

Atlantic Fleet Training and Testing
Final Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement

United States Department of the Navy

Volume IV

August 2025

NAVY

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APPENDIX F
BIOLOGICAL RESOURCES SUPPLEMENTAL INFORMATION

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

F BIOLOGICAL RESOURCES SUPPLEMENTAL INFORMATION F-1

F.1 Habitats F-1

F.1.1 General Background F-1

F.1.1.1 Natural Features F-1

F.1.1.2 Artificial Features F-2

F.1.1.3 General Threats F-2

F.2 Vegetation F-5

F.2.1 General Background F-6

F.2.1.1 Habitat Use F-6

F.2.1.2 General Threats F-7

F.2.2 Species Not Listed under the Endangered Species Act F-9

F.2.2.1 Microalgae F-10

F.2.2.2 Macroalgae F-10

F.2.2.3 Vascular Plants (Phylum Tracheophyta) F-11

F.3 Invertebrates F-11

F.3.1 General Background F-12

F.3.1.1 Habitat Use F-13

F.3.1.2 Movement and Behavior F-14

F.3.1.3 Sound Sensing and Production F-15

F.3.1.4 General Threats F-15

F.3.2 Endangered Species Act-Listed Species F-16

F.3.2.1 Elkhorn Coral (*Acropora palmata*) F-19

F.3.2.2 Staghorn Coral (*Acropora cervicornis*) F-21

F.3.2.3 Lobed Star Coral (*Orbicella annularis*) F-23

F.3.2.4 Boulder Star Coral (*Orbicella franksi*) F-25

F.3.2.5 Mountainous Star Coral (*Orbicella faveolata*) F-27

F.3.2.6 Pillar Coral (*Dendrogyra cylindrus*) F-28

F.3.2.7 Rough Cactus Coral (*Mycetophyllia ferox*) F-29

F.3.2.8 Queen Conch (*Aliger gigas*) F-31

F.3.3 Species Not Listed under the Endangered Species Act F-32

F.3.3.1 Corals, Hydroids, Jellyfish (Phylum Cnidaria) F-32

F.4 Fishes F-34
F.4.1 General Background F-35
F.4.1.1 Habitat Use F-36
F.4.1.2 Movement and Behavior F-37
F.4.1.3 Hearing and Vocalization F-38
F.4.1.4 General Threats F-38
F.4.2 Endangered Species Act-Listed Species F-40
F.4.2.1 Atlantic Salmon (*Salmo salar*) F-40
F.4.2.2 Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) F-42
F.4.2.3 Shortnose Sturgeon (*Acipenser brevirostrum*) F-48
F.4.2.4 Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) F-50
F.4.2.5 Smalltooth Sawfish (*Pristis pectinata*) F-52
F.4.2.6 Giant Manta Ray (*Mobula birostris*) F-54
F.4.2.7 Nassau Grouper (*Epinephelus striatus*) F-56
F.4.2.8 Oceanic Whitetip Shark (*Carcharhinus longimanus*) F-58
F.4.2.9 Scalloped Hammerhead Shark (*Sphyrna lewini*) F-59
F.4.3 Species Not Listed under the Endangered Species Act F-61
F.5 Marine Mammals F-61
F.5.1 General Background F-61
F.5.1.1 Group Size F-64
F.5.1.2 Habitat Use F-64
F.5.1.3 Dive Behavior F-65
F.5.1.4 Hearing and Vocalization F-65
F.5.1.5 General Threats F-65
F.5.2 Endangered Species Act-Listed Species F-69
F.5.2.1 North Atlantic Right Whale (*Eubalaena glacialis*) F-69
F.5.2.2 Blue Whale (*Balaenoptera musculus*) F-74
F.5.2.3 Fin Whale (*Balaenoptera physalus*) F-75
F.5.2.4 Rice's Whale (*Balaenoptera ricei*) F-78
F.5.2.5 Sei Whale (*Balaenoptera borealis*) F-81
F.5.2.6 Sperm Whale (*Physeter macrocephalus*) F-83
F.5.2.7 West Indian Manatee (*Trichechus manatus*) F-85
F.5.3 Species Not Listed under the Endangered Species Act F-90
F.5.3.1 Bryde's Whale (*Balaenoptera brydei/edeni*) F-90
F.5.3.2 Humpback Whale (*Megaptera novaengliae*) F-91
F.5.3.3 Minke Whale (*Balaenoptera acutorostrata*) F-94
F.5.3.4 Dwarf/Pygmy Sperm Whale (*Kogia sima* and *Kogia breviceps*) F-96

F.5.3.5 Beaked Whales (Various Species) F-98
F.5.3.6 Northern Bottlenose Whale (*Hyperoodon ampullatus*) F-101
F.5.3.7 Atlantic Spotted Dolphin (*Stenella frontalis*) F-102
F.5.3.8 Atlantic White-Sided Dolphin (*Lagenorhynchus acutus*) F-103
F.5.3.9 Clymene Dolphin (*Stenella clymene*) F-105
F.5.3.10 Common Bottlenose Dolphin (*Tursiops truncatus*) F-106
F.5.3.11 Common Dolphin (*Delphinus delphis*) F-111
F.5.3.12 False Killer Whale (*Pseudorca crassidens*) F-112
F.5.3.13 Fraser's Dolphin (*Lagenodelphis hosei*) F-113
F.5.3.14 Killer Whale (*Orcinus orca*) F-114
F.5.3.15 Long-Finned Pilot Whale (*Globicephala melas*) F-115
F.5.3.16 Melon-Headed Whale (*Peponocephala electra*) F-116
F.5.3.17 Pantropical Spotted Dolphin (*Stenella attenuata*) F-117
F.5.3.18 Pygmy Killer Whale (*Feresa attenuata*) F-118
F.5.3.19 Risso's Dolphin (*Grampus griseus*) F-120
F.5.3.20 Rough-Toothed Dolphin (*Steno bredanensis*) F-121
F.5.3.21 Short-Finned Pilot Whale (*Globicephala macrorhynchus*) F-122
F.5.3.22 Spinner Dolphin (*Stenella longirostris*) F-124
F.5.3.23 Striped Dolphin (*Stenella coeruleoalba*) F-125
F.5.3.24 White-Beaked Dolphin (*Lagenorhynchus albirostris*) F-127
F.5.3.25 Harbor Porpoise (*Phocoena phocoena*) F-128
F.5.3.26 Gray Seal (*Halichoerus grypus*) F-129
F.5.3.27 Harbor Seal (*Phoca vitulina*) F-131
F.5.3.28 Harp Seal (*Pagophilus groenlandicus*) F-132
F.5.3.29 Hooded Seal (*Cystophora cristata*) F-134

F.6 Reptiles F-135

F.6.1 General Background F-135
F.6.1.1 Group Size F-137
F.6.1.2 Habitat Use F-137
F.6.1.3 Dive Behavior F-138
F.6.1.4 Hearing and Vocalization F-139
F.6.1.5 General Threats F-140
F.6.2 Endangered Species Act-Listed Species F-148
F.6.2.1 Green Sea Turtle (*Chelonia mydas*) F-148
F.6.2.2 Hawksbill Sea Turtle (*Eretmochelys imbricata*) F-152
F.6.2.3 Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) F-155
F.6.2.4 Loggerhead Sea Turtle (*Caretta caretta*) F-159
F.6.2.5 Leatherback Sea Turtle (*Dermochelys coriacea*) F-166
F.6.2.6 American Crocodile (*Crocodylus acutus*) F-171

F.6.2.7 American Alligator (*Alligator mississippiensis*) F-173
F.6.3 Species Not Listed under the Endangered Species Act F-175
F.6.3.1 Diamondback Terrapin (*Malaclemys terrapin*) F-175
F.7 Birds and Bats F-176
F.7.1 General Background F-176
F.7.1.1 Group Size F-177
F.7.1.2 Habitat Use F-177
F.7.1.3 Dive Behavior F-179
F.7.1.4 Hearing and Vocalization F-179
F.7.1.5 General Threats F-180
F.7.2 Endangered Species Act-Listed Species F-181
F.7.2.1 Piping Plover (*Charadrius melodus melodus*) F-181
F.7.2.2 Red Knot (*Calidris canatus rufa*) F-184
F.7.2.3 Roseate Tern (*Sterna dougallii*) F-186
F.7.2.4 Bermuda Petrel (*Pterodroma cahow*) F-189
F.7.2.5 Black-Capped Petrel (*Pterodroma hasitata*) F-191
F.7.2.6 Indiana Bat (*Myotis sodalis*) F-193
F.7.2.7 Northern Long-Eared Bat (*Myotis septentrionalis*) F-195
F.7.2.8 Tricolored Bat (*Perimyotis subflavus*) F-198
F.7.3 Species Not Listed under the Endangered Species Act F-200
F.7.3.1 Bird Species F-200
F.7.3.2 Bats F-207

List of Figures

Figure F.1-1: Extent of Seasonal Hypoxia (e.g., Low Dissolved Oxygen) in the Northwestern Gulf of America from 2001 to 2011 ..... F-4
Figure F.3-1: Shallow-Water Habitats for ESA-Listed Coral Species and Queen Conch in the Study Area F-17
Figure F.5-1: Biologically Important Areas for North Atlantic Right Whales in the Study Area – Northeast F-71
Figure F.5-2: Biologically Important Areas for North Atlantic Right Whales in the Study Area – Southeast F-72
Figure F.5-3: Biologically Important Areas for Fin Whales in the Study Area F-77
Figure F.5-4: Biologically Important Areas for Rice's Whales in the Study Area – Eastern Gulf of America F-79
Figure F.5-5: Biologically Important Areas for Rice's Whales in the Study Area – Western Gulf of America F-80
Figure F.5-6: Biologically Important Areas for Sei Whales in the Study Area F-82
Figure F.5-7: Biologically Important Areas for Humpback Whales in the Study Area F-92

Figure F.5-8: Biologically Important Areas for Minke Whales in the Study Area F-95
Figure F.5-9: Biologically Important Areas for Bottlenose Dolphins in the Study Area – Southeast F-108
Figure F.5-10: Biologically Important Areas for Bottlenose Dolphins in the Study Area – South Florida and Gulf of America F-108
Figure F.5-11: Biologically Important Areas for Bottlenose Dolphins in the Study Area – Gulf of America F-109
Figure F.5-12: Biologically Important Areas for Harbor Porpoises in the Study Area F-129
Figure F.6-1: Dive Depth and Duration Summaries for Sea Turtle Species F-139
Figure F.6-2: Generalized Dive Profiles and Activities Described for Sea Turtles F-140

List of Tables

This appendix does not contain tables.

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F BIOLOGICAL RESOURCES SUPPLEMENTAL INFORMATION

F.1 HABITATS

The purpose of this section is to provide basic ecological background information that is not present in the main document of the Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). With exception to the following topics the remainder of the necessary information can be found in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (hereinafter referred to as the 2018 Final EIS/OEIS) (Section 3.5, Habitats):

- Updates to the distributions of shallow-water coral reefs, live-hard bottoms, and deep-sea coral or sponge habitats have been accessed using the most recent published literature. The most up-to-date mapping of seafloor resources is needed for the most accurate estimates of impact footprint as well as effective mitigation measures that minimize the footprint of sensitive habitats.
- Literature exploration and verification of recent published articles was used to determine the potential effects from the numerous threat sources described in the 2018 Final EIS/OEIS. This information provided vital context for the analysis of cumulative impacts.
- Literature exploration and verification of recent published articles was completed to assess the status of the previously discussed threats as well as emerging threats. This information provided vital context for the analysis of cumulative impacts.

F.1.1 GENERAL BACKGROUND

With the exceptions noted below, general background for abiotic habitats in the Study Area, as described in the 2018 Final EIS/OEIS (Section 3.5.2.1, General Background), has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

F.1.1.1 Natural Features

F.1.1.1.1 Bottom Habitats

The following information was updated from the 2018 Final EIS/OEIS:

The depth limit for differentiating natural-bottom habitats relevant to biological resources is approximately 2,500 meters (m); the biological resources present on substrate greater than 2,500 m deep is mostly bacteria where chemosynthetic features (e.g., hydrothermal vents) are absent, regardless of substrate type (refer to Section F.3, Invertebrates, for more information on the depth limits). The deeper areas are also devoid of live hard corals (Tittensor et al., 2009), structure-forming sponges (Hourigan et al., 2017), as well as specific fish-habitat associations in the mid-Atlantic region (Ross et al., 2015b). Bottom habitats, including abiotic substrate types, are depicted in Section 3.3 (Habitats) Figure 3.3-1 through Figure 3.3-5 (artificial reefs and bottom habitats figures).

A detailed breakdown of natural-abiotic substrates intersecting specific named training and testing areas is provided in the following paragraphs.

F.1.1.1.1.1 Regions Intersecting the United States Exclusive Economic Zone

For hard substrate/live-hard bottom within regions intersecting the United States (U.S.) Exclusive Economic Zone, the highest percent coverages (30 to 72 percent) are mapped in the South Florida

Ocean Measurement Facility/Southeast U.S. Continental Shelf, Jacksonville Range Complex/Gulf Stream, Key West Range Complex/Gulf Range Complex, and other Atlantic Fleet Training and Testing (AFTT) inshore waters/Northeast U.S. Continental Shelf. The highest percent coverages for intermediate substrate (30 to 38 percent) are in other training or testing areas/Northeast U.S. Continental Shelf, Lake Borgne/Gulf Range Complex, the Northeast Range Complexes, and the Virginia Capes Range Complex. Soft substrate dominates the abiotic substrate in the vast majority of training and testing locations at depths less than 2,500 m (Table 3.3-1 in Section 3.3, Habitats), with the exception of the South Florida Ocean Measurement Facility. The highest coverage of bottom deeper than 2,500 m and within the U.S. Exclusive Economic Zone include the Sinking Exercise Box/Gulf Stream, other training/testing areas/Gulf Stream, Virginia Capes Range Complex/Gulf Stream, and Northeast Range Complexes/Gulf Stream.

F.1.1.1.1.2 Regions Outside of the United States Exclusive Economic Zone

Other large marine ecosystems and open-ocean areas outside of the U.S. Exclusive Economic Zone are mapped at broad scales by U.S. Department of the Navy (Naval Oceanographic Office). The Canadian Eastern Arctic – West Greenland, Labrador – Newfoundland, and Scotian Shelf ecosystems have relatively little high-quality mapping data that is publicly available for inclusion in the database; these areas also do not have established range complexes and experience very limited amounts of military readiness activities.

F.1.1.1.2 Water Column Habitats

In the Study Area, water column habitats (e.g., floating *Sargassum*) and artificial feature points, including typical current speeds and flow directions, are mapped in Figure 3.3-6 to Figure 3.3-10 (water column figures). The recent satellite-based mapping is more detailed than the generalized drawing of flow directions depicted in the 2018 Final EIS/OEIS's Figure 3.0-7 (Major Currents in the Study Area). For example, the Loop Current is much farther west in the Gulf of America, and the strongest flows of the Gulf Stream are much closer to shore in the U.S. Southeast Atlantic than what Figure 3.0-7 suggests.

F.1.1.2 Artificial Features

The only difference between the subsequent paragraphs and those of the 2018 Final EIS/OEIS is the inclusion of seafloor pipelines as a habitat for biological resources (Schramm et al., 2021).

Artificial reef habitats have been intentionally created with a wide variety of materials ranging from simple concrete blocks to highly engineered structures. They have also been created as a result of structures built for other purposes (e.g., jetties, oil and gas platforms, seafloor pipelines) or unintentional sinking of vessels (i.e., shipwrecks).

Factors such as the materials, structural features, interstitial space, and surface area of the artificial substrate, as well as local environmental conditions influence the variety and abundance of sessile and sedentary organisms that may become established and the relative success of attracting or enhancing local fish populations (Ajemian et al., 2015; Broughton, 2012; Macreadie et al., 2011; Powers et al., 2003; Ross et al., 2016; Schramm et al., 2021).

F.1.1.3 General Threats

Estuarine and ocean habitats worldwide are under pressure from a variety of human activities (Crain et al., 2009) such as coastal development (shoreline stabilization, dredging, flood control, and water diversion); destructive fishing practices (Auster & Langton, 1999); offshore energy and resource development and extraction (Boehlert & Gill, 2010); increasing global temperatures and ocean acidification (Hoegh-Guldberg & Bruno, 2010); marine debris (Rochman et al., 2016); and the cumulative

effects (Clarke et al., 2014; Halpern et al., 2015) of all these impacts on habitats. These types of activities produce a range of physical and chemical stressors on habitats that are only increasing in intensity as economies grow (Danish et al., 2019). Stressors associated with these activities are not distributed randomly across habitat types and ecosystems; most are more prevalent closer to highly developed landscapes (Halpern et al., 2015). Areas where heavy concentrations of human activities co-occur with military readiness activities have the greatest potential for cumulative stress on the marine ecosystem (see Chapter 4, Cumulative Impacts, for more information). Many threats are also related to some degree (e.g., development and pollution are correlated), which can result in either enhancing or diminishing an impact across a substrate. There are also numerous emerging issues facing marine habitats that include both negative and positive effects (e.g., increased toxicity of metal pollution due to ocean acidification, extraction of rare earth metals from deep-sea habitats, colocation of marine activities) (Herbert-Read et al., 2022) that further complicates an understanding of how a single activity or the compilation of activities impacts a specific substrate type.

F.1.1.3.1 Water Quality Degradation

The following information was updated from the 2018 Final EIS/OEIS:

The occurrence of dead zones (areas of low [less than 2.0 milligrams per liter, hypoxic] or no dissolved oxygen [anoxic]) are increasing in coastal waters worldwide, representing a major threat to the health and economy of the United States and elsewhere (Committee on Environment and Natural Resources, 2010). This trend is exemplified most dramatically off the coast of Louisiana and Texas, where the second largest hypoxic zone in the world is associated with the excess nutrient discharge by the Mississippi and Atchafalaya rivers (Figure F.1-1). Hypoxic conditions recur annually in the northern Gulf of America, typically during summer and coinciding with increasing salinity stratification along with higher seasonal riverine input and nutrient loading (May et al., 2012). Most aquatic organisms cannot survive in hypoxic conditions, which form each summer. This area is one of the most productive recreational and commercial fishing grounds in the conterminous United States. The biological impact of physical disturbance of the bottom during periods of hypoxia is likely minimal due to the relatively low abundance and resilience of surviving organisms (van Denderen et al., 2022). There are no other large hypoxic zones that intersect the Study Area, though there are smaller dead zones associated with large coastal rivers draining into highly developed watersheds (Diaz & Rosenberg, 2008).

F.1.1.3.2 Increasing Global Temperatures and Ocean Acidification

The following information was updated from the 2018 Final EIS/OEIS:

- Sea-level rise, caused by increasing ocean temperatures, is having the greatest impacts on intertidal and coastal ecosystems, mostly due to intertidal and shallow subtidal vegetation trying to migrate with the changing shorelines (discussed more in Section F.2, Vegetation).
- Ocean acidification is starting to inhibit the calcification of some habitat-forming invertebrates (e.g., oysters, hard corals), which in turn affects their growth rate and building of hard substrate (discussed more in Section F.3, Invertebrates).
- Changes in long-term weather patterns are altering ocean circulation, upwelling/downwelling, rainfall, and nutrient distribution patterns (Chen et al., 2019; Gonçalves Neto et al., 2021; Wang et al., 2015). The wet tropical areas and mid-latitude land are experiencing more frequent and extreme precipitation (Allan et al., 2020), which is increasing erosion-related sedimentation and runoff to coastal habitats (Keener et al., 2012). These can alter primary productivity to a system and thus result in food-web-level impacts.

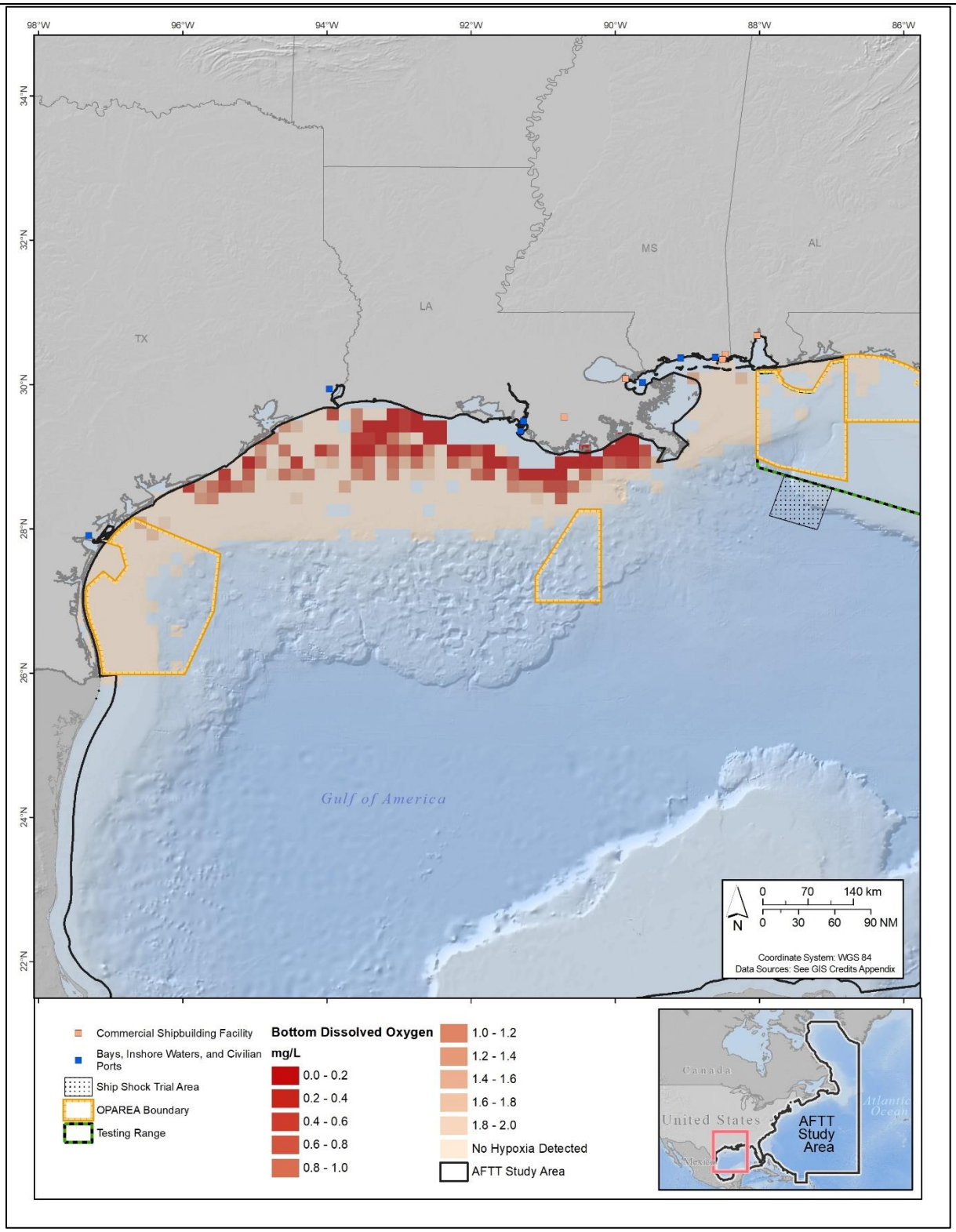


Figure F.1-1: Extent of Seasonal Hypoxia (e.g., Low Dissolved Oxygen) in the Northwestern Gulf of America from 2001 to 2011

F.1.1.3.3 Marine Debris

A multi-year study conducted from 1997 to 2007 along the southeast Atlantic coast concluded that marine debris was mostly general source (land or water-based) or land-based (42 and 38 percent, respectively) followed by ocean based (e.g., items originating from recreational and commercial fishing, shipping, and tourism activities) (20 percent) (Ribic et al., 2010). A similar study conducted along the U.S., Caribbean, and Gulf of America coasts reported similar results (Ribic et al., 2011). An assessment of marine debris collected between 2008 and 2015 in the mid-Atlantic region (Delaware to Virginia) found that the most abundant debris items were plastic, foam, and tobacco-related products (Mid-Atlantic Regional Council On The Ocean, 2015). The majority of marine debris reported in these studies were plastic. U.S. Navy vessels have a zero-plastic discharge policy and return all plastic waste to appropriate disposal or recycling sites onshore, with the exception of military expended materials containing plastic that are not recovered.

Other studies conducted along the northwestern Atlantic shelf break and slope have either observed relatively high concentrations of lighter marine debris (e.g., plastic fragments) in submarine canyons (Jones et al., 2022) or scattered heavier debris (Quattrini et al., 2015). Quattrini et al. (2015) used a remote operated vehicle to survey over 26 kilometers (km) of seafloor and noted 140 items of marine debris. The items were mostly derelict fishing gear and other debris (e.g., soda cans, glass bottles, balloons, rugs, plastic bags). Bauer et al. (2008) conducted a remotely operated vehicle study of marine debris in Gray's Reef National Marine Sanctuary and found mostly fishing gear snagged on ledges. Fishing gear was also found along mesophotic depths (30 to 120 m) of the Florida Reef Tract intersecting the Key West Range Complex (Reed et al., 2021). No items of military origin were noted in any of these surveys. In the Mediterranean, lighter debris were more often observed in shallower waters compared to deeper waters where heavier items were also observed (mostly along shipping routes) among generally higher concentrations of debris (Ramirez-Llodra et al., 2013). The dynamic nearshore environment likely resulted in heavier items being buried in the soft substrate (Jenkins & Wever, 2007) while lighter items remained on the surface to be moved greater distances from where they initially settled (Jones et al., 2022).

F.2 VEGETATION

The purpose of this section is to provide basic ecological background information that is not present in the main document of the Supplemental EIS/OEIS. With exception to the following topics the remainder of the necessary information can be found in the 2018 Final EIS/OEIS (Section 3.3, Vegetation):

- Updates to the numbers and population statuses of vegetation species in the Study Area have been accessed using the most recent published literature. This information more accurately characterizes the affected environment.
- Depth limits and distribution of coastal wetlands, seagrass beds, and benthic macroalgae habitats have been updated using the most recent published literature. This information affects the analysis directly because some activities have specific depth ranges in which they occur. If vegetation does not co-occur within the activity's depth range, then the activity is assumed to have no impact on vegetation.
- Literature exploration and verification of recent published articles to determine the potential effects from the numerous threat sources described in the 2018 Final EIS/OEIS. This information provides vital context for analysis of cumulative impacts.

- Literature exploration and verification of recent published articles to assess the status of the previously discussed threats as well as emerging threats. This information provides vital context for analysis of cumulative impacts.

F.2.1 General Background

Broadly speaking, aquatic vegetation is a relatively stationary feature of estuaries and oceans that includes many growth forms and species forming the foundation of the food chain and biotic habitat for animal populations. There are approximately 8,600 marine plant species catalogued in the world's oceans (Mora et al., 2011) and many more that are likely unidentified (Isbell et al., 2023). Estuarine and marine ecosystems depend almost entirely on the energy produced by marine vegetation through photosynthesis (Castro & Huber, 2000), which is the transformation of the sun's energy into chemical energy. In the lighted surface waters of the open ocean and coastal waters, marine algae and flowering plants provide oxygen and habitat for many organisms in addition to forming the base of the food web (Dawes, 1998). Vegetation in the Study Area is comprised of many thousands of plants and plant-like species spanning many taxonomic groups (taxonomy is a method of classifying and naming organisms). The basic taxonomic groupings of vegetation include microalgae (e.g., phytoplankton, surface algae), macroalgae (e.g., seaweed, kelp), and vascular plants.

- Microalgae are either single-celled attached (sometimes filamentous or chain forming) or individuals that can be free-floating (phytoplankton) or substrate-oriented (surface algae).
- Macroalgae are multi-celled algae that grow loosely attached to hard intertidal (e.g., dead man's fingers, *Codium*) or subtidal substrate (e.g., kelp, *Laminaria*) or drift about in floating mats (e.g., *Sargassum*).
- Vascular plants include seagrasses and coastal wetlands:
    - Seagrasses are flowering plants that grow fully submerged and rooted in the shallow and sheltered margins of estuarine or marine ecosystems.
    - Coastal wetland plants (e.g., salt-brackish marsh, mangroves) grow rooted in intertidal flats along the sheltered margins of estuarine or marine ecosystems.

It is estimated that most marine plant species have not yet been described (Mora et al., 2011). The total number of plant species that occur in the Study Area is therefore unknown but is likely to be several hundred at least (Fautin et al., 2010). The results of a research effort to estimate the number of marine plant species in various areas identified 246 species in the Northeast U.S. Continental Shelf Large Marine Ecosystem, 113 in the Southeast U.S. Continental Shelf Large Marine Ecosystem, and 967 species in the Gulf of Mexico Large Marine Ecosystem (Fautin et al., 2010).

F.2.1.1 Habitat Use

F.2.1.1.1 Shoreline Habitats

Emergent wetlands are found along the shallowest margins of estuaries, coastal lagoons, tidal creeks or rivers, wherever the sediment is adequate to support root development (Levinton, 2013a; Mitsch et al., 2009). Saltmarsh cordgrass (*Sporolus* spp., formerly *Spartina* spp.) dominates emergent wetlands along most estuarine (or otherwise sheltered) shorelines of the Study Area. Mangroves dominate in areas that do not regularly have freezing temperatures, including tropical and subtropical waters of Texas, Louisiana, South Florida, and Puerto Rico (Bunting et al., 2018). The most current mapping of emergent wetlands intersecting the Study Area is depicted in Section 3.3 (Habitats) Figure 3.3-1 to Figure 3.3-5; the total area of coastal emergent wetlands mapped in the Study Area is 1,611 square kilometers (km^2).

F.2.1.1.2 Bottom Habitats

The following information was updated from the 2018 Final EIS/OEIS:

- Benthic algae can grow at depths with less than 1 percent light penetration, which reaches approximately 95-m depths in the clearest conditions that occur in the offshore waters of North Carolina (Smith Jr., 1981) depicted in Section 3.3, Habitats (Figure 3.3-1 to Figure 3.3-10). The depth limit for benthic algae in the 2018 Final EIS/OEIS was stated as 200 m without an adequate reference. The maximum depth of a resource matters for analysis. Using the updated parameters, benthic macroalgae could occur on 47,000 km^2 of seafloor in Study Area locations (refer to Table 3.3-1 in Section 3.3, Habitats, for supporting data).
    - The depth limits of algae growth vary in the Study Area, with relatively shallow depths on the U.S. northeast Atlantic coast and greater depths around South Florida and Gulf of America. Kelp (*Laminaria* species; a large, brown seaweed) and other leathery seaweeds occur from the low tide line out to only about 20 to 40 m in the New England region, depending on water clarity (Calvert & McGonigle, 2020; Luning, 1990; Steneck et al., 2002; Vadas & Steneck, 1988).
    - Red macroalgae grows down to 63, 85, and 105 m in the Gulf of Maine (Vadas & Steneck, 1988), northwestern Gulf of America (Clark et al., 2014), and Pulley Ridge (Reed et al., 2019), respectively.
- Seagrasses grow from the intertidal zone to a maximum depth of about 99 feet (ft. [30 m]) in the clear, protected waters off southern Florida (Duarte et al., 2007). The 2018 Final EIS/OEIS reported a maximum depth of 297 ft. (90 m) from seagrass growth, but the references used included Duarte et al. (2007) without determining if it applied to the Study Area.
- The most current mapping of seagrass beds intersecting the Study Area is depicted in Section 3.3 (Habitats) Figure 3.3-1 to Figure 3.3-5. The total area of seagrass beds mapped in the Study Area is 7,821 km^2.

F.2.1.1.3 Water Column Habitats

In general, marine plants inhabiting the ocean water column include various species of phytoplankton and floating seaweed. For a description of phytoplankton taxa that were discounted for analysis in Section 3.4 (Vegetation) refer to the 2018 Final EIS/OEIS (Section 3.3.2.3, Species Not Listed Under the Endangered Species Act). Floating *Sargassum* (a brown macroalgae) forms floating mats that are important habitats for marine life (South Atlantic Fishery Management Council, 2002). In the Study Area, floating *Sargassum* occurs in all the offshore ranges (Section 3.4, Table 3.4-1). The seasonal coverage of floating *Sargassum* is depicted in Figure 3.3-6 through Figure 3.3-10 of Section 3.3 (Habitats) and described in Section F.2.2 (Species Not Listed under the Endangered Species Act). The 2018 Final EIS/OEIS did not describe the seasonal distribution of floating *Sargassum.*

F.2.1.2 General Threats

Human activities and associated effects on marine and estuarine vegetation include excessive nutrient input (such as fertilizers), siltation (the addition of fine particles to the ocean), pollution (oil, sewage), global temperature increases and ocean acidification, fishing practices, shading from structures, habitat degradation from construction and dredging, and introduced or invasive species. These activities produce a range of physical and chemical stressors on marine habitats, including vegetation, that are

increasing in intensity as economies grow (Danish et al., 2019). Most stressors associated with these activities are close to highly developed landscapes, rather than randomly distributed (Halpern et al., 2015). In addition to the well-known threats to marine vegetation, there are also several emerging threats (e.g., increasing wildfire impacts, coastal darkening) that have yet to be studied thoroughly (Herbert-Read et al., 2022).

The biodiversity of marine plants has experienced dramatic declines worldwide that are predicted to continue (Isbell et al., 2023). The estimated declines in biodiversity are relatively high compared to marine invertebrates (Isbell et al., 2023). The primary indirect threats to marine plants (in order of significance) include human population, production and consumption, governance, technology, and trade. The primary direct threats to marine plants include land and sea-use change, global temperature increases and ocean acidification, pollution, and overexploitation. Refer to the threat subsections below for details and citations.

The threats facing marine vegetation in general are further described in the subsections below. Taxa-specific threats are updated in Section F.2.2 (Species Not Listed under the Endangered Species Act).

F.2.1.2.1 Development and Human Activities

The impacts on marine and estuarine vegetation are primarily from inshore and nearshore developments and associated activities described in Section F.1.1.3 (Habitats, General Threats). The nature of the threat from development is taxa-specific, with nearshore taxa (e.g., coastal wetlands, seagrass, kelp) affected more by coastal development than offshore taxa (e.g., floating *Sargassum* and other seaweed). Offshore taxa are more likely to be affected by offshore renewable resource development (e.g., wind turbines), which can cause an increase in hard substrate where there is sufficient light for algae growth (Karlsson et al., 2022; Tsiamis et al., 2020). However, the effects of offshore renewable energy infrastructure on benthic habitats includes some significant unknowns, such as the hydrodynamic changes that could alter primary production (e.g., algae growth) and allow the range expansion of non-native/invasive species (Dannheim et al., 2019). This is important to the extent it applies to military expended materials.

F.2.1.2.2 Water Quality Degradation

The overall impact of pollutants on marine and estuarine habitats from oil spills and polluted runoff/discharge is described in Section F.1.1.3 (Habitats, General Threats). Not only does coastal pollution and agricultural runoff degrade water quality for submerged plant species (e.g., seagrass), it can also cause toxic “red tides” and other harmful algae blooms. Harmful algae blooms are diverse phenomena involving multiple species and classes of algae that occupy a broad range of habitats from lakes to oceans and produce a multiplicity of toxins or biologically active compounds that impact aquatic life (Anderson et al., 2021). Based on 30 years of data for the United States, there has been a significant increase in all harmful algae bloom events caused by the dispersion of species to new areas, the discovery of new harmful algae bloom poisoning effects, and the exacerbating effects of human activities like nutrient pollution, aquaculture expansion, ocean warming, and other activities/effects (Anderson et al., 2021).

F.2.1.2.3 Global Temperature Increases and Ocean Acidification

The overall impact of increasing global temperatures and ocean acidification on marine and estuarine habitats is described in Section F.1.1.3 (Habitats, General Threats). The most obvious consequence on marine and estuarine vegetation is a landward shift that occurs along natural or undisturbed shorelines, where the overall photic zone can move upslope with sea-level rise. As such, sea-level rise may reduce the spatial extent of some biogenic habitats (e.g., wetlands) where it outpaces the accretion rates of

habitat-forming species even where upslope migration is unobstructed by vertical-shoreline structures (Schuerch et al., 2018). However, the effect is highly dependent on the slope of the shorelines being inundated and extent of shoreline development. The effect of sea-level rise and increasing storm intensities is most significant along shorelines with artificial-vertical stabilization (e.g., bulkheads, sea walls) or steep elevation gradients that prevent upslope movement of shallow, nearshore habitats (Borchert et al., 2018). Artificial stabilization also deepens the nearshore environment and increases wave energies along adjacent shorelines, which increases the erosion of some shorelines that provides a sediment supply for other habitats (Palinkas et al., 2018).

The forces of erosion and sea-level rise along increasingly armored shorelines will likely continue reducing the area of suitable habitat for vegetation (e.g., marsh grasses, seagrasses, benthic macroalgae). Eight sub-estuaries of the Chesapeake Bay (including the Virginia Capes Inshore training area) are more than 50 percent hardened/armored (e.g., bulkheads, rip-rap), and 23 more are between 30 and 50 percent hardened/armored (Erdle et al., 2006; Patrick et al., 2014). Armoring will probably increase through this century as coastal zone populations increase and as sea levels continue to rise (Curtis & Schneider, 2011; Dugan et al., 2008; Small & Nicholls, 2003). The development of small channels connecting expanding shoreline developments (e.g., marinas, community docks) with established navigation channels will likely increase as well. The threats facing migration of shallow-water coastal habitats along the Atlantic coast are further exacerbated by estimates that 60 percent of land below 3.3 ft. (1 m) in elevation is open for development, with only 10 percent set aside for conservation (Titus et al., 2009); with sea-level rise, shallow-coastal habitats need high-elevation wetlands and low-elevation uplands to migrate into.

Increased atmospheric carbon dioxide and sea temperature may lead to several impacts that could affect vegetation (e.g., stratification, acidification). Warmer waters may lead to a greater stratification in the water column, which may support harmful algal blooms (World Ocean Review, 2015). The stratification may also inhibit upwelling, as seen during El Niño events, which would prevent nutrients from circulating to the surface (Lehmköster, 2015; World Ocean Review, 2015), reducing photosynthetic capabilities. Additionally, increased sea temperatures may lead to changes in the composition of marine vegetation communities (Schiel et al., 2004). Ocean acidification with increased dissolved carbon dioxide has also been shown to reduce the ability of seagrasses to deter herbivores (Arnold et al., 2012).

F.2.1.2.4 Other Threats

Other threats to marine and estuarine vegetation include marine debris and invasive species. Marine plastic debris has only speculative effects on algae and seagrass directly, though there may be an indirect effect on plant-eating consumers (Bonanno & Orlando-Bonaca, 2020). Other types of marine debris have not been recognized as a threat to aquatic vegetation, except where it accumulated in very high concentrations (e.g., litter accumulation in wetland areas). In Caribbean seagrass meadows and perhaps elsewhere, the ecosystem services of native species are threatened by a combination of intensive grazing and opportunities invasive seagrass species that leave seabeds more vulnerable to erosion from storms (James et al., 2020).

F.2.2 Species Not Listed under the Endangered Species Act

For the following discussion, vegetation has been divided into three major taxonomic groups (microalgae, macroalgae, and vascular plants) and eight major phyla that have distinct morphological, biochemical, physiological, and life history traits that reflect their evolutionary history and influence their distributions and ecological relationships.

F.2.2.1 Microalgae

The great diversity of microalgae makes generalization difficult, but overall, algae are resilient and are able to colonize disturbed environments created by stressors (Levinton, 2013b). Trends in the abundance of many microalgae species is unknown, but likely increasing due to excess nutrients reaching surface waters. However, excess nutrients tend to favor an overabundance of harmful algae species (Wurtsbaugh et al., 2019).

F.2.2.2 Macroalgae

The three primary groups of macroalgae include green, brown, and red algae. Among the prominent macroalgae groups mentioned previously, floating *Sargassum* has been increasing in abundance from 2011 to 2018, though the increase is due to massive amounts of the seaweed on Caribbean beaches that originated in the central Atlantic (Gower & King, 2020; Gower et al., 2013; Wang et al., 2019). The causes for the persistent increase have been attributed to nutrient enrichment from coastal rivers and climate variation. However, kelp forests in New England have been declining (Witman & Lamb, 2018); a decline that is most dramatic in shallow, nearshore habitats. There has also been an increase in benthic macroalgae at the expense of hard corals in the western Atlantic over time (Tebbett et al., 2023).

F.2.2.2.1 Brown Algae (Phylum Phaeophyta)

The following information on kelp (*Laminaria* species) was updated from the 2018 Final EIS/OEIS:

- Kelp species are abundant on Cashes Ledge in the central Gulf of Maine (Witman & Lamb, 2018) where leathery macroalgae make up 70 percent of the benthic community on rocky habitats less than 40 m deep (Calvert & McGonigle, 2020). This habitat also coincides with the Northeast Range Complex. The density of kelp on Cashes Ledge is much higher than rocky habitats closer to shore (Witman & Lamb, 2018).
- The primary threat to kelp beds globally is considered to be coastal development followed closely by water pollution and overharvesting (Morris et al., 2020). In the New England area, commercial farming/harvesting of kelp and other "rockweeds" (attached seaweed species) has raised concerns about the ecological effects on the associated marine animals that depend on kelp beds as habitat (Kim et al., 2019). Maine has recently developed a rockweed fishery management plan aimed at ensuring the sustainable use of this resource (Maine Department of Marine Resources, 2014). Fishing can also impact kelp forests via the ecological effect of removing kelp consumers (e.g., sea urchins) or the predators of those consumers (e.g., large, benthic carnivores) (Steneck et al., 2002).

The following information on floating *Sargassum* was updated from the 2018 Final EIS/OEIS:

- In the western North Atlantic, *Sargassum* can double in size every 15 to 28 days, depending on the level of nutrient enrichment (Lapointe, 1986). The growth rate of vegetation determines how quickly it can recover from physical disturbance and strike.
- Given the size of the Study Area (approximately 2.6 million square nautical miles [NM^2]), the relative coverage of *Sargassum* ranges from less than 1 percent to 5 percent of the sea surface (2018 Final EIS/OEIS). However, this estimate does not account for the massive infusion of *Sargassum* from the Central Atlantic that has been occurring in recent years (Wang et al., 2019). However, the central Atlantic is not in the Study Area and the quantity of floating *Sargassum* flowing into the Study Area from this region is unknown.

F.2.2.3 Vascular Plants (Phylum Tracheophyta)

F.2.2.3.1 Seagrasses

The following information was updated from the 2018 Final EIS/OEIS:

- The largest area of seagrass in the Study Area occurs in the inshore locations associated with the Northeast, Virginia Capes, Key West, and Gulf Range Complexes (see Section 3.3, Habitats, Figure 3.3-1 to Figure 3.3-5). A review of seagrass from 1879 to 2006 found that global seagrass coverage decreased by 75 percent (Waycott et al., 2009). However, the study documented much less severe declines or slight increases within inshore training or testing areas where more recent trend analysis were available. The nuanced picture for seagrass trends in training and testing locations was not mentioned in the 2018 Final EIS/OEIS.
- There is some evidence suggesting seagrass growth is stimulated with ocean acidification, which will help to offset the stress of increasing water temperatures (Zimmerman, 2021).

F.2.2.3.2 Coastal Wetlands

Areal coverage of coastal wetlands (mostly saltmarsh cordgrass, but also mangroves) on the U.S. Atlantic and Gulf of America coasts have decreased dramatically during the 20th century, with additional losses of 0.4 and 5.2 percent on the Atlantic and Gulf coasts, respectively, from 2004 to 2009 (Dahl & Stedman, 2013). In the Gulf of America, the primary causes for the decline were erosion and/or inundation. Based on satellite imagery from 2011 and 2016 for the continental United States, Homer et al. (2020) estimated a continued decline of wetlands in most coastal draining watersheds adjoining the Study Area. Boat wakes in sheltered inshore waters can also erode shorelines and fringing wetlands that would otherwise be relatively stable (Fonseca & Malhotra, 2012; Parnell et al., 2007).

F.2.2.3.2.1 Saltmarsh Cordgrass

The following information was updated from the 2018 Final EIS/OEIS:

- The most common plant species of salt and brackish marshes in the Study Area is known as smooth or salt marsh cordgrass (*Sporobolus alterniflorus)* (Peterson et al., 2014). The species scientific name was *Spartina alterniflora* in the 2018 Final EIS/OEIS.

F.2.2.3.2.2 Mangroves

The following information was updated from the 2018 Final EIS/OEIS:

- Mangroves occur along the shores of Florida, Louisiana, Texas, and Puerto Rico in the Study Area (Bunting et al., 2018). Mangroves are now documented to occur in more states than was reported in the 2018 Final EIS/OEIS.
- The area of mangroves in the Study Area is included in the estimate reported for coastal emergent wetlands.

F.3 INVERTEBRATES

The purpose of this section is to provide basic ecological background information that is not present in the main document of the Supplemental EIS/OEIS. With exception to the following topics the remainder of the necessary information can be found in the 2018 Final EIS/OEIS (Section 3.4.2.1, General Background):

- Updates to the numbers and population statuses of invertebrate species in the Study Area have been accessed using the most recent published literature. This information more accurately characterizes the affected environment.

- Literature exploration and verification of recent published articles to determine the soft-bottom habitats that dominate the Study Area seafloor and the depth distribution, size range, and density of benthic invertebrates offshore. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the diminished impact of physical disturbances on the most resilient habitats and deepest regions of the Study Area.
- Literature exploration and verification of recently published articles to assess the distribution of shallow-water coral reefs and shallow-water invertebrate beds. Up-to-date mapping of seafloor resources is needed for the most accurate estimates of impact footprint as well as effective mitigation measures that minimize the impact footprint on sensitive habitats.
- Literature exploration and verification of daily vertical migrations of many pelagic invertebrates and the distribution of aerial insects in the Study Area. This information is directly used in the analysis to address impacts to surface waters that occur mostly during the day.
- Literature exploration and verification of recent published articles to determine the potential effects from the numerous threat sources described in the 2018 Final EIS/OEIS. This information provided vital context for the analysis of cumulative impacts.
- Literature exploration and verification of recent published articles to assess the status of the previously discussed threats as well as emerging threats. This information provides vital context for analysis of cumulative impacts.

The following topics on Endangered Species Act (ESA)-listed invertebrate species were updated from the 2018 Final EIS/OEIS (Section 3.4.2.2):

- Proposed listing and reclassification of ESA-listed marine invertebrate species and designation of critical habitats.
- Population statuses and distribution of ESA-listed and ESA-proposed invertebrate species and current threats based on latest 5-year review by the National Marine Fisheries Service (NMFS). This information provides vital information for the intersection of stressors and affected environments and vital context for cumulative impacts analysis.

The following topics on specific invertebrate taxa were updated from the 2018 Final EIS (Section 3.4.2.3):

- Typical percent coverage of living shallow- and deep-water hard coral species on live hard bottoms. The information provides important qualifiers for the estimated footprint of physical disturbance on the habitat for these species.

F.3.1 General Background

Invertebrates, which are animals without backbones, are the most abundant life form on Earth, with marine invertebrates representing a large, diverse group with 246,352 species accepted worldwide to date (World Register of Marine Species Editorial Board, 2024) and many more that are likely unidentified (Mora et al., 2011). The results of a research effort to estimate the number of marine invertebrate species in various areas identified over 3,000 species in the Northeast U.S. Continental Shelf Large Marine Ecosystem and over 10,000 species in the Gulf of America (Fautin et al., 2010). Of the known species, a large portion are lacking the data necessary to estimate their population statuses (Collier et al., 2016).

Aerial invertebrates (i.e., flying insects) may also occur along the Study Area coastline at low altitudes (e.g., butterflies) as well as high over the ocean during wind-assisted migrations. However, relatively few flying insect species occur over large expanses of open water (see Section F.3.1.2, Movement and Behavior, for supporting details).

F.3.1.1 Habitat Use

F.3.1.1.1 Bottom Habitats

As a general rule, benthic invertebrate size and biomass decreases exponentially with increasing depth in the ocean; with greater declines for larger species (Rex et al., 2006). Benthic macroinvertebrates dominate over bacterial biomass in depths of 0 to 4,000 m (continental shelf to bathyal zone), and bacterial biomass dominates the abyssal zone (2018 Final EIS/OEIS's Figure 3.0-2, Three-Dimensional Representation of the Intertidal Zone, Continental Margin, Abyssal Zone, and Water Column Zones). The only areas of the bathyal and abyssal zone known to be densely populated by macroinvertebrates are around hydrothermal vents and cold seeps.

Soft bottom constitutes one of the largest habitat types on earth, covering roughly 80 percent of Earth's seafloor (Byers & Grabowski, 2013) and 84 percent in the mapped portion of the Study Area (Table 3.3-2, Shipwrecks and Designated Artificial Reefs in Training and Testing Locations of the Study Area). The invertebrate species present depend on the sediment grain size and associated water conditions (e.g., salinity, depth, dissolved oxygen, flow/turbulence). Long-lived suspension feeders (e.g., filter-feeding bivalves crustaceans, soft corals) commonly occur in higher-energy/sandy sediment and deposit feeders (e.g., snail, worms, sea cucumbers) commonly occur in lower-energy/muddy sediment. Based on the predictive relationships developed in Rex et al. (2006), the biomass of benthic macroinvertebrates at 200 to 4,000 m depths is approximately 3.84 to 0.07 tons (7,680 and 150 pounds [lb.], respectively) per square mile. At depths of less than 200 m on the U.S. Northeast Continental Shelf, the average biomass of benthic macroinvertebrates ranged from 127 to 267 tons per square mile (mi^2) (Theroux & Wigley, 1998). Whereas soft bottom habitats are relatively unstructured, there are features present in the form of depressions, ripples, tubes, and burrows that take time to recover after physical disturbance (van Denderen et al., 2015). Such features also recover more quickly than layered structures forming on hard substrate (e.g., oysters). There are also small patches of soft bottom that receive a net benefit from proximity to hard/intermediate bottom for various reasons (Byers & Grabowski, 2013). The distribution of soft and intermediate bottom in the Study Area is depicted in Section 3.3 (Habitats) Figure 3.3-1 to Figure 3.3-10.

Other, less common, benthic habitats in the Study Area include submerged aquatic vegetation (e.g., kelp forests, seaweed beds, seagrass beds, coastal wetlands), shallow-water coral reefs, and various types of live-hard bottom (e.g., seaweed beds, worm reefs, shallow-water invertebrate beds, deep-water invertebrate beds). The distribution of sessile invertebrates associated with live-hard bottoms (e.g., sponges, anemones, hard corals, barnacles, oysters, mussels) is approximated by the location of artificial, hard, and (to a lesser extent) intermediate substrate depicted in Section 3.3 (Habitats) Figure 3.3-1 to Figure 3.3-10. The bottom types associated with live-hard bottoms cover 16 percent of substrate types in the mapped portion of the Study Area (Table 3.3-1 of Section 3.3, Habitats).

Shallow-Water Coral Reefs

The hard consolidated structures characteristic of shallow-water coral reefs are created by symbiotic algae that are generally limited to shallow depths (less than 99 ft. [30 m] in the tropics), high salinities, and

annual-minimum temperatures greater than 18 degrees Celsius (˚C) (Kleypas et al., 1999). However, the depth limit referenced in Kleypas et al. (1999) was based on what could be mapped from the air; there are also shallow-water coral reef forms (i.e., low relief plates) with symbiotic Coralline algae that grow down to 495 ft. (150 m) (Rocha et al., 2018), though they have only been documented in the Study Area down to 52 and 105 m in the Flower Garden Banks/northwest Gulf of America (Clark et al., 2014) and Pulley Ridge (Reed et al., 2019). Shallow-water coral reefs in water deeper than 30 m are referred to as "mesophotic" reefs. Shallow-water coral reefs are not expected in estuarine/inshore waters of the Study Area due to unsuitable salinities and/or temperatures. Shallow-water coral reefs are also not expected on artificial structures overlapping the high-salinity zone of Port Canaveral because this area is substantially north of the known shallow water coral reefs. Shallow coral reefs only overlap the AFTT training and testing ranges of Key West (e.g., Pulley Ridge, Florida Reef Tract) and the South Florida Ocean Measurement Facility, respectively. The remaining coral reefs in the Study Area (e.g., Flower Garden Banks, reefs off Mexico, Bermuda, and Puerto Rico) do not overlap any named training or testing area (e.g., Key West Range Complex). The total estimated area of shallow-water coral reefs in the Study Area is 4,724 km^2 as depicted in Section 3.3 (Habitats) Figure 3.3-1 to Figure 3.3-5, although the mapping resolution and percent coverage in living hard coral colonies varies greatly between reef areas. The defining characteristic of a shallow-water coral reef is not necessarily the presence of living, reef-building corals, but rather the structural presence of coral skeletons with some amount of coverage in living coral colonies.

Shallow-Water Invertebrate Beds

Shallow-water invertebrate beds are a type of live-hard bottom that occurs on shallow, hard-bottom areas too cold for shallow-water coral reefs. These habitats provide attachment sites for benthic macroalgae, oysters, barnacles, bryozoans, limpets, sea anemones, sea fans, sponges, and tunicates, among others. Other invertebrates move about or shelter in crevices, including crustaceans (e.g., crabs, lobsters), echinoderms (e.g., brittle stars, sea cucumbers, sea urchins, sea stars), and molluscs (e.g., snails, nudibranchs, sea hares, octopus). The maximum depth of this habitat varies from region to region, depending on the maximum depth of benthic algae growth (refer to Section F.2, Vegetation, for details). Relatively shallow areas are dominated by vegetation (e.g., seaweed, seagrass) and relatively deep areas are dominated by sessile invertebrates. On the U.S. South Atlantic Continental Shelf, the coverage of sessile organisms on shallow, hard bottom present in Gray's Reef National Marine Sanctuary (20 to 30 m depth) varies according to topography, with 1 to 20 percent coverage on low-relief areas, and nearly 100 percent coverage on high-relief areas (Kendall et al., 2005). The areas of low- and high-relief hard bottom cover 25 and less than 1 percent of Gray's Reef bottom features, respectively.

F.3.1.2 Movement and Behavior

Planktonic animals commonly undergo daily migrations to surface waters at dusk and return to deeper waters at dawn (Brierley, 2014). This includes small, microscopic zooplankton and larvae, larger crustaceans (e.g., shrimp), and jellyfish. Many zooplankton, mysid shrimp and squid species that occur in the water column at night, migrate to deeper waters during the day. At any time of the day, jellyfish may occur in various portions of the water column, including near the surface. Large scale analysis using acoustic backscatter data indicates that vertical migrants leave the ocean surface at approximately 20 minutes before sunrise and return to the depths approximately 17 minutes after sunset (Bianchi & Mislan, 2016). The depth of migration varies from 200 to 650 m, depending on the depth of the oxygen-minimum layer (Bianchi et al., 2013).

Aerial insects have a predisposition to resist being carried over the sea unless they are habitual transoceanic migrants (literature review in Becciu et al., 2019). Habitual transoceanic migrants include some night-flying

moths and day-flying butterflies, among an array of insects considered mostly pests (Chapman et al., 2010; Drake & Reynolds, 2012). Other insects collected on offshore oil/gas platforms (mostly true bugs and flies) in the Gulf of America may have been attracted to the lights during storms that swept them out to sea (Keaster et al., 1996). Of particular interest in the Study Area is the monarch butterfly *Danaus plexippus* that is a candidate for proposed listing under the ESA (85 *Federal Register* 81813). In the Study Area, the eastern sub-population of monarch butterflies migrate mostly along the Gulf of America and western Atlantic coasts (Brower, 1996; Tracy et al., 2019b), with speculative, high-altitude migration across the open water from the northeastern Gulf of America to the mountains of central Mexico (Brower, 1996). However, more recent research modeling the migration routes of monarch butterflies did not include any routes over the Gulf of America or Atlantic Ocean (Tracy et al., 2019b).

F.3.1.3 Sound Sensing and Production

The background information for sound sensing and production of invertebrates in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.4.2.1.3) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

F.3.1.4 General Threats

General threats to marine invertebrates include overexploitation and destructive fishing practices, habitat degradation resulting from pollution, disease, invasive species, oil spills, global temperature increases and ocean acidification, marine debris, microplastic ingestion, and possibly human-generated noise. There are also emerging issues facing marine invertebrates causing both negative and positive effects (e.g., increasing wildfire impacts, coastal darkening, colocation of marine activities) (Herbert-Read et al., 2022). These issues produce a range of physical and chemical stressors on marine habitats that are only increasing in intensity as economies grow (Danish et al., 2019). Stressors associated with these activities are not distributed randomly across habitat types and ecosystems; most are more prevalent closer to highly developed landscapes (Halpern et al., 2015). And the threats are often correlated, to some degree (e.g., pollution and disease), which can result in either an additive or diminutive effect on the resource.

The biodiversity of marine benthic communities, including estuarine invertebrates, has experienced dramatic declines worldwide that are predicted to continue (Collier et al., 2016; Worm et al., 2006). The loss of species has consisted mostly of uncommon or specialist varieties. Though still alarming, the estimated declines in biodiversity are relatively low compared to other biological resources (Isbell et al., 2023), although the population status of most marine invertebrates is unknown (Collier et al., 2016). For marine invertebrates, the primary indirect threats (in order of significance) include human population, production and consumption, governance, trade, and technology. The primary direct threats are considered global temperature increases and ocean acidification, land and sea-use change, overexploitation, pollution, and invasive species. For estuarine invertebrates, the decline has been documented in numerous studies and primarily attributed to pollutants, eutrophication, and hypoxia (i.e., nutrient enrichment and low dissolved oxygen), physical habitat destruction, and invasive species (Collier et al., 2016).

Insect biodiversity (included aerial invertebrates) has been in a dramatic decline that could lead to 40 percent of species going extinct over the next few decades, worldwide (Sánchez-Bayo & Wyckhuys, 2019). As less common/specialist species decline, the abundance of some common/generalist species, including many pest species, has actually increased. The main drivers of decline in insect species (in order of importance) include habitat loss and conversion to intensive agriculture and development,

pollution (e.g., synthetic pesticides and fertilizers), biological factors (e.g., pathogens, introduced species), and global temperature increases and ocean acidification (Sánchez-Bayo & Wyckhuys, 2019).

F.3.1.4.1 Development and Human Activities

The following information was updated from the 2018 Final EIS/OEIS:

The development of offshore-renewable resources (e.g., wind turbines) may only impact marine invertebrates to the extent hard substrate is increased. However, the effects of offshore-renewable energy infrastructure on benthic habitats includes some significant unknowns, such as the hydrodynamic changes that could alter primary production (e.g., algae growth) and allow the range expansion of non-native/invasive species (Dannheim et al., 2019).

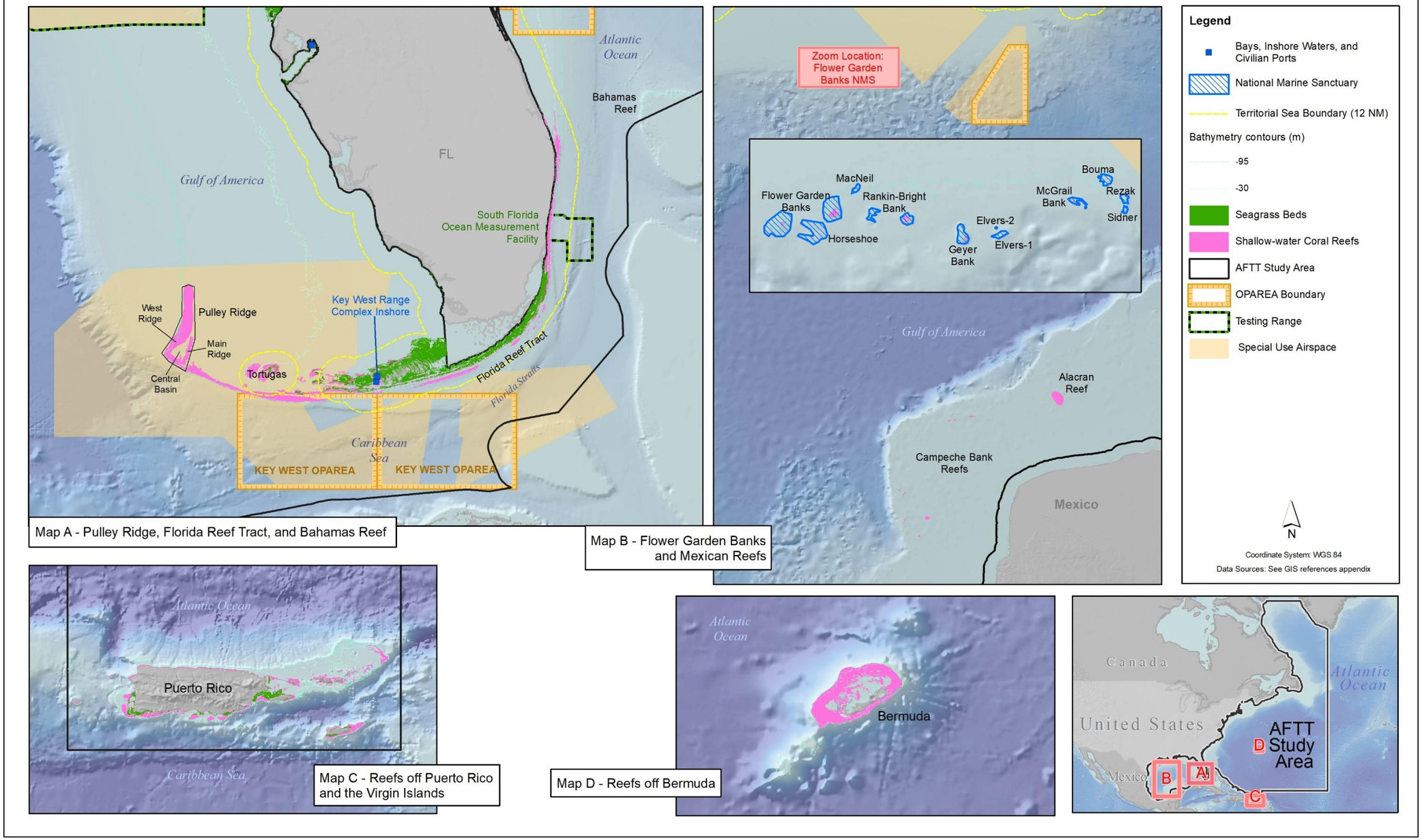
F.3.1.4.2 Other Threats

Other significant threats to marine invertebrates include diseases, invasive species, and oil spills. The review of literature in Ward and Lafferty (2004) documented an increase in marine diseases affecting corals, crustaceans, and echinoderms despite a continuing lack of baseline data for most invertebrate species. Collier et al. (2016) listed invasive species among the key agents of biodiversity decline in aquatic ecosystems, including invertebrates in the marine environment. Geburzi and McCarthy (2018) highlighted trends among successful invasive invertebrate species, from methods of transport (e.g., shipping and ballast water discharge) to ecological flexibility (e.g., attachment to artificial substrate). Oil spills continue to be a stressor on marine ecosystems despite a transition to more renewable resources (Adzigbli & Yuewen, 2018). Some microbes consume small quantities of oil from naturally occurring seeps, but large quantities released in spills would not be able to be consumed. The effects of excess oil include the destruction of food webs and toxicity (both acute and chronic) that vary by species and life stage, as evidenced by the monitoring conducted after the Deepwater Horizon oil spill (Buskey et al., 2016). However, oil spills were not listed among the key agents of biodiversity decline in aquatic ecosystems in Collier et al. (2016), though they are associated with development and human activities that are key agents.

F.3.2 Endangered Species Act-Listed Species

There are eight species of invertebrates listed as threatened or endangered under the ESA and known to be present in the Study Area. Seven listed coral species are discussed in Section F.3.2.1 (Elkhorn Coral [*Acropora palmata*]) through Section F.3.2.7 (Rough Cactus Coral [*Mycetophyllia ferox*]). The one non-coral species (queen conch [*Aliger gigas*]) is also ESA threatened and discussed in Section F.3.2.8.

The following subsections reference Figure F.3-1 in describing the habitat of ESA-listed invertebrate species. The only shallow-water coral reef areas fully outside of both the Florida Keys National Marine Sanctuary and the 12-NM boundary from shore are Pulley Ridge and the shelf break connection to the Florida Reef Tract (Figure F.3-1). There have been no ESA-listed coral species observed in these areas to date despite multiple surveys (Halley et al., 2005; National Marine Fisheries Service, 2022j; Reed et al., 2019). There are some mesophotic reef sites along the Florida Reef Tract (at approximately 30 to 116 m depths) that have been surveyed recently (Reed et al., 2021), though there were no ESA-listed coral species observed in survey locations intersecting the Key West or Gulf Range Complexes (National Marine Fisheries Service, 2022j).



1 **Figure F.3-1: Shallow-Water Habitats for ESA-Listed Coral Species and Queen Conch in the Study Area**

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F.3.2.1 Elkhorn Coral (*Acropora palmata*)

F.3.2.1.1 Status and Management

Elkhorn coral is listed as a threatened species under the ESA, and critical habitat has been designated. The critical habitat designation identifies the physical or biological features essential to the species' conservation as, "substrate of suitable quality and availability to support larval settlement and recruitment by sexual reproduction, and reattachment and recruitment of asexual fragments," (74 *Federal Register* 72210). For purposes of this definition, "substrate of suitable quality and availability," means natural consolidated hard substrate or dead coral skeleton that is free from fleshy or turf macroalgae cover and sediment cover (Endangered and Threatened Species; Critical Habitat for Threatened Elkhorn and Staghorn Corals, 73 *Federal Register* 72210, November 26, 2008). This definition applies to depths from mean low water to 30 m. No other essential features were sufficiently definable. The critical habitat designation for elkhorn coral applies to staghorn coral as well (see Section F.3.2.2, Staghorn Coral (*Acropora cervicornis*)). While most shallow-water coral habitat in the Study Area falls within the definition of critical habitat for elkhorn and staghorn coral, the United States contains only about 10 percent of all potential critical habitat in the Caribbean (Bryant et al., 1998). Exemptions from critical habitat designations include a small zone around Naval Air Station Key West and a small area within the South Florida Ocean Measurement Facility Testing Range. The exemption for Naval Air Station Key West was granted in accordance with a provision of the National Defense Authorization Act that allows such exemptions for installations with approved Integrated Natural Resources Management Plans. The exemption for the South Florida Ocean Measurement Facility was granted for national security reasons (73 *Federal Register* 72210). However, ESA protection is not limited to critical habitat designations; the species and where it might occur are also protected via regulatory consultation requirements.

Critical habitat for the species is designated in multiple areas near Florida (1,329 mi^2), Puerto Rico (1,383 mi^2), St. John and St. Thomas (121 mi^2), and St. Croix (126 mi^2) (see Figure 3.5-1, Critical Habitat for Elkhorn and Staghorn Coral and Five ESA-Listed Coral Species in the Study Area). The Florida areas contain the only critical habitats that intersect a range complex or testing range in the Study Area. Areas adjacent to the Naval Air Station Key West and areas within the boundaries of the South Florida Ocean Measurement Facility Testing Range meet the definition of elkhorn critical habitat. However, areas within 50 yards of the shore of Naval Air Station Key West and a small portion of the nearshore footprint of the South Florida Ocean Measurement Facility Testing Range (combined total of 5.5 mi^2) have been exempted from the critical habitat designation (73 *Federal Register* 72210).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.1.2 Habitat and Geographic Range

Elkhorn coral is typically found on outer reef crests and slopes with exposure to wave action at depths of 1 to 20 m (3 to 66 ft.), although it has been reported as deep as 30 m (98 ft.) (Aronson et al., 2008b; Boulon et al., 2005). The optimal water temperature range for elkhorn coral is 77 to 84 degrees Fahrenheit (°F), and it requires a salinity range of 34 to 37 parts per thousand (Aronson et al., 2008b; Boulon et al., 2005; Goreau & Wells, 1967). Elkhorn coral inhabits shallow waters with high oxygen content and low nutrient levels (Spalding et al., 2001). Clear, shallow water allows the coral sufficient sunlight exposure to support zooxanthellae (symbiotic photosynthetic organisms; analogous to plants living inside the animals). Elkhorn coral primarily inhabit the seaward margins of reefs where appropriate conditions are more likely to occur (Ginsburg & Shinn, 1964).

Elkhorn corals are typically found in the southeastern part of the Gulf of Mexico Large Marine Ecosystem, the northern part of the Caribbean Sea Large Marine Ecosystem, and the southern part of the Southeast U.S. Continental Shelf Large Marine Ecosystem. Elkhorn coral distribution in the Study Area extends from southeastern Florida through the Florida Keys and surrounds Puerto Rico and the U.S. Virgin Islands (Aronson et al., 2008b). Elkhorn coral is known to occur in portions of the South Florida Ocean Measurement Facility Testing Range (Gilliam & Walker, 2011) and the Key West Range Complex. Two colonies of elkhorn coral occur in the Flower Garden Banks National Marine Sanctuary in the Gulf of America, but this area is not included in designated elkhorn critical habitat (73 *Federal Register* 72210). Although the Flower Garden Banks National Marine Sanctuary is located in the Gulf of America, it does not intersect a training or testing range. Potential habitat for the species is depicted in Figure F.3-1.

F.3.2.1.3 Population Trends

Elkhorn coral was once a dominant coral on Caribbean reefs and was so abundant that an entire reef zone is named for it. A review of quantitative data of Acroporidae in the wider Caribbean area, including the Florida Keys and Dry Tortugas, indicates a greater than 97 percent reduction of Acroporidae coverage since the 1970s with peak declines in the 1980s (Boulon et al., 2005; National Marine Fisheries Service, 2015b). Multiple stressors, including disease, increased water temperature, decreased breeding population, loss of recruitment habitat, and sedimentation, may be affecting the recovery of this species. The current range of Acroporidae is considered to be the same as the historical range, despite the substantial decline in abundance (Bruckner, 2003; Rothenberger et al., 2008).

Research on the population status of elkhorn coral, in particular, indicates a drastic decline. Surveys of Carysfort Reef (1974 to 1982) and Molasses Reef (1981 and 1986) revealed slight declines or stable colonies (Jaap et al., 1988). It was not until the observation of a 93 percent decrease of coral in Looe Key (1983 to 2000) that the elkhorn coral populations mirrored the substantial decline of other coral species such as staghorn coral (Miller et al., 2002). Continued long-term monitoring in the Florida Keys and the U.S. Virgin Islands has found that elkhorn coral remains at less than 1 percent of all corals on reefs (Rothenberger et al., 2008), and the species' continued decline since 2004 is attributed principally to fragmentation, disease, and predation (Williams & Miller, 2011). Notwithstanding, the additional focus provided by the 2006 decision to list elkhorn coral as threatened, the population has continued to decline by 50 percent or more, recruitment failure has been observed, and genetic studies have shown that approximately half of all colonies are clones, which reduces the number of genetically distinguishable individuals. The latest 5-year review reported further declines in the Florida Keys population based on survey results from 2014 and 2015 (National Marine Fisheries Service, 2022j).

Elkhorn coral can reproduce sexually by spawning (once each year in August or September) (Boulon et al., 2005), or asexually by fragmentation (National Marine Fisheries Service, 2023b). Although fragmentation of adult colonies helps maintain high growth rates (from 4 to 11 centimeters [cm] [approximately 2 to 4 inches (in.)] per year), fragmentation reduces the reproductive potential of elkhorn coral by delaying the production of eggs and sperm for 4 years after the damage occurs (Lirman, 2000). Furthermore, large intact colonies produce proportionally more gametes than small colonies (such as new colonies started from fragmentation) because tissue at growing portions of the base and branch tips is not fertile (National Marine Fisheries Service, 2015b). During sexual reproduction, eggs and sperm immediately float to the sea surface where multiple embryos can develop from the fragmentation of a single embryo. Developing larvae travel at or near the sea surface for up to several weeks (Boulon et al., 2005) before actively seeking specific micro-habitats suitable for growth. Maturity is reached between 3 and 8 years, the average generation time is 10 years, and longevity is likely longer

than 10 years based on average growth rates and size (Wallace, 1999). Combined with a severely reduced population, these factors restrict the species' capacity for recovery.

F.3.2.1.4 Predator and Prey Interactions

Predators of corals include sea stars, snails, and fishes (e.g., parrotfish and damselfish) (Boulon et al., 2005; Roff et al., 2011). The marine snail, *Coralliophila abbreviata*, and the bearded fireworm (*Hermodice carunculata*), are the primary predators on elkhorn coral (Boulon et al., 2005).

Corals feed on zooplankton, which are small organisms that inhabit the ocean water column. Corals capture prey with tentacles armed with stinging cells that surround the mouth or by employing a mucus-net to catch suspended prey. In addition to capturing prey, these corals also acquire nutrients through their symbiotic relationship with zooxanthellae. The coral host provides nitrogen in the form of waste to the zooxanthellae, and the zooxanthellae provide organic compounds produced by photosynthesis (the process by which sunlight is used to produce food) to the host (Brusca & Brusca, 2003; Schuhmacher & Zibrowius, 1985). Zooxanthellae also provide corals with their characteristic color.

F.3.2.1.5 Species-Specific Threats

The greatest threat to elkhorn coral is ocean warming. Non-ideal conditions (like increased water temperature) will cause stress to corals, resulting in the release the zooxanthellae (symbiotic algae) that live in their tissue (i.e., and provide them food), usually causing death (National Marine Fisheries Service, 2023b). Other threats to elkhorn coral are ocean acidification (decrease in water pH caused by increased carbon dioxide in the atmosphere) that makes it harder for them to build their skeleton, unsustainable fishing practices that deplete the herbivores (animals that feed on plants) that keep the reef clean, and land-based sources of pollution that impacts the clear, low nutrient waters in which they thrive. Elkhorn coral is also more susceptible to disease than many other Caribbean corals (Aronson & Precht, 2001; Pandolfi et al., 2003; Patterson et al., 2002; Porter et al., 2001). In particular, elkhorn coral is susceptible to "white pox" and "white band" disease. A human fecal bacterium found in several other coral species is known to cause white pox disease in only elkhorn coral (Sutherland et al., 2011). Discharge of sewage from all oceangoing vessels therefore has the potential to expose elkhorn coral to this bacterium. Whiteband disease is associated with naturally occurring microbes that infects elkhorn coral stressed by human activity (Lesser et al., 2007; Muller & van Woesik, 2012) and global temperature increases and ocean acidification (Randall & van Woesik, 2015).

NMFS evaluated the population's demographic, spatial structure, and vulnerability factors and determined that the species was likely to have an, "…extremely high risk of extinction with little chance for recovery…," by 2100 (Brainard et al., 2011). The following elements contributed to elkhorn coral's threatened listing: (1) high vulnerability to ocean warming, ocean acidification and disease; (2) high vulnerability to sedimentation and elevated nutrient levels; (3) uncommon abundance; (4) decreasing trend in abundance; (5) low relative recruitment rate; (6) restricted geographic range; (7) concentrated in the Caribbean; and (8) inadequacy of regulatory mechanisms. The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.2 Staghorn Coral (*Acropora cervicornis*)

F.3.2.2.1 Status and Management

Staghorn coral is designated as a threatened species under the ESA. Staghorn coral shares the four areas of designated critical habitat with elkhorn coral, as well as the two exemptions at Navy facilities (refer to Section F.3.2.1.1, Status and Management, for information on critical habitat for these two species). Exemptions from critical habitat designations include a small zone around Naval Air Station Key West

and a small area within the South Florida Ocean Measurement Facility Testing Range. The exemption for Naval Air Station Key West was granted in accordance with a provision of the National Defense Authorization Act that allows such exemptions for installations with approved Integrated Natural Resources Management Plans. The exemption for the South Florida Ocean Measurement Facility was granted for national security reasons (73 *Federal Register* 72210).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.2.2 Habitat and Geographic Range

Staghorn coral is commonly found in lagoons and the upper to mid-reef slopes, at depths of 1 to 20 m, and requires a salinity range of 34 to 37 parts per thousand (ppt) (Aronson et al., 2008a; Boulon et al., 2005) (refer to Section F.3.2.1.2, Habitat and Geographic Range, as habitat information provided for elkhorn coral applies to staghorn coral as well).

In the Study Area, staghorn distribution extends south from Palm Beach, Florida and along the east coast to the Florida Keys and Dry Tortugas (Jaap, 1984), in the southern part of the Gulf of Mexico Large Marine Ecosystem, the northern part of the Caribbean Sea Large Marine Ecosystem, and the southern part of the Southeast U.S. Continental Shelf Large Marine Ecosystem. Staghorn coral is known to occur in portions of the Key West Range Complex (77 *Federal Register* 73219). Potential habitat for the species is depicted in Figure F.3-1.

F.3.2.2.3 Population Trends

Most population monitoring of shallow-water corals is focused on the Florida Keys, which straddle three large marine ecosystems: Southeast U.S. Continental Shelf, Caribbean Sea, and Gulf of Mexico. Because the Florida Keys comprise their own ecological subregion, most reports categorize coral data as Floridian versus Caribbean rather than distinguishing populations on one side of these artificial boundaries. Research on the population status of staghorn coral indicates a drastic decline throughout the Caribbean that peaked in the 1980s. At four monitored reefs in the Florida Keys, staghorn coral cover decreased as follows:

- 18 percent on Carysfort Reef (1974 to 1982) (Dustan & Halas, 1987)
- 96 percent on Molasses Reef (1981 to 1986) (Jaap et al., 1988)
- 80 to 98 percent in the Dry Tortugas (Davis, 1982)
- 98 percent on Looe Key (1983 to 2000) (Causey et al., 2002)

Continued long-term monitoring in the Florida Keys and the U.S. Virgin Islands has found that staghorn coral remains at 2 percent or less of all corals on reefs, a fraction of its former abundance (Boulon et al., 2005; Rothenberger et al., 2008). Staghorn coral grown in “nurseries” to assist recovery programs had substantially higher survival rates after a catastrophic cold-water bleaching event in 2010, suggesting that restoration projects have potential for success (Schopmeyer et al., 2011). This same 2010 cold-water event killed an average of 15 percent of staghorn colonies at monitored reefs in the Florida Keys, a substantial decline in this remnant population (Lirman et al., 2011; National Marine Fisheries Service, 2012). Since the 2006 decision to list staghorn coral as threatened, some populations have continued to decline by 50 percent or more, and reliance on asexual fragmentation as a source of new colonies is not considered sufficient to prevent extinction (77 *Federal Register* 73219). The latest 5-year review reported further declines in the Florida Keys population based on survey results from 2014 to 2020 (National Marine Fisheries Service, 2022j).

Growth rates for this species range from approximately 1 to 5 in. per year (Boulon et al., 2005). Reproductive strategies and characteristics are not materially different from elkhorn coral (Section F.3.2.1.3, Population Trends).

F.3.2.2.4 Predator and Prey Interactions

Predators of corals include sea stars, snails, and fishes (e.g., parrotfish and damselfish) (Boulon et al., 2005; Roff et al., 2011). The marine snail, *Coralliophila abbreviata* (Grober-Dunsmore et al., 2006), and the bearded fireworm, are the primary predators on staghorn coral. Staghorn coral feeding strategies and symbioses are not materially different than those described for elkhorn coral (Section F.3.2.1.4, Predator and Prey Interactions).

F.3.2.2.5 Species-Specific Threats

Staghorn coral has no species-specific threats. It is susceptible to the same suite of stressors that generally threaten corals (Section F.3.2.1.5, Species-Specific Threats). However, it is more susceptible to disease such as white band disease (Patterson et al., 2002; Porter et al., 2001), even though other diseases can also impact staghorn coral survival (National Marine Fisheries Service, 2015b). A white band type II disease that is linked with the bacterial infection, *Vibrio carchariae*, also referred to as *V. charchariae* or *V. harveyi* (Gil-Agudelo et al., 2006), has also been described. A transmissible disease that caused rapid tissue loss in staghorn corals in the Florida Keys was described in 2003 (Williams & Miller, 2005). Similar to white pox in *A. palmata*, the disease manifested with irregular multifocal tissue lesions with apparently healthy tissue remaining in between. Ciliate infections have also been documented at several locations in the Caribbean (Croquer et al., 2006).

NMFS evaluated the population's demographic, spatial structure, and vulnerability factors to determine whether the species was likely to have an "…extremely high risk of extinction with little chance for recovery…" by 2100 (Brainard et al., 2011). Elements that contribute to staghorn coral's threatened status include high vulnerability to ocean warming, ocean acidification and disease, sedimentation and elevated nutrient levels, low abundance, decreasing trend in abundance, low relative recruitment rate, restricted geographic range, and inadequacy of regulatory mechanisms. The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.3 Lobed Star Coral (*Orbicella annularis*)

F.3.2.3.1 Status and Management

Lobed star coral (*Orbicella* [formerly *Montastraea*] *annularis*) is listed as threatened under the ESA. *Orbicella annularis*, boulder star coral (*Orbicella franksi*) and mountainous star coral (*Orbicella faveolata*) have partially overlapping morphological characteristics, particularly in northern sections of their range, making identification less certain than for most other Caribbean corals. While there now is reasonable acceptance that these are three separate and valid species, decades of taxonomic uncertainty and difficult field identification have led many to consider these a single species complex. Consequently, many long-term monitoring data sets and previous ecological studies did not distinguish among the three species, instead pooling them together as "*M. annularis* complex" or "*M. annularis* sensu lato" (Brainard et al., 2011; Jaap et al., 2002; National Marine Fisheries Service, 2012; Somerfield et al., 2008).

There is now critical habitat designated for this species (88 *Federal Register* 54026, August 9, 2023) that expands on the critical habitat depicted for elkhorn coral as shown in Figure 3.5-1 (Critical Habitat for Elkhorn and Staghorn Coral and Five ESA-Listed Coral Species in the Study Area).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.3.2 Habitat and Geographic Range

Lobed star coral has been reported from depths of 0.5 to 20 m (2 to 66 ft.) (Brainard et al., 2011; National Marine Fisheries Service, 2012). *Orbicella* species, including lobed star coral, occur in most reef habitat types, although less commonly on the reef flat and in the shallow zones formerly dominated by elkhorn coral (Brainard et al., 2011; Goreau, 1959; National Marine Fisheries Service, 2012). *Orbicella* species are key reef-builders. They are known throughout the Caribbean, Bahamas, and the Flower Garden Banks, but are uncommon or possibly absent from Bermuda.

In the Study Area, lobed star coral is typically found in the southern and southeastern parts of the Gulf of Mexico Large Marine Ecosystem, the northern part of the Caribbean Sea Large Marine Ecosystem, and the southern part of the Southeast U.S. Continental Shelf Large Marine Ecosystem. Lobed star coral range includes most portions of the Study Area where shallow-water coral reefs occur. The principal areas of coincidence between lobed star coral habitat and the Study Area are near Puerto Rico and south Florida. Lobed star coral is known to occur in the South Florida Ocean Measurement Facility Testing Range, adjacent to the Naval Air Station Key West, and the Key West Range Complex. However, some of this geographic range information is based on ecological studies that identified the *O. annularis* complex rather than specifying *O. annularis* in particular. Potential habitat for the species is depicted in Figure F.3-1.

F.3.2.3.3 Population Trends

Lobed star coral in the U.S. Virgin Islands declined 72 percent during the years from 1988 to 1999 (Edmunds & Elahi, 2007). Declines between 40 and 60 percent were recorded in Puerto Rico, and 80 to 95 percent declines were observed in Florida between the late 1970s and 2003 (Aronson et al., 2008c; Brainard et al., 2011). However, because many studies in Puerto Rico and Florida did not reliably distinguish between the three species, these changes in abundance should be assumed to apply generally to the *O. annularis* species complex (Brainard et al., 2011). In addition to these declines, the remnant population of *O. annularis* in the Florida Keys was decimated by the 2010 cold-water bleaching event that killed about 56 percent of all *O. annularis* colonies at monitored reefs (Lirman et al., 2011). The recent 5-year review (National Marine Fisheries Service, 2022j) reported on trends in *O. annularis* abundance at permanent monitoring sites in southeast Florida, the Florida Keys+, and the Dry Tortugas. The results indicated a substantial decline between 2014 and 2015 followed by a gradual decline until 2019. In terms of density in these locations, *O. annularis* decreased from approximately 0.04 colonies per square meter in 2014 to about 0.02 colonies per square meter in 2019. The mean colony size was reported as between 25 and 50 cm (10 to 20 in.).

All three of the *O. annularis* complex species are hermaphroditic, spawning over six to eight nights following the new moon in late summer (late August to early October) (Brainard et al., 2011). Buoyant gametes are fertilized at the surface. Fertilization success is low and recruitment rates are considered to be extremely low. For example, one study found only a single *O. annularis* recruit over 16 years of observation of 12 square meters of reef in Discovery Bay, Jamaica (Hughes & Tanner, 2000). Asexual reproduction by fragmentation is occasionally successful, but in general, reproduction rates of this species are extremely low (Aronson et al., 2008c; Brainard et al., 2011). Genetic studies of boulder star coral found that populations in the eastern and western Caribbean are relatively genetically distinct, suggesting that regional differences in population trends or regulations for corals may influence their populations' genetic diversity (Foster et al., 2012).

Growth rates are approximately 1 cm per year for colonies at depths of less than 12 m and growth rates decrease sharply as depth increases (Brainard et al., 2011). Slow growth coupled with low recruitment rates contribute to the three *O. annularis* complex species' vulnerability to extinction (Brainard et al., 2011).

F.3.2.3.4 Predator and Prey Interactions

Lobed star coral is much less susceptible to predation by snails than the *Acropora* species, and although preyed upon by parrotfish, the species is not targeted (Brainard et al., 2011; Roff et al., 2011). Lobed star coral, as well as other species of *Orbicella*, is susceptible to yellow band disease (Closek et al., 2014). Yellow band disease progresses slowly but can cause large die-offs over the course of several seasons. The disease is known to affect several other types of coral and is pervasive in the Caribbean (Closek et al., 2014). Lobed star coral feeding strategies and symbioses are not materially different than those described for elkhorn coral (Section F.3.2.1.4, Predator and Prey Interactions).

F.3.2.3.5 Species-Specific Threats

All three species of the *O. annularis* complex are highly susceptible to thermal bleaching, both warm and cool extremes (Brainard et al., 2011; National Marine Fisheries Service, 2012). Recently, lobed star coral and mountainous star coral (*O. faveolata*) were found to have higher susceptibility to coral bleaching than many other species (van Hooidonk et al., 2012). Among the 25 coral species assessed after a 2010 cold-water bleaching event in Florida, *O. annularis* was the most susceptible to mortality by a factor of almost two (Lirman et al., 2011). Otherwise, this coral has no species-specific threats, and is susceptible to the same suite of stressors that generally threaten corals (Section F.3.1.4, General Threats). Disease and pollution (e.g., nutrients, herbicides, and pesticides) are the most damaging of the general threats (Brainard et al., 2011; Hughes et al., 2003; Pandolfi et al., 2005).

NMFS evaluated the population's demographic, spatial structure, and vulnerability factors to determine whether the species was likely to have an, "…extremely high risk of extinction with little chance for recovery…," by 2100 (Brainard et al., 2011). Elements that contribute to lobed star coral's threatened status are: susceptibility to ocean temperature shifts, disease, sedimentation, elevated nutrient levels, and ocean acidification; susceptibility to trophic effects of fishing; inadequate existing regulatory mechanisms to address global threats; threats by human impacts; decreasing trend in abundance; low relative recruitment rate; narrow overall distribution (based on narrow geographic distribution and moderate depth distribution); the concentration of the species in the Caribbean; and shifts to small size classes via fission and partial mortality of older, larger colonies (79 *Federal Register* 53852). The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.4 Boulder Star Coral (*Orbicella franksi*)

F.3.2.4.1 Status and Management

Boulder star coral is designated as a threatened species under the ESA. This species, previously identified as *Montastraea franksi*, is part of the *O. annularis* complex, which also includes lobed star coral and mountainous star coral.

There is now critical habitat designated for this species (88 *Federal Register* 54026) that expands on the critical habitat depicted for elkhorn coral as shown in Figure 3.5-1 (Critical Habitat for Elkhorn and Staghorn Coral and Five ESA-Listed Coral Species in the Study Area).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.4.2 Habitat and Geographic Range

Boulder star coral is found at least as deep as 50 m (164 ft.) (Brainard et al., 2011), and is found in most reef environments. The *O. annularis* complex has been reported to at least 70 to 90 m (230 to 295 ft.), though only *O. faveolata* and *O. franksi* are likely to occur at these depths.

Boulder star corals are typically found in the southern part of the Southeast U.S. Continental Shelf Large Marine Ecosystem (southeast Florida from Lake Worth Inlet in Palm Beach County to the Dry Tortugas; Figure F.3-1, Map A), the southeastern and northwestern regions of the Gulf of Mexico Large Marine Ecosystem (e.g., Flower Garden Banks; Figure F.3-1, Map B), and the northern part of the Caribbean Sea Large Marine Ecosystem (e.g., Puerto Rico, U.S. Virgin Islands; Figure F.3-1, Map C). Boulder star coral is known to occur in the South Florida Ocean Measurement Facility Testing Range, adjacent to Naval Air Station Key West, and the Key West and Gulf Range Complexes. The latest 5-year review reported that this species has not been observed on the Florida Reef Tract at depths greater than 40 m (National Marine Fisheries Service, 2022j). However, the species has been observed on more banks in the Flower Garden Banks National Marine Sanctuary (Figure F.3-1). The species is also found in Bermuda but otherwise its geographic range is not materially different from *O. annularis*. However, some of this geographic range information is based on ecological studies that identified the *O. annularis* complex rather than specifying *O. franksi* in particular.

F.3.2.4.3 Population Trends

This species information is assumed not to be materially different from lobed star coral; however, differences may be masked since many ecological studies collected data at the *O. annularis* complex level rather than specifying *O. franksi* in particular.

F.3.2.4.4 Predator and Prey Interactions

This species information is assumed not to be materially different from lobed star coral; however, differences may be masked since many ecological studies collected data at the *O. annularis* complex level rather than specifying *O. franksi* in particular.

F.3.2.4.5 Species-Specific Threats

Boulder star coral was less susceptible to mortality after a 2010 cold-water bleaching event in Florida than any of its congeners (different species of the same genus) by at least a factor of three (Lirman et al., 2011). Otherwise, susceptibility to threats is not assumed to be materially different from lobed star coral. However, differences may be masked because many ecological studies identified the *O. annularis* complex rather than specifying *O. franksi* in particular.

NMFS evaluated the population's demographic, spatial structure, and vulnerability factors to determine whether the species was likely to have an "…extremely high risk of extinction with little chance for recovery…" by 2100 (Brainard et al., 2011). Elements that contribute to boulder star coral's threatened status are: high susceptibility to ocean warming, disease, elevated nutrient levels, ocean acidification, and sedimentation, susceptibility to trophic effects of fishing, inadequate existing regulatory mechanisms to address global threats, decreasing trend in abundance, slow growth rate, low relative recruitment rate, moderate overall distribution (based on narrow geographic distribution and wide depth distribution), restriction to the Caribbean, and shifts to small size classes via fission and partial mortality of older, larger colonies (79 *Federal Register* 53852). The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.5 Mountainous Star Coral (*Orbicella faveolata*)

F.3.2.5.1 Status and Management

Mountainous star coral is designated as a threatened species under the ESA. The species was previously identified as *Montastraea faveolata*. Mountainous star coral is part of the *O. annularis* complex, which also includes lobed star coral and boulder star coral.

There is now critical habitat designated for this species (88 *Federal Register* 54026, August 9, 2023) that expands on the critical habitat depicted for elkhorn coral as shown in Figure 3.5-1 (Critical Habitat for Elkhorn and Staghorn Coral and Five ESA-Listed Coral Species in the Study Area).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.5.2 Habitat and Geographic Range

Mountainous star coral occurs within depths from 0.5 m (2 ft.) to at least 40 m (131 ft.) (Brainard et al., 2011), and like *O. annularis* it is more commonly found in the shallower portions of this depth range. The *O. annularis* complex has been reported to at least 70 to 90 m (230 to 295 ft.), though only *O. faveolata* and *O. franksi* are likely to occur at these depths. The latest 5-year review reported that this species has not been observed on the Florida Reef Tract on seafloor greater than 44 m deep (National Marine Fisheries Service, 2022j). However, the species has been observed on more banks in the Flower Garden Banks National Marine Sanctuary (Figure F.3-1). This species is also found in Bermuda but otherwise its geographic range is not materially different from *O. annularis*.

Mountainous star coral is known to occur in the South Florida Ocean Measurement Facility Testing Range and the Key West Range Complex (both offshore and inshore locations). Three colonies were found growing on the seawalls in Truman Harbor (HDR Environmental Operations and Construction Inc., 2013), which is an inshore location of the Key West Range Complex. However, some of this geographic range information is based on ecological studies that identified the *O. annularis* complex rather than specifying *O. faveolata* in particular. Potential habitat for the species is depicted in Figure F.3-1.

F.3.2.5.3 Population Trends

This species information is assumed not to be materially different from lobed star coral; however, differences may be masked since many ecological studies collected data at the *O. annularis* complex level rather than specifying *O. faveolata* in particular.

F.3.2.5.4 Predator and Prey Interactions

This species information is assumed not to be materially different from lobed star coral; however, differences may be masked since many ecological studies collected data at the *O. annularis* complex level rather than specifying *O. faveolata* in particular.

F.3.2.5.5 Species-Specific Threats

This species information is assumed not to be materially different from lobed star coral; however, differences may be masked since many ecological studies collected data at the *O. annularis* complex level rather than specifying *O. faveolata* in particular.

NMFS evaluated the population's demographic, spatial structure, and vulnerability factors to determine whether the species was likely to have an "…extremely high risk of extinction with little chance for recovery…" by 2100 (Brainard et al., 2011). Elements that contribute to mountainous star coral's threatened status are: high susceptibility to ocean warming, disease, sedimentation and elevated

nutrient levels, susceptibility to trophic effects of fishing, inadequate existing regulatory mechanisms to address global threats, decreasing trend in abundance, low relative recruitment rate, late reproductive maturity, moderate overall distribution with concentration in areas of high human impact, and shifts to small size classes via fission and partial mortality of older, larger colonies (79 *Federal Register* 53852). The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.6 Pillar Coral (*Dendrogyra cylindrus*)

F.3.2.6.1 Status and Management

Pillar coral is currently designated as an endangered species under the ESA (89 *Federal Register* 101993, December 17, 2024). The species was previous listed as threatened. The change was based on population declines and susceptibility to a recently emerged coral disease.

There is now critical habitat designated for this species (88 *Federal Register* 54026, August 9, 2023) that expands on the critical habitat depicted for elkhorn coral as shown in Figure 3.5-1 (Critical Habitat for Elkhorn and Staghorn Coral and Five ESA-Listed Coral Species in the Study Area).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.6.2 Habitat and Geographic Range

Pillar coral most frequently occurs at depths of 3 to 8 m (10 to 26 ft.) but has been documented at depths of 1 to 25 m (3 to 82 ft.) (Brainard et al., 2011; National Marine Fisheries Service, 2012). It is found on rocky outcrops in areas of high wave activity (Marhaver et al., 2015). It is known to occur in south Florida as far north as Broward County and from one colony in Bermuda, but is not known to occur at the Flower Garden Banks or elsewhere in the northern or western Gulf of America.

In the Study Area, pillar coral is typically found in the southern and southeastern parts of the Gulf of Mexico Large Marine Ecosystem, the northern part of the Caribbean Sea Large Marine Ecosystem, and the southern part of the Southeast U.S. Continental Shelf Large Marine Ecosystem. Pillar coral range includes most portions of the Study Area where shallow-water coral reefs occur. The principal areas of coincidence between pillar coral habitat and the Study Area are near Puerto Rico and south Florida. Pillar coral is known to occur in portions of the South Florida Ocean Measurement Facility Testing Range, adjacent to the Naval Air Station Key West, and in the Key West Range Complex. Potential habitat for the species is depicted in Figure F.3-1.

F.3.2.6.3 Population Trends

Pillar coral is both rare and conspicuous (due to its growth form). It has a limited habitat preference and colonies are often dispersed and isolated throughout the habitat range (79 *Federal Register* 53852). Because pillar coral colonies have been killed by warm- and cold-water bleaching, disease, and physical damage, it has been assumed that this rare species is in decline. In general, pillar coral is too rare for meaningful trends in abundance to be detected by typical reef-monitoring programs (Brainard et al., 2011). However, recent studies on reproductive strategies and life history have shown low sexual recruitment rates and slow growth, adding further population and genetic diversity concerns for the species (Marhaver et al., 2015).

Growth rates for this species are typically 8 millimeters (mm) (0.3 in.) per year, though rates up to 20 mm (0.8 in.) per year have been reported (Brainard et al., 2011). Piller coral were first recorded spawning in August 2012, they are known to spawn 3 to 4 days after a full moon. The rate of sexual

reproduction is likely to be low because the species is so rare and colonies are gonochoric (i.e., a colony is either male or female); male and female colonies are unlikely to be in close enough proximity for reliable fertilization. For this reason, no juveniles of pillar coral have been observed in the past several decades, and fragmentation seems to be the only successful mode of reproduction for this species (National Marine Fisheries Service, 2012). The latest 5-year review reported further declines in the Florida Keys population based on recent survey results (National Marine Fisheries Service, 2022j).

F.3.2.6.4 Predator and Prey Interactions

Predators of this species seem to be few, and though the corallivorous fireworm (*Hermodice carunculata*) feeds on diseased pillar coral, it does not seem to be a major predator (Brainard et al., 2011). A species of sea urchin (*Diadema antillarum*) has been known to cause partial mortality at the base of pillar coral colonies (79 *Federal Register* 53852). Pillar coral is distinctive among Caribbean corals because its tentacles are extended for feeding on zooplankton during the day, while most other corals' tentacles are retracted during the day (Boulon et al., 2005; Brainard et al., 2011). Pillar coral feeding strategies and symbioses are not materially different than those described for elkhorn coral (Section F.3.2.1.4, Predator and Prey Interactions).

F.3.2.6.5 Species-Specific Threats

Pillar coral has no species-specific threats. It is susceptible to the same suite of stressors that generally threaten corals (Section F.3.1.4, General Threats); however, it was historically more susceptible to exploitation by the curio trade (Brainard et al., 2011). Low population density and separation of male and female colonies are the principal threats to the species (Brainard et al., 2011; National Marine Fisheries Service, 2012).

NMFS evaluated the population's demographic, spatial structure, and vulnerability factors to determine whether the species was likely to have an "…extremely high risk of extinction with little chance for recovery…" by 2100 (Brainard et al., 2011). Elements that contribute to pillar coral's threatened status are susceptibility to ocean warming, disease, acidification, elevated nutrient levels, sedimentation, trophic effects of fishing, inadequate existing regulatory mechanisms to address global threats, rare general range-wide abundance, low relative recruitment rate, narrow overall distribution (based on narrow geographic distribution and moderate depth distribution), and restriction to the Caribbean (79 *Federal Register* 53852). The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.7 Rough Cactus Coral (*Mycetophyllia ferox*)

F.3.2.7.1 Status and Management

Rough cactus coral is designated as a threatened species under the ESA.

There is now critical habitat designated for this species (88 Federal Register 54026, August 9, 2023) that expands on the critical habitat depicted for elkhorn coral as shown in Figure 3.5-1 (Critical Habitat for Elkhorn and Staghorn Coral and Five ESA-Listed Coral Species in the Study Area).

A 5-year review was completed by NMFS for this species in January 2022 (National Marine Fisheries Service, 2022j).

F.3.2.7.2 Habitat and Geographic Range

Rough cactus coral is known to occur as deep as 80 to 90 m (Brainard et al., 2011; National Marine Fisheries Service, 2012). Though reported to commonly occur at depths of 5 to 30 m (Aronson et al., 2008d), this could be an artifact of scuba diver-based survey intensity, which decreases dramatically

below 30 m. Rough cactus coral occurs in patch and fore reef (the part of the reef exposed to the open ocean) habitat types, generally in lower energy parts of the reef (Brainard et al., 2011; National Marine Fisheries Service, 2012). It is known to occur throughout the Caribbean and southern Gulf of America, but is absent from the Flower Garden Banks, Bermuda, and the southeast United States north of south Florida (79 *Federal Register* 53852).

In the Study Area, rough cactus coral is typically found in the southern and southeastern parts of the Gulf of Mexico Large Marine Ecosystem, the northern part of the Caribbean Sea Large Marine Ecosystem, and the southern part of the Southeast U.S. Continental Shelf Large Marine Ecosystem. Rough cactus coral range includes most portions of the Study Area where shallow-water coral reefs occur (e.g., Pulley Ridge). However, the available surveys on Pulley Ridge (minimum depth of 60 m) have not documented any ESA-listed coral species (Halley et al., 2005; Reed et al., 2019). The principal areas of coincidence between rough cactus coral habitat and the Study Area are near Puerto Rico and south Florida. Rough cactus coral is known to occur in the South Florida Ocean Measurement Facility Testing Range, Key West Range Complex, and adjacent to the Naval Air Station Key West. The principal areas of coincidence between rough cactus coral habitat and the Study Area are near Puerto Rico and south Florida. Rough cactus coral is known to occur in the South Florida Ocean Measurement Facility Testing Range, adjacent to the Naval Air Station Key West, and the Key West Range Complex. Potential habitat for the species is depicted in Figure F.3-1.

F.3.2.7.3 Population Trends

Though never abundant, rough cactus coral in the Florida Keys has declined by at least 80 percent since 1996 and perhaps by much more since the 1970s (Brainard et al., 2011). The abundance of rough cactus coral has been estimated to be at least hundreds of thousands of colonies in the Florida Keys and Dry Tortugas (50 *Federal Register* 53852). The latest 5-year review reported further declines in the Florida Keys population based on recent survey results (National Marine Fisheries Service, 2022j).

Rough cactus coral is a hermaphroditic brooder, releasing fully developed larvae in the late winter (February to March) (Aronson et al., 2008d). Recruitment rates are extremely low or absent, as evidenced by observation of an anchor-damaged site in the U.S. Virgin Islands over a 10-year period (Brainard et al., 2011). No colonies of rough cactus coral were observed to recruit to the site despite the presence of adults on an adjacent reef (50 *Federal Register* 53852).

F.3.2.7.4 Predator and Prey Interactions

Rough cactus coral is not known to be particularly susceptible to predators (Brainard et al., 2011), and feeding strategies and symbioses are not materially different than those described for elkhorn coral (Section F.3.2.1.4, Predator and Prey Interactions).

F.3.2.7.5 Species-Specific Threats

Though not especially susceptible to mortality from warm-water bleaching (Brainard et al., 2011; Lough & van Oppen, 2009), 15 percent of *Mycetophyllia* species were killed after a cold-water bleaching event in Florida (Lirman et al., 2011). Some coral diseases are characterized by the white-colored bands or pox they cause but are otherwise difficult to discriminate (Porter et al., 2001). While diseases such as “white plague” do not seem to be species specific (Porter et al., 2001), rough cactus coral in the Florida Keys has been particularly susceptible to this type of disease (Brainard et al., 2011).

NMFS evaluated the population’s demographic, spatial structure, and vulnerability factors to determine whether the species was likely to have an “…extremely high risk of extinction with little chance for recovery…” by 2100 (Brainard et al., 2011). Elements that contribute to rough cactus coral’s

(*Mycetophyllia ferox*) threatened status are: high susceptibility to disease; susceptibility to ocean warming, acidification, trophic effects of fishing, elevated nutrient levels, and sedimentation; inadequate existing regulatory mechanisms to address global threats; threats by human impacts; rare general range-wide abundance; decreasing trend in abundance; low relative recruitment rate; moderate overall distribution (based on narrow geographic distribution and wide depth distribution); and restriction to the Caribbean (50 *Federal Register* 53852). The latest 5-year review continued to support these conclusions (National Marine Fisheries Service, 2022j).

F.3.2.8 Queen Conch (*Aliger gigas*)

F.3.2.8.1 Status and Management

On September 7, 2022, NMFS announced a proposed rule to list the queen conch as a threatened species under the ESA throughout its range (Horn et al., 2022). The decision was made after a status review and after considering the efforts being made to protect the species. The proposal followed a lawsuit filed by WildEarth Guardians and Friends of Animals in 2016. The species was subsequently listed as threatened on March 15, 2024 (89 *Federal Register* 11208).

The queen conch may not be commercially or recreationally harvested in Florida waters per state law. In the Caribbean, NMFS and the Caribbean Fishery Management Council manage queen conch in federal waters, while the governments of Puerto Rico and the U.S. Virgin Islands manage queen conch in their territorial waters.

There is no critical habitat designated or currently proposed for this species.

F.3.2.8.2 Habitat and Geographic Range

The distribution of the queen conch in the Study Area includes South Florida, Puerto Rico, Bermuda, and the Flower Garden Banks in the Gulf of America (Theile, 2001). Within this area, the species inhabits a wide range of habitats including seagrass beds, sand flats, algal beds, and coral reef areas, from a few inches deep to approximately 30 m (Brownell & Stevely, 1981). Juveniles are associated specifically with native seagrass beds (Boman et al., 2019), and adults spawn habitually in sandy areas less than 20 m deep, with rubble or otherwise hard substrate nearby (Glazer & Kidney, 2004; Stoner & Sandt, 1992). Of particular interest in the Study Area are the relatively high densities of adult queen conch reported on mesophotic reefs (38 to 44 m in depth) around Puerto Rico (García-Sais et al., 2012); mesophotic reefs in this depth range are also found along the margins of the Florida Reef Tract that intersects the Key West Range complex (Figure F.3-1).

F.3.2.8.3 Population Trends

The majority of available density estimates from various jurisdictions suggest the queen conch population is below the minimum threshold necessary to maintain their viability as a species. Of the estimated 743 million individuals remaining throughout the species range, 95 percent reside in jurisdictions outside of the Study Area (Horn et al., 2022). The current densities and population trends for queen conch in Study Area locations are relatively low (15.07 to 17.29 adults/acre) but increasing. Unfished populations in South Florida were increasing (1990–2020), and fished populations around Puerto Rico (1985–2015) and the U.S. Virgin Islands (1975–2010) were increasing slightly. As an associated measure, the area of seagrass habitat in the Study Area has declined (or increased, depending on location) only slightly compared to other areas in the queen conch's distribution (Waycott et al., 2009).

F.3.2.8.4 Predator and Prey Interactions

The early life stages (e.g., juveniles) of queen conch are the most vulnerable to predators, including stingrays, spiny lobster, octopus, nurse sharks, hermit crabs, predaceous snails, and other predators (Horn et al., 2022). Mortality due to predation decreases as a conch grows larger and more resilient (Iversen et al., 1986). Juvenile conch bury themselves in dense aggregations that predators find difficult to dislodge. The hard shell and nocturnal activity of the adult conch reduces the risk of predation from tulip snails, apple murex, common octopus, spiny lobsters, queen triggerfish, spotted eagle rays, a variety of hermit crabs, sea turtles, and sharks (Iversen et al., 1986; Jory & Iversen, 1983; Stoner & Ray, 1993). Only the larger predators can penetrate the thick shell of an older conch. Predation is not believed to currently be a factor influencing the status of the queen conch.

The species forages primarily on seagrass detritus and red/green macroalgae on shallow-water coral reefs and other hard bottom areas (Randall, 1964; Serviere-Zaragoza et al., 2009; Stoner & Sandt, 1992; Stoner & Waite, 1991). The location of seagrass beds and shallow-water coral reefs is depicted in Figure F.3-1, and overlaps only the Key West Range Complex, among the named training and testing areas.

F.3.2.8.5 Species-Specific Threats

The most significant threat to queen conch is a combination of overuse by commercial fisheries and insufficient regulatory protections (Horn et al., 2022). Many jurisdictions have regulations that are inadequately enforced or implement regulations that use inappropriate metrics for managing the queen conch fisheries (e.g., allowing for the legal harvest of juvenile conch). The species populations continue to decline and the few jurisdictions with adequate regulations and enforcement have yet to report any substantial recovery.

Other threats include decline in native seagrass coverage, environmental contaminants, oil spills, and microplastic pollution (Horn et al., 2022). However, the best available information indicates that these factors are not threatening the species persistence. The Caribbean region is also being impacted by global temperature increases and ocean acidification, where direct and indirect effects (e.g., ocean warming/acidification on shell formation and shifting habitat locations, respectively) are only beginning to be realized.

F.3.3 Species Not Listed under the Endangered Species Act

F.3.3.1 Corals, Hydroids, Jellyfish (Phylum Cnidaria)

F.3.3.1.1 Shallow-Water Hard Corals

Researchers compiled historical and recent information on the amount of hard reef structure covered by living corals at 90 reef locations in the wider Caribbean Sea (primarily shallow reefs in water depths of 1 to 20 m) (Jackson et al., 2014). Average coral coverage on the hard reef structure is estimated to be approximately 14 to 17 percent, down from approximately 35 percent during the period of 1970 to 1983. Shallow-water coral cover on the Flower Garden Banks was reportedly much higher than any area in southern Florida. The coverage estimates for living coral on high and low-relief areas (mostly hard substrate) of the Flower Garden Banks was 54 to 59 and 19 to 32 percent, respectively (Clark et al., 2014). The coverage of live-hard corals was also lower in the upper mesophotic zone than the shallow-water zone. Shallow-water coral reefs have also been documented south of the Tortugas at 30 m to greater than 50 m depths on a feature called “Riley’s Hump” (Weaver et al., 2006). The coverage of living hard corals on Pulley Ridge features averaged 1.5 percent, but there were no ESA-listed coral species observed (Reed et al., 2019). Pulley Ridge is considered the deepest shallow-water/mesophotic coral reef in the Study Area (Reed et al., 2019). Shallow-water coral reefs may contain ESA-listed coral

species, and changes in overall coral coverage provides context for subsequent discussion of these species in Section F.3.2 (Endangered Species Act-Listed Species).

Hard, reef-forming coral species make up a small portion of the total coverage by living organisms on shallow-water coral reefs. For example, the coverage of macroalgae and sessile animals on Pulley Ridge features was 47 and 60 percent, respectively (Reed et al., 2019). Remote operated vehicle surveys of the Tortugas South Ecological Reserve in similar depths of water (Miller's Ledge) suggested a much lower coverage of biota (5 percent), and very low (0.01 percent) coverage of hard corals (Reed et al., 2017; Weaver et al., 2006). Miller's Ledge comes very close to overlapping the Key West operating area (OPAREA), although similar habitats at depth intersect the northern edge of the OPAREA. However, the shallow-water coral reef areas in the Florida Reef Tract (with the exception of Pulley Ridge) and the northwest Gulf of America is encompassed by either the Florida Keys or Flower Garden Banks National Marine Sanctuaries, respectively, where management rules prohibit impacting sensitive bottom habitats (refer to Section F.3.2, Endangered Species Act-Listed Species, for mapping).

The following information was updated from the 2018 Final EIS/OEIS:

- In 2016, a mass die-off of corals and other invertebrates (e.g., sponges, urchins, brittle stars, and clams) was documented in the Flower Garden Banks National Marine Sanctuary in the Gulf of America (National Oceanic and Atmospheric Administration, 2016a, 2016b). The die-off was most likely caused by localized hypoxia produced by unusually high freshwater discharge from the Mississippi/Atchafalaya rivers (Kealoha et al., 2020). Coral disease has become another pressing issue affecting coral reef survival over the last 50 years. A large disease outbreak was documented in numerous coral species off southeastern Florida in 2014 (Precht et al., 2016). Reefs throughout the Caribbean have also been severely impacted by increased frequency and intensity of disease outbreaks leading to coral death. A recent example of this is stony coral tissue loss disease, which has quickly spread throughout the Caribbean, devastating coral reef ecosystems (Traylor-Knowles et al., 2022).
- In general, the less-studied mesophotic coral ecosystems of the South Florida area (Figure F.3-1) appear to be in better condition than shallow-water reefs in the region (Reed et al., 2021). Importantly, no stony coral tissue loss disease was observed in any mesophotic reef surveyed. Overall, the benthic diversity of the South Florida mesophotic reefs was high compared to shallow reefs, and the mesophotic ecosystems presented very different signature species (including only one of the ESA-listed coral species). However, the occurrence of ESA-listed coral species documented in Reed et al. (2021) did not coincide with the survey locations intersecting the Key West Range Complex.

F.3.3.1.2 Deep-Water Hard Corals

The following information was updated from the 2018 Final EIS/OEIS:

- Perhaps the largest continuous area of deep-water coral on Earth occurs on the Stetson-Miami Terrace area of Blake Plateau off the U.S. Southeast Atlantic coast at 400 m to greater than 900 m depths (Sowers, 2020); an area that also coincides with the Jacksonville Range Complex (refer to Section 3.3, Habitats, Figure 3.3-3, Artificial Reef Areas and Bottom Habitats in the Southeast Region of the Study Area, for mapping). Sowers (2020) used a mosaic of multibeam sonar mapping, topographic modeling, and validation work (using remote operated vehicles) to map coral habitats on this expansive feature. The resulting analysis suggests a very low percentage of living hard coral (1 to 7 percent) on topographic features that are likely coral habitats (e.g., peaks, ridges, slopes). Based on the validation work, those topographic features

were mostly coral rubble and stands of dead coral. Communities of *L. pertusa* have also been found to inhabit substrate at relatively shallow depths of 180 to 250 m off the coast of northeastern Florida in the Jacksonville Range Complex (Ross et al., 2015a; U.S. Department of the Navy, 2010).

- Submersible and remote operated vehicle surveys on the west Florida slope in the eastern Gulf of America estimated 37 percent of intermediate-hard substrate featured living *L. pertusa* or some other hard coral species (Ross et al., 2017). The Ross et al. (2017) survey covered a total of 56.76 km of bottom between the Key West Range Complex and the Naval Surface Warfare Center Panama City Testing Range in depths ranging from about 400 to 600 m (refer to Section 3.3, Habitats, Figure 3.3-4, Artificial Reef Areas and Bottom Habitats in the South Florida Region of the Study Area, for mapping). They noted that mounds less than 525 m deep were usually caped with greater than 50 percent living coral colonies.
- Deep-water corals and sponges in other large marine ecosystems in the Study Area do not coincide with any named training or testing areas, though they could be impacted by a minority of activities that may occur anywhere in the Study Area. In the Newfoundland/Labrador Shelf Large Marine Ecosystem, for example, deep-sea corals were mapped using incidental by-catch samples from stock assessment surveys and fisheries observations (Wareham & Edinger, 2007). Thirteen alcyonaceans, 2 antipatharians, 4 solitary scleractinians, and 11 pennatulaceans were recorded. Corals were broadly distributed along the continental shelf edge and slope, with most species found deeper than 200 m; only soft corals were found on the continental shelf. Deep-water coral and sponge habitats in other large marine ecosystems of the Study Area are poorly documented, based on the available spatial data for global deep-water coral collections (Freiwald et al., 2021).

The results of habitat suitability modeling of seamounts located in less than 2,500 m water depth and rising at least 1,000 m off the bottom suggest the potential for deep-water corals to occur at seamounts located off the northeast U.S. continental shelf (Tittensor et al., 2009), which is consistent with the observation of corals on Mytilus Seamount and other seamounts in the Northeast U.S. Continental Shelf Large Marine Ecosystem (Freiwald et al., 2021; Quattrini et al., 2015).

F.4 FISHES

The following topics on fishes in general were updated from the 2018 Final EIS/OEIS Section 3.6.2.1 (General Background):

- Estimated number of fish species, biomass of fishes in particular ocean zones, number of species in different zones and regions of the ocean, and schooling behavior. This information more accurately characterizes the affected environment.
- Distribution and density of fishes at the surface and on the bottom at various depths. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the low potential for vessels, in-water devices, and military expended materials to strike fish near the surface and in deep ocean areas.
- Information on the structural composition and typical fish assemblage of hard and soft bottom habitats. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for (1) the comparatively low potential for military expended materials and seafloor devices to strike fish in soft bottom areas, and (2) the greater potential for these items to strike fish in hard

bottom areas, although standard operating procedures and mitigation measures limit activities over hard bottom.

- Information on vertical migration. This information generally strengthens the reasoning presented in the 2018 Final EIS/OEIS for the low potential for vessels, in-water devices, and military expended materials to strike fish near the surface during the day, when most activities occur.
- Visual and chemosensory feeding cues used by fishes. This information confirms the conclusion presented in the 2018 Final EIS/OEIS that the potential for fish to ingest an expended item would be influenced partly by feeding method.
- Updated information on various threats to fishes. This information provides context for analysis of cumulative impacts.

The following topics on ESA-listed fish species were updated from the 2018 Final EIS/OEIS Section 3.6.2.2 (Endangered Species Act-Listed Species):

- Population status of ESA-listed fish species based on latest 5-year reviews by NMFS and, where applicable, the USFWS. This information provides updated context for impacts analysis.
- Information on ESA-listed fish species, from sources other than 5-year reviews, regarding distribution, population trends, spawning activity, predation, and threats. This information more accurately characterizes the status of ESA-listed fish species in the Study Area.
- Designation of critical habitat for one ESA-listed fish species (Nassau grouper [*Epinephelus striatus*]).
- Scientific name change for one ESA-listed fish species (giant manta ray [*Mobula birostris*]).

F.4.1 General Background

The following information was updated from the 2018 Final EIS/OEIS Section 3.6.2.1 (General Background):

- Fishes are the most numerous and diverse vertebrate group in the Study Area. Approximately 18,000 marine and estuarine fish species occur worldwide (Fricke et al., 2023).
- Although about 78 percent of marine fish species occur in waters less than 200 m deep and in close association with land, the results of a circumglobal survey cruise indicate that the biomass of mesopelagic fish (occurring at depths of 200 to 1,000 m) is likely much greater than the biomass of fishes found elsewhere in the ocean (Irigoien et al., 2014).
- For demersal fishes, the results of a modeling effort suggest a general pattern of decreasing biomass, abundance, and size with increasing depth in the world's oceans (Wei et al., 2011).
- In surface waters of the Study Area from the Virginia Capes Range Complex to the Jacksonville Range Complex, Willmott et al. (2021) reported an average daytime density of rays, sharks, and large bony fishes (e.g., tunas, mahi-mahi, billfish, and sunfish) of 1.66 per km^2.
- A review of information available on species richness found that the number of marine fish species changes with latitude in the Study Area (Fautin et al., 2010). The greatest number is estimated for the Gulf of America, followed in decreasing order by the Southeast U.S. Continental Shelf and Northeast U.S. Continental Shelf Large Marine Ecosystems.

F.4.1.1 Habitat Use

The background information for general habitat use in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.2.1.1 (Habitat Use) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

F.4.1.1.1 Shoreline Habitats

The background information for shoreline habitats in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.2.1.1 (Habitat Use) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

F.4.1.1.2 Bottom Habitats

The following information in this section was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.1 (Habitat Use).

Hard bottom habitats include rocky and live hard bottom, which support biotic communities that vary according to depth. Hard bottom habitats in relatively shallow water are generally dominated by benthic macroalgae, whereas invertebrates are typically associated with deep-water hard bottom (down to about 2,500 m in the North Atlantic). Hard substrate at depths greater than about 2,500 m may support relatively sparse populations of sessile invertebrates, but generally does not support invertebrates that form habitats potentially used by fish (e.g., hard corals and sponges). Hard bottom habitats usually support higher fish densities than the surrounding habitats (Flávio et al., 2023), although the degree of association may vary considerably (Ross et al., 2015b). A study of the Middle Atlantic Bight found that, of the 38 total fish taxa observed at all habitat types, 33 were associated with natural hard bottom and shipwreck habitat (Ross et al., 2016).

Deep-water invertebrate beds may also support greater fish occurrence than surrounding soft bottom habitat. Deep-water beds include concentrations of hard corals, soft corals, sponges, or chemosynthetic communities. Deep-water hard corals typically form mounds of substrate called bio- or litho-herms. The number of fish species observed at deep-water coral mounds off the U.S. Atlantic coast varies by location, with over 50 species documented at the Cape Lookout *Lophelia* banks (South Atlantic Fishery Management Council, 2023). A comparatively lower number of fish species have been documented in association with chemosynthetic habitats. Surveys reported 11 fish species at various hydrothermal vent fields in the Atlantic Ocean, and one species at a cold seep on the Florida Escarpment (Biscoito et al., 2002). Demersal fishes observed at cold seeps along the continental margin off the northeastern U.S. consisted of blue antimora (*Antimora rostrata*) and eel species of the genus *Synaphobranchus* (Quattrini et al., 2015). The most abundant species observed at seeps associated with Baltimore and Norfolk Canyons included the eel *Dysommina rugosa*, shortbeard codling (*Laemonema barbatulum*), longfin hake (*Phycis chesteri*), freckled tonguefish (*Symphurus nebulosus*), and lanternfish (unidentified species) (Ross et al., 2015b). Fishes documented during a study of cold seep communities in the Gulf of America (offshore of Louisiana) also included eel species of the genus *Synaphobranchus*, as well as hagfish species of the genus *Eptatretus* (Cordes et al., 2009).

Soft bottom habitats are composed of various mixtures of sand, silt, and clay, as well as small particles of biological origin (e.g., the shells and skeletal remains of small animals). Most substrate in the Study Area consists of this habitat type. Soft bottom habitat usually supports a low number of fish (individuals and species) compared with structured habitats, although there is often some overlap in species occurrence. For example, of 38 total fish species documented in a study of the Middle Atlantic Bight, 33 species were exclusively associated with hard habitat but only 6 were exclusively associated with soft

substrate (Ross et al., 2016). The species richness of benthic fishes generally declines with increasing depth, likely because of reduced food availability (Quattrini et al., 2015). Additionally, benthic fishes in deep ocean areas are generally considered to be widely dispersed. Surveys of the abyssal plain in the northeast Atlantic Ocean (depth of about 4,800 m) resulted in a density estimate of 723 fish per km^2 located on and near the bottom (Milligan et al., 2016). Fish distribution appeared to be random, with no aggregations noted in the survey area. Trawl surveys conducted in the Gulf of America from depths of about 200 to 3,000 m collected a total of 119 demersal species (Powell et al., 2003). Abundance and species richness were highest on the upper continental slope and decreased with depth.

The following specific information was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.1 (Habitat Use):

- Mesophotic reefs, which occur at depths where there is reduced light penetration and reduced photosynthesis in algae, are known in the Study Area to depths of 50 to 90 m and support numerous fish species. For example, over 60 species have been documented at Pulley Ridge off the southwest coast of Florida (National Oceanic and Atmospheric Administration, 2023).
- Research conducted in the mid-Atlantic region of the Study Area indicates that benthic fishes tend to ignore differences in bottom type at depths greater than about 1,400 m (Ross et al., 2015b).
- The rate at which sinking organic material is broken down by bacteria in shallow water is affected by temperature, with warmer waters decreasing the amount of food available to fishes (and other marine organisms) in depths of 200 to 1,000 m, where the majority of fish biomass occurs (Crichton et al., 2023).

F.4.1.1.3 Water Column Habitats

The background information for water column habitats in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.2.1.1 (Habitat Use) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

F.4.1.2 Movement and Behavior

The following information in this section was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.2 (Movement and Behavior).

Vertical migration may be associated with foraging, predator avoidance, thermoregulation, and navigation. Vertical movement over a 24-hour period is common and is known as diel vertical migration. However, vertical movements may also occur over other time periods. The typical pattern for large epipelagic and predatory fishes is descent below the euphotic zone during the day and a rise to the surface at night, with episodic variations attributed to thermoregulation and/or vertically migrating prey (Andrzejaczek et al., 2019). The typical pattern for small pelagic fishes is similar, with episodic descents or movement to the surface at night related to echolocating predators (Urmy & Benoit-Bird, 2021). An exception to this pattern has been noted for basking sharks (*Cetorhinus maximus*) and other planktivorous sharks and rays that, in some circumstances (e.g., in nearshore environments), ascend during the day and descend at night (Andrzejaczek et al., 2021; Sims et al., 2005). This behavior is attributed to tracking zooplankton prey that undergoes reverse diel migration, thermal fronts, or thermoregulation. Some large epipelagic fishes such as sharks also undertake short-period (minutes to hours) vertical movements, which occur while the animals are also moving horizontally and may be described as oscillatory movements (Andrzejaczek et al., 2019). The purpose of this behavior is uncertain, but it may increase the probability of detecting food cues throughout the water column and

decrease the energy used for swimming. Giant manta rays tagged off the coast of Peru underwent vertical oscillations during the night, presumably for thermal recovery between foraging dives to cool water (Andrzejaczek et al., 2021). This behavior has been documented in bigeye tuna (*Thunnus obesus*) and some shark species as well (Andrzejaczek et al., 2019). Conversely, some species may undertake short dives during the day to reduce body temperature. Vertical movements of some epipelagic species may coincide with the lunar cycle (Andrzejaczek et al., 2019).

The following specific information was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.2 (Movement and Behavior):

- Schooling reduces individual predation risk by creating a collective structure in which to hide (Pavlov & Kasumyan, 2000). Fish schools generally dissociate at night, likely because of the role of vision in schooling behavior.
- Some fish species rely on visual cues for feeding while others, particularly benthic species, also rely on chemosensory cues (taste) (Roch et al., 2020). Fishes that rely on visual cues are more likely to ingest non-food items (e.g., plastic particles) that visually resemble natural food than those that primarily rely on chemosensory detection.
- The potential for a species distribution shift is substantially influenced by primary habitat constituents (Roberts et al., 2020). While some pelagic species, which are strongly influenced by water temperature and salinity, have shifted distribution over the past two decades, benthic species have generally retained their historical distribution.

F.4.1.3 Hearing and Vocalization

Information on hearing and vocalization in fishes is provided in Appendix D (Acoustic and Explosive Impacts Supporting Information), Section D.5.1 (Fishes, Hearing and Vocalizations).

F.4.1.4 General Threats

The following information was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.4 (General Threats):

- An assessment of cumulative human impacts on the world's ocean found a slightly increasing trend off the U.S. Atlantic and Gulf of America coasts, which was substantially lower than in many other areas of the world (Halpern et al., 2019).
- There are some emerging issues that could cause both negative and positive effects on marine fishes (e.g., increasing wildfire impacts, coastal darkening, colocation of marine activities) that have yet to be studied thoroughly (Herbert-Read et al., 2022).
- Human activities may produce physical and chemical stressors on marine habitats that grow in intensity as economies grow (Danish et al., 2019). Impacts associated with these activities are not randomly distributed across the patchwork of habitat types and ecosystems; most stressors are more prevalent closer to highly developed landscapes (Halpern et al., 2008).
- Threats are often correlated to some degree. For example, a fish that is stressed by exposure to a pollutant could potentially be more susceptible to disease.
- The results of a census survey on global biodiversity indicate that about 25 percent of marine fish have become threatened or extinct since 1500 (Isbell et al., 2023). The main direct drivers of marine fish biodiversity loss included overexploitation as well as changes in land and sea use. Main indirect drivers included governance and human population.
- Fishing is the most common exploitative activity (World Register of Introduced Marine Species, 2023).

F.4.1.4.1 Water Quality

The following information was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.4.1 (Water Quality):

- Pollution initially impacts fishes that occur near the sources of pollution but may also affect future generations from effects to reproduction and increased mortality across life stages.
- Estimated organic and nutrient pollution trends are declining in waters of the United States (Halpern et al., 2019).
- A study of commercial coastal fishery species before and after the Deepwater Horizon oil spill, which resulted in 134 million gallons of oil being released into the northern Gulf of America in 2010, found that fish abundance and diversity were unchanged, except that abundance increased the year following the spill (Schaefer et al., 2016). The increase was attributed to a temporary fishery closure.

F.4.1.4.2 Development and Human Activities

The following information was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.4.2 (Commercial and Recreational Activities), in which the corresponding subsection is titled Commercial and Recreational Activities:

- The increase in abundance of commercial coastal species in the northern Gulf of America following a fishery closure associated with the Deepwater Horizon oil spill demonstrates the overwhelming influence of commercial fishing on marine fish populations (Schaefer et al., 2016).
- Barrett et al. (2019) found a substantial increase in density and diversity in wild fish near aquaculture sites. However, the long-term survival and reproduction of these fishes was not determined. Fish collected near aquaculture sites were larger and heavier with no change in body condition but had a higher risk of infection and parasitism.

Anthropogenic Noise

Information on threats to fishes from anthropogenic noise is provided in Appendix D (Acoustic and Explosive Impacts Supporting Information), Section D.5 (Fishes).

F.4.1.4.3 Disease and Parasites

The following statement was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.4.3 (Disease and Parasites):

- While the incidence of disease in some types of marine animals has increased in recent years, there is an apparently decreasing trend for marine fishes. For example, Tracy et al. (2019a) noted that global incidence of reported disease in marine fishes declined from 1970 to 2013. The reason could be declines in abundance and population density of many species because of overexploitation or bycatch.

F.4.1.4.4 Invasive Species

The following statement was updated from the 2018 Final EIS/OEIS Section 3.6.2.1.4.4 (Invasive Species):

- Although introduction of the Indo-Pacific lionfish (*Pterois volitans* and *P. miles*) to the Atlantic, Gulf of America, and Caribbean Sea remains a potential threat to native fishes, recent studies indicate expansion in the Study Area appears to be declining (Benkwitt et al., 2017; Campbell et

al., 2021), and competition with native reef species is less acute than initially thought (Smith & Côté, 2021).

F.4.1.4.5 Marine Debris

Updated information on the threats to estuarine and ocean habitats from marine debris that are applicable to fishes is provided in Section F.4.1.4 (General Threats).

F.4.2 Endangered Species Act-Listed Species

In the Study Area, nine fish species are listed as endangered or threatened under the ESA. The species are described in Section F.4.2.1 (Atlantic Salmon [*Salmo salar*]) through Section F.4.2.9 (Scalloped Hammerhead Shark [*Sphyrna lewini*]). Atlantic salmon, Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), and Gulf sturgeon (*A. oxyrinchus desotoi*) are anadromous species that are primarily found in coastal waters, but spend substantial portions of their life cycle in estuarine and riverine waters. The shortnose sturgeon (*A. brevirostrum*) inhabits its natal river and estuary, and very rarely has been observed in coastal waters. Smalltooth sawfish (*Pristis pectinata*) are predominately found in estuarine and coastal waters but can also occur in freshwater and deeper ocean waters. The scalloped hammerhead is generally considered a marine fish but has early life stages that are estuarine. Nassau groupers (*Epinephelus striatus*) are marine fishes that inhabit deep coral reefs or rocky substrate in Florida and the Caribbean. Giant manta rays (*Mobula birostris*) and oceanic whitetip sharks (*Carcharhinus longimanus*) are primarily pelagic and oceanic in distribution and can occur throughout the Study Area.

F.4.2.1 Atlantic Salmon (*Salmo salar*)

F.4.2.1.1 Status and Management

The Gulf of Maine distinct population segment (DPS) of Atlantic salmon was listed as federally endangered in 2000 (65 *Federal Register* 69459). During 2009, the Gulf of Maine DPS was expanded to include Maine's Penobscot, Kennebec, and Androscoggin Rivers, which support remnant wild populations (74 *Federal Register* 29344). The Atlantic salmon is co-managed by NMFS and the USFWS because its life cycle spans marine, estuarine, and freshwater habitats. Although Atlantic salmon may occur elsewhere (e.g., hatchery programs and aquaculture), only the Gulf of Maine DPS is protected under the ESA.

In June 2009, critical habitat was designated in 45 areas within Maine for the Gulf of Maine DPS of Atlantic salmon (74 *Federal Register* 29300). NMFS revised the critical habitat designation slightly in August 2009 to exclude certain areas (74 *Federal Register* 39903). Critical habitat was designated to include all perennial rivers, streams, and estuaries and lakes connected to the marine environment within the range of the Gulf of Maine DPS of Atlantic salmon, except for those particular areas within the range that are specifically excluded. Within the DPS, the physical and biological features for Atlantic salmon include sites for spawning and incubation, sites for juvenile rearing, and sites for migration. The physical and biological features of habitat are those features that allow Atlantic salmon to successfully use sites for spawning and rearing and sites for migration. These features include the following:

- substrate of suitable size and quality
- rivers and streams of adequate flow, depth, water temperature and water quality
- rivers, streams, lakes and ponds with sufficient space and diverse, abundant food resources to support growth and survival
- waterways that allow for free migration of both adult and juvenile Atlantic salmon

- diverse habitat and native fish communities in which salmon interact with while feeding, migrating, spawning, and resting

In 2015, NMFS focused efforts to protect species that are most at risk of extinction in the near future. The Atlantic salmon was selected as one of the eight species because of their critically low abundance and declining population trends. Key actions include reconnecting the Gulf of Maine with headwater streams, increasing the number of juveniles successfully emigrating into the marine environment, reducing mortality in international fishery in West Greenland waters, and increasing the understanding and ability to improve survival in the marine environment (National Marine Fisheries Service, 2016b).

The latest 5-year review for Atlantic salmon (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020a) documents some success in reconnecting the Gulf of Maine with headwater streams. The minimum reclassification requirements for habitat have been met, and even exceeded, as dam removals and improvements to fish passage have increased the quantity of habitat that is both suitable and accessible for spawning and juvenile rearing. However, the review concluded that no change to the status of the species is warranted at this time.

F.4.2.1.2 Habitat and Geographic Range

Atlantic salmon is an anadromous and iteroparous (does not die after spawning like other salmon) species. After hatching, juveniles rear in their natal rivers and estuaries. After juveniles complete the smolting process (e.g., physiologically transforming into marine form called a smolt), they enter the estuarine portion of the Study Area in the Gulf of Maine, primarily at night, during the late spring when water temperatures reach 10° C (50° F) (Sheehan et al., 2012) and school in coastal waters primarily in the upper 3 m (10 ft.), although they may occur in deeper waters (Hedger et al., 2009). Adults migrate back to their natal river to spawn.

The historic range of Atlantic salmon in the northwestern Atlantic Ocean includes coastal drainages from northern Quebec, Canada, to Connecticut. Smolts migrate into marine habitats during approximately 2 weeks each spring, usually during May (McCormick et al., 1998). Spawning adults migrate into estuaries and natal rivers throughout the spring and summer with the peak occurring in June (Fay et al., 2006). By mid-summer, smolts migrate to the Gulf of Maine along the Scotian Shelf Large Marine Ecosystem (Fay et al., 2006). During their first summer, sub-adults inhabit the coastal waters off Canada, the Southern Grand Banks (Newfoundland-Labrador Shelf Large Marine Ecosystem), the Labrador Sea, and the northern Gulf of St. Lawrence (Reddin & Short, 1991). Decreasing nearshore water temperatures in autumn trigger offshore (greater than 3 nautical miles [NM] from shoreline) movements (Dutil & Coutu, 1988). Sub-adults overwinter in the Labrador Sea south of Greenland. Small percentages return to Gulf of Maine coastal rivers after their first winter at sea (Fay et al., 2006). Atlantic salmon also migrate great distances in the open ocean to reach feeding areas in the West Greenland Shelf Large Marine Ecosystem and in the Davis Strait between Labrador and Greenland (Fay et al., 2006; Reddin & Short, 1991). They spend up to 2 years feeding before returning to Gulf of Maine coastal rivers to spawn (Reddin & Short, 1991).

F.4.2.1.3 Population Trends

By the end of the 19th century, Atlantic salmon had been extirpated from the Androscoggin, Merrimack, and Connecticut Rivers. The Gulf of Maine DPS represents the last wild population. Populations have been extirpated or decreased from overfishing, land use practices, and development that eliminated spawning and rearing habitat and reduced water quality. The population remains in decline. With added conservation efforts, adult returns remain extremely low.

Adult return rates have continued to decline since the 1980s, which indicates low marine survival (Chaput, 2012). Population estimates have rarely exceeded 5,000 in any given year since 1967, whereas historical abundances (excluding the Penobscot River) likely exceeded 100,000 (Fay et al., 2006). Numerous conservation and restoration practices have slowed the population decline but have not increased recovery. The current average number of Atlantic salmon returning to Gulf of Maine rivers annually is estimated at 1,200 individuals (National Marine Fisheries Service, 2023a). Similar to salmon populations on the West Coast of the United States, changes in ocean conditions affect recovery rates.

The latest 5-year review of Atlantic Salmon (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020a) concluded that the Gulf of Maine DPS remains at critically low abundance. The very low population sizes constitute a significant risk to the resiliency of the species through increasing losses in genetic fitness, loss of adaptive traits, and reduced ability to withstand catastrophic events. Whereas the population growth rate of naturally reared fish has improved in recent years, they are overshadowed by the small population sizes.

F.4.2.1.4 Predator and Prey Interactions

Upon ocean entry, smolts feed on fish larvae (Haugland et al., 2006), amphipods, euphausiids, and small fish (Fraser, 1987; Hislop & Shelton, 1993; Hislop & Youngson, 1984; Jutila & Toivonen, 1985). As they grow, small fishes become an increasingly dominant component of their diet. Striped bass, cod, haddock, fish-eating birds, and marine mammals feed on smolts and sub-adults in the marine environment. Adults prey on capelin, Atlantic herring, and sand lance (Hansen & Windsor, 2006). Adults are vulnerable to predation by seals and cormorants (Fay et al., 2006).

F.4.2.1.5 Species-Specific Threats

Incremental increases in marine survival (survival from emigrating smolts to adult returns) have a much greater impact on the population than comparable increases in freshwater survival (Legault, 2005), however, the factors contributing to low marine survival are not well understood. A review of existing studies indicates that mortality during the early marine migration varies between 8 and 71 percent, with predation being the most common cause of low survival in rivers and estuaries (Thorstad et al., 2015). In recent decades, individuals have migrated to sea at a younger age; these smaller smolts are subject to increased mortality (Russell et al., 2012). Parasitic crustaceans have also been noted to cause mortality and are common in areas with large aquaculture populations (Gargan et al., 2012; Krkosek et al., 2013).

The primary threats impacting the juvenile life stages include restricted fish passage (Baum, 1997), degraded water quality and aluminum toxicity (Kroglund et al., 2007), commercial aquaculture (Hansen & Windsor, 2006), and lack of spawning habitat (Fay et al., 2006). Increases in juvenile survival could enhance the probability of recovery, but only if marine survival is also increased. Current research shows that the catch and release recreational fishery does not negatively impacted the adult population during the spawning migration (Lennox et al., 2016).

F.4.2.2 Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)

F.4.2.2.1 Status and Management

Atlantic sturgeon is co-managed by Atlantic States Marine Fisheries Commission and NMFS. Sharp declines in the abundance of Atlantic sturgeon resulting from historic overfishing, pollution, habitat loss, and habitat degradation led the Atlantic States Marine Fisheries Commission to issue a coast-wide moratorium on the commercial harvest in state waters in 1998 (63 *Federal Register* 9967). This was followed closely by a similar moratorium in federal waters issued by NMFS in early 1999 (64 *Federal Register* 9449). When the population continued to decline, National Oceanic and Atmospheric

Administration listed the species as endangered or threatened throughout its range in 2012 (77 *Federal Register* 5880; 77 *Federal Register* 5914). The Chesapeake Bay, New York Bight, Carolina, and South Atlantic DPSs are listed as endangered, and the Gulf of Maine DPS as threatened. The most recent 5-year reviews for the Atlantic sturgeon in the Gulf of Maine, New York Bight, and Chesapeake Bay concluded that no change to the status of the respective DPSs is warranted at this time (National Marine Fisheries Service, 2022c, 2022e, 2022h).

In August 2017, NMFS designated critical habitat for each of the five Atlantic sturgeon DPSs: Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic (82 *Federal Register* 39160). All critical habitat designations are riverine waters between Maine and Georgia related to spawning or potential spawning habitat.

Critical habitat for the Gulf of Maine DPSs of Atlantic sturgeon has been designated in the Penobscot, Kennebec, Androscoggin, and Piscataqua Rivers in Maine, Piscataqua River in New Hampshire, and Merrimack River in Massachusetts (82 *Federal Register* 39160).

Critical habitat for the New York Bight DPSs of Atlantic sturgeon has been designated in the Connecticut River in Massachusetts, Connecticut and Housatonic Rivers in Connecticut, the Hudson River in New York, the Hudson and Delaware Rivers in New Jersey, and the Delaware River in Pennsylvania and Delaware (82 *Federal Register* 39160).

Critical habitat for the Chesapeake Bay DPSs of Atlantic sturgeon has been designated in the Nanticoke and Potomac Rivers, as well as the Marshyhope Creek in Maryland, and the Rappahannock, York, Mattaponi, Pamunkey, and James Rivers in Virginia (82 *Federal Register* 39160).

Critical habitat for the Carolina DPS of Atlantic sturgeon has been designated in the Roanoke, Tar-Pamlico, Neuse, Northeast Cape Fear, Cape Fear, and Pee Dee Rivers in North Carolina; and Pee Dee, Black, Santee, and Cooper Rivers in South Carolina (82 *Federal Register* 39160).

Critical habitat for the South Atlantic DPS has been designated in the Edisto, Combahee, and Savannah rivers in South Carolina, the Ogeechee, Altamaha, Satilla, and St. Marys Rivers in Georgia, and the St. Marys River in Florida (82 *Federal Register* 39160).

The physical features essential for the conservation of Atlantic sturgeon belonging to the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs are those habitat components that support successful reproduction and recruitment. These include the following:

- hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0 to 0.5 ppt range) for settlement of fertilized eggs, refuge, growth, and development of early life stages
- aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and spawning sites for juvenile foraging and physiological development
- water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support the following:
    - unimpeded movement of adults to and from spawning sites
    - seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary

  - staging, resting, or holding of sub-adults or spawning condition adults (Water depths in main river channels must also be deep enough [e.g., at least 1.2 m] to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river.)
  - water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support the following: spawning, annual and interannual adult, sub-adult, larval, and juvenile survival, and larval, juvenile, and sub-adult growth, development, and recruitment (e.g., 13 to 26°C for spawning habitat and no more than 30°C for juvenile-rearing habitat, and 6 milligrams per liter [mg/L] or greater dissolved oxygen for juvenile-rearing habitat)

The physical features essential for the conservation of Atlantic sturgeon belonging to the Carolina and South Atlantic DPSs are those habitat components that support successful reproduction and recruitment. These include the following:

- hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0 to 0.5 ppt range) for settlement of fertilized eggs and refuge, growth, and development of early life stages
- aquatic habitat inclusive of waters with a gradual downstream gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and spawning sites for juvenile foraging and physiological development
- water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support the following:
  - unimpeded movement of adults to and from spawning sites
  - seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary
  - staging, resting, or holding of sub-adults or spawning condition adults (Water depths in main river channels must also be deep enough (at least 1.2 m) to always ensure continuous flow in the main channel when any sturgeon life stage would be in the river.)
- water quality conditions, especially in the bottom meter of the water column, with temperature and oxygen values that support the following:
  - spawning
  - annual and inter-annual adult, sub-adult, larval, and juvenile survival
  - larval, juvenile, and sub-adult growth, development, and recruitment (Appropriate temperature and oxygen values will vary interdependently and depending on salinity in a particular habitat. For example, 6.0 mg/L dissolved oxygen or greater likely supports juvenile-rearing habitat, whereas dissolved oxygen less than 5.0 mg/L for longer than 30 days is less likely to support rearing when water temperature is greater than 25° C. In temperatures greater than 26° C, dissolved oxygen greater than 4.3 mg/L is needed to protect survival and growth. Temperatures of 13 to 26° C likely support spawning habitat.)

F.4.2.2.2 Habitat and Geographic Range

Sub-adult and adult Atlantic sturgeon inhabit the Newfoundland-Labrador Shelf, Scotian Shelf, Northeast U.S. Continental Shelf, and Southeast U.S. Continental Shelf Large Marine Ecosystems, likely year-round. Juveniles, sub-adults, and adults also inhabit many of the estuarine and riverine systems that are included in the Study Area (e.g., Kennebec River in Maine, Chesapeake Bay, James River and York River in Virginia, Cooper River in South Carolina, St. Johns River in Florida, and St. Marys River and Kings Bay in Georgia). Larvae are not known to inhabit the Study Area.

Atlantic sturgeon are fairly well studied during their juvenile and spawning life phases in riverine environments, but their sub-adult and adult estuarine and marine phases are less understood. Females spawn highly adhesive eggs on cobble substrate located on river bottoms, which are fertilized by males. Breece et al. (2013) found that spawning habitat in the Delaware River was influenced by salinity and substrate composition. Larvae hatch out in 4 to 7 days, and newly hatched young are active swimmers, frequently leaving the bottom and swimming throughout the water column. After 9 to 10 days, the yolk sac is absorbed, and the larvae begin to show more strictly benthic behavior. Adults return to lower estuarine or marine environments shortly after spawning. Juveniles remain riverine and estuarine residents for 1 to 4 years before migrating to the Atlantic Ocean (Balazik et al., 2012a). After reaching 76 to 92 cm in length (30 to 36 in.), sub-adults move from natal estuaries into the marine environment, and may undertake long range migrations (National Marine Fisheries Service, 2007b).

Spawning was originally thought to occur only in the spring along the Atlantic coast; however, recent research indicates that spawning primarily occurs in the fall in the South Atlantic (from Georgia to Chesapeake Bay) rather than spring (Balazik, 2012; Balazik & Musick, 2015; Hager, 2015; Kahn et al., 2014; Smith et al., 2015). Fall spawning also occurs in Chesapeake Bay tributaries: Pamunkey River, a tributary of the York River, and Marshyhope Creek, a tributary of the Nanticoke River (Hager et al., 2014; Horne & Stence, 2016; Kahn et al., 2014; Secor et al., 2022). There is currently no evidence of fall spawning in the New York Bight or Gulf of Maine DPSs (National Marine Fisheries Service, 2022e, 2022h).

Sub-adults disperse widely both north and south along the Atlantic coast and beyond the continental shelf (Bain, 1997). Sub-adults and adults were found to be strongly associated within a narrow range of depths 10 to 50 m over gravel and sand and, to lesser extent, silt and clay (Stein et al., 2004) and in temperatures around 20° C (Breece et al., 2016). However, recent acoustic monitoring research suggests that, in at least some areas, Atlantic sturgeon may occupy deeper portions of the continental shelf more often than previously thought (Hager & Mathias, 2018). A study of a potential wind energy site offshore of New York found that Atlantic sturgeons were present over the continental shelf mostly during winter (Ingram et al., 2019). The number of detections was highest in shallow water and generally decreased with increasing depth and distance from shore. Rothermel et al. (2020) provided more detailed information for marine habitats used by Atlantic sturgeon off the coast of Maryland, and the migratory patterns of Atlantic sturgeon through the area. Their findings also provide further information indicating that Atlantic sturgeon occur farther offshore in the late fall and winter months than in the spring and summer, though consistent occurrence in relatively shallow, nearshore waters was also supported. Atlantic sturgeon in the marine environment are known to concentrate around the mouths of inlets and large estuaries in spring, summer, and fall (Dunton et al., 2010; Erickson et al., 2011). While inhabiting these areas, sturgeon have been found to associate with river plumes or sandy and muddy substrate that may offer increased foraging opportunities (Breece et al., 2016; Laney et al., 2007; Oliver et al., 2013; Savoy & Pacileo, 2003).

Age of sexual maturity varies from 5 to 34 years depending on latitude, averaging 10 and 15 (Breece et al., 2013) years for males and females, respectively (National Marine Fisheries Service, 2007b). Sturgeon in the southern parts of the range tend to mature faster but experience shorter lifespans than sturgeon in the northern portions of the range. Despite extensive mixing in coastal waters, adults return to their natal river to spawn as indicated from tagging records. During non-spawning years, adults remain in marine waters either year-round or seasonally venture into either natal or non-natal estuarine environments (Bain, 1997; Hager et al., 2016). For example, as part of a Navy-funded research effort, Hager et al. (2016) found that sturgeon implanted with acoustic transmitters in the York River system in Virginia spent the summer and fall seasons of non-spawning years in either the mainstem of the Chesapeake Bay, the Delaware Bay and the Delaware River, or along the coast of New York and in the Hudson River.

Although generally considered benthic species, sturgeons are occasionally found at the surface and some species are known to leap into the air, possibly to take air into the swim bladder to maintain neutral buoyancy (Dunbar, 2015; Thorn & Falgiani, 2013; Watanabe et al., 2008). Most of their time is likely spent near the bottom, based on 8 years of tracking data from 69 Atlantic sturgeon and shortnose sturgeon adults with depth-sensing acoustic tags in the Penobscot River, Maine (Dunbar, 2015). An investigation of depth and vertical movements of Atlantic sturgeon and shortnose sturgeon in the Penobscot River found that all fish remained at the bottom for extended time periods, sometimes for days (Dunbar, 2015). Out of hundreds of thousands of recorded data points, only 33 occurred at depths less than 0.5 m; these were assumed to be associated with surfacing behavior. Although a different species on a different continent, a study of seven Chinese sturgeons (*Acipenser sinensis*) found two swim patterns and depth profiles, presumably related to buoyancy and swim bladder function (Watanabe et al., 2008). Four individuals actively swam in the water column at depths of 7 to 31 m, surfacing occasionally. Three fish spent nearly all their time (88 to 94 percent) on the bottom, with relatively rapid swims to the surface followed by a glide back the bottom. A subsequent study involving Chinese sturgeons found that all individuals swam in an up-and-down pattern, moving between the bottom and approximately 5 m depth, and individuals occasionally surfaced (Watanabe et al., 2012).

F.4.2.2.3 Population Trends

Atlantic sturgeon is a long-lived (average lifespan of 60 years), late-maturing, estuarine-dependent, iteroparous, and anadromous species. Abundance estimates are available for some spawning rivers (National Marine Fisheries Service, 2020a) and are summarized below.

- Between 18,000 and 21,000 individuals were estimated for the St. John River, Canada, between 2013 and 2015, making this the largest population on the Atlantic coast.
- In 1995, a total of 9,500 juveniles were estimated in the Hudson River, New York (4,600 fish of wild origin and 4,900 hatchery-raised fish). Commercial fishery data indicated an estimated 870 adults in 1998.
- In 2014, approximately 3,700 juveniles were estimated in the Delaware River.
- Approximately 1,800 to 1,900 adults and sub-adults have been estimated for the Pee Dee River, South Carolina.
- Between 1,000 and 2,000 juveniles are thought to occur in the Altamaha River, Georgia.
- Approximately 300 adults were estimated for the York River, Virginia. This number is consistent with the 325 adults estimated as a result of a Navy tracking study (Hager & Mathias, 2018).

- Sampling in the Pamunkey and Mattaponi Rivers, which are tributaries of the York River, resulted in spawning-run abundance estimates ranging from 31 to 576 fish (95 percent confidence interval) between 2013 and 2018 (Kahn et al., 2019).
- Between 3 and 36 individuals are estimated for the Roanoke River.
- Between 0 and 23 individuals are estimated for the Neuse River.
- Between 35 and 152 individuals are estimated for the Cape Fear River.
- Between 108 and 231 individuals are estimated for the Satilla River.
- Between 819 and 1,446 individuals are estimated for the Savannah River.
- A low but unspecified number of adults and subadults occur in the St. Johns River, Florida during winter and spring, but the spawning population of this river appears to be extinct (Fox et al., 2018; Fox et al., 2016; National Marine Fisheries Service, 2007b; Waldman & Wirgin, 1998).

The Atlantic sturgeon has been overfished throughout its range, with landings peaking around the turn of the 20th century followed by drastic declines thereafter (Smith & Clugston, 1997). Historically, the species was recorded in 38 rivers from St. Croix, Maine to the St. Johns River, Florida. As of 2007, they were only known to still occupy 35 rivers (National Marine Fisheries Service, 2007b). However, spawning populations have been discovered in at least five new rivers since this estimate and preliminary research indicates there are likely spawning populations in several more rivers that have yet to be fully investigated.

In the early 1600s, Atlantic sturgeon was considered an important fishery (Atlantic Sturgeon Status Review Team, 2007). In the mid-1800s, incidental catch of Atlantic sturgeon in the shad and river herring seine fisheries indicated that the species was very abundant (Armstrong & Hightower, 2002). By 1870, females were collected for their eggs, which were sold as caviar. By 1890, over 3,350 metric tons were landed from rivers along the Atlantic coast (Smith & Clugston, 1997). Despite a moratorium on commercial fishing for this species since 1998, there has been no indication of recovery. The latest 5-year reviews for Atlantic sturgeon (National Marine Fisheries Service, 2022c, 2022e, 2022h) state that the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs have likely neither improved nor declined relative to their status when they were listed in 2012. The lack of recovery is attributed to channel dredging and ship strikes, coastal development, pollution, poor water quality, and habitat degradation and loss (National Marine Fisheries Service, 2022c, 2022e, 2022h). Current population estimates for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs are 7,455, 34,566, and 8,811, respectively. These estimates encompass many age classes because subadults can be as young as 1 year old when they first enter the marine environment, and adults can live at least as long as 60 years (Balazik et al., 2012a; Hilton et al., 2016).

F.4.2.2.4 Predator and Prey Interactions

Atlantic sturgeon prey upon benthic invertebrates such as isopods, crustaceans, worms, and molluscs (National Marine Fisheries Service, 2022b). It has also been documented to feed on bottom-dwelling fish (Bain, 1997). Evidence of predation on sturgeon is scant, but it is speculated that juveniles may be eaten by the American alligator (*Alligator mississippiensis*), alligator gar (*Atractosteus spatula*), striped bass (*Morone saxatilis*) (Dadswell et al., 1984), and sharks. Recent observations suggest occasional predation on juvenile sturgeon by other protected species (e.g., gray seals, birds of prey) (National Marine Fisheries Service, 2022c, 2022e, 2022h). Predation of early Atlantic sturgeon life stages by introduced, non-native, catfish species has also been suggested as contributing to the very low capture rates of juvenile Atlantic sturgeon in the James River and in the other Chesapeake Bay tributaries. Based on DNA

analysis of potential predator stomachs in the Pamunkey River, the highest percentage of sturgeon DNA (likely eggs or larvae) was found in striped bass, non-native common carp (*Cyprinus carpio*), and blue catfish (*Ictalurus furcatus*) (Bunch et al., 2021).

F.4.2.2.5 Species-Specific Threats

Overfishing of females for caviar prior to the 1900s resulted in large population declines. Current threats include bycatch; habitat degradation from dredging, dams, and water withdrawals; passage impediments including locks and dams; degraded water quality; ship strikes; and bycatch in commercial fisheries (Atlantic Sturgeon Status Review Team, 2007; Balazik et al., 2012b; Brown & Murphy, 2010; Foderaro, 2015; National Marine Fisheries Service, 2018a).

The copepod *Dichelesthium oblongum* parasitizes 93 percent of the Atlantic sturgeon sampled in the New York Bight (Fast et al., 2009). High parasite load, stress, and reduced immune suppression has been associated with Atlantic sturgeon inhabiting areas of poor water quality (e.g., sewage contamination). Hilton et al. (2016) reviewed diseases and parasites known to affect Atlantic sturgeon, which include but are not limited to various parasitic worms, copepods, and isopods.

F.4.2.3 Shortnose Sturgeon (*Acipenser brevirostrum*)

F.4.2.3.1 Status and Management

In 1967, the U.S. Department of Interior listed the shortnose sturgeon as endangered throughout its range (32 *Federal Register* 4001). The species remained listed following enactment of the ESA in 1973 (Wippelhauser & Squiers, 2015). NMFS recognizes 19 DPSs that inhabit 25 river systems ranging from the Saint John River in New Brunswick, Canada, to the St. Johns River, Florida (National Marine Fisheries Service, 1998). NMFS also recognizes three metapopulations (genetically similar groups), based on the current distribution of spawning individuals, including the Carolinian Province (southern metapopulation), Virginian Province (mid-Atlantic metapopulation), and Acadian Province (northern metapopulation) (National Marine Fisheries Service, 2023c). Critical habitat for this species remains under development.

F.4.2.3.2 Habitat and Geographic Range

Like all sturgeon species, shortnose sturgeon spawn by releasing eggs in freshwater rivers (National Marine Fisheries Service, 2023c). After the fertilized eggs hatch, the larvae orient into the current and away from light, generally staying near the bottom and seeking cover. Within 2 weeks, the larvae emerge from cover and swim in the water column, moving downstream from the spawning site. Within 2 months, juvenile behavior mimics adults, with active swimming (Deslauriers & Kieffer, 2012) and foraging at night along the bottom (Richmond & Kynard, 1995). In estuaries, juveniles and adults occupy areas with little or no current over a bottom composed primarily of mud and sand (Secor et al., 2000). Adults are found in deep water (10 to 30 m) in winter and in shallower habitat (2 to 10 m) during summer (Welsh et al., 2002). Juveniles are known to occur in the Study Area, particularly in the St. Johns River in Florida. When adult shortnose sturgeon enter marine waters, they generally stay close to shore (National Marine Fisheries Service, 2023c).

Although sturgeon are considered to be a benthic species, they have also been observed leaping from the water in riverine habitats (Dunbar, 2015; Thorn & Falgiani, 2013). Most of their time is likely spent near the bottom, based on 8 years of tracking data from 69 Atlantic sturgeon and shortnose sturgeon adults with depth-sensing acoustic tags in the Penobscot River, Maine (Dunbar, 2015). Of the hundreds of thousands of data points collected for the study, only 33 were from depths of less than 0.5 m; these were assumed to be associated with surfacing behavior. As described in Section F.4.2.2.2 (Atlantic

Sturgeon, Habitat and Geographic Range), studies of Chinese sturgeons found that individuals surfaced only occasionally, presumably to take in air to help maintain neutral buoyancy.

The geographic range of shortnose sturgeon extends along the coastal rivers and estuaries of eastern North America from the Saint John River, New Brunswick, Canada, to the St. Johns River, Florida (Kynard, 1997; National Marine Fisheries Service, 2023c). The species primarily occurs in rivers and estuaries of the Northeast and Southeast U.S. Continental Shelf Large Marine Ecosystems, occasionally moving into the nearshore coastal waters (Dadswell, 2006; National Marine Fisheries Service, 1998; Richmond & Kynard, 1995). Among Study Area-Inshore Locations of the Proposed Action (e.g., training areas, ports), shortnose sturgeon populations occur in the Kennebec, Piscataqua, James, Cooper, Savannah, St. Marys, and St. Johns Rivers (National Marine Fisheries Service, 2023c).

F.4.2.3.3 Population Trends

The shortnose sturgeon is a long-lived (average lifespan 30 years), riverine- and estuarine-habitat-dependent, iteroparous, and anadromous species. Populations were stable or possibly increasing in the 1990s (Wippelhauser et al., 2015). The current population status of shortnose sturgeon varies among the occupied rivers (National Marine Fisheries Service, 2023c). Overall, populations in the southeast are relatively small compared to northeast populations. Of southeast U.S. rivers that coincide with Study Area-Inshore Locations of the Proposed Action, the Savannah River supports the largest known shortnose sturgeon population with estimates ranging from 1,390 (2009) to 2,432 (2013). The status of other riverine populations that coincide with other proposed Study Area-Inshore Locations is currently unknown, though spawning has been documented in the Cooper and Kennebec Rivers.

F.4.2.3.4 Predator and Prey Interactions

Shortnose sturgeon are benthic omnivores that typically feed by suctioning prey from the bottom (National Marine Fisheries Service, 1998; Stein et al., 2004), but individuals have also been observed feeding off plant surfaces (Dadswell et al., 1984). Prey items include crustaceans, insect larvae, worms, and molluscs. Young-of-the-year were found to consume amphipods and dipteran (fly) larvae (National Marine Fisheries Service, 1998). Juveniles similarly feed primarily on insect larvae and small crustaceans. Adults feed primarily on molluscs, with freshwater mussels being a primary prey item.

Prey varies with season between northern and southern river systems. In northern rivers, some sturgeon feed in freshwater during summer and over sand-mud bottoms in the lower estuary during fall, winter, and spring (National Marine Fisheries Service, 1998). In southern rivers, feeding has been observed during winter at or just downstream the saltwater and freshwater interface (Kynard, 1997). In the Southeast U.S. Continental Shelf Large Marine Ecosystem, shortnose sturgeon reduces feeding activity during summer months (Sulak & Randall, 2002).

Young-of-the-year have been found in the stomachs of yellow perch (*Perca flavescens*) (Dadswell et al., 1984). Predation on sub-adults and adults is not well documented; however, they may possibly be preyed upon by gars, alligators, sharks, and seals (Dadswell et al., 1984; National Marine Fisheries Service, 1998).

F.4.2.3.5 Species-Specific Threats

The population decline has been attributed to pollution, overharvest in commercial fisheries, bycatch in current fisheries, and its resemblance to the formerly commercially valuable Atlantic sturgeon (National Marine Fisheries Service, 2023c). Other risk factors include dams that block access to spawning areas, poaching, non-native species, poor water quality in spawning and nursery habitats, contaminants (e.g., heavy metals, pesticides, and organochlorine compounds), siltation from dredging, bridge construction

and demolition, impingement on power plant cooling water intake screens, impoundment operations, hydraulic dredging operations, and bycatch in commercial fisheries (Collins et al., 2000; National Marine Fisheries Service, 1998, 2023c).

F.4.2.4 Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

F.4.2.4.1 Status and Management

The Gulf sturgeon and the Atlantic sturgeon are members of the same species but do not overlap geographically. The Gulf sturgeon was federally listed in 1991 as threatened in the Gulf of Mexico Large Marine Ecosystem (56 *Federal Register* 49653) and is co-managed by NMFS and the USFWS. The fishery for Gulf sturgeon has been closed since the species was listed. Bycatch along the gulf coast was a major source of mortality (U.S. Fish and Wildlife Service, 1995), and efforts to reduce bycatch include gear modifications for nearshore trawl fisheries (Smith & Clugston, 1997). In 2009, NMFS and the USFWS concluded that the Gulf sturgeon population was stable and had achieved recovery objectives (U.S. Fish and Wildlife Service & National Marine Fisheries Service, 2009). However, in the same document, NMFS and the USFWS also concluded that the best available information indicates the Gulf sturgeon continues to meet the definition of a threatened species.

In 2003, NMFS and the USFWS collectively designated critical habitat for Gulf sturgeon within and adjacent to the states of Louisiana, Mississippi, Alabama, and Florida (68 *Federal Register* 13369). The physical and biological features essential for the conservation of Gulf sturgeon were determined to be those habitat components that support feeding, resting, sheltering, reproduction, migration, and physical features necessary for maintaining the natural processes that support these habitat components.

The physical and biological features include the following:

- abundant prey items within riverine habitats for larval and juvenile life stages, and within estuarine and marine habitats and substrates for juvenile, sub-adult, and adult life stages
- riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay
- riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, sub-adult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during freshwater residency and possibly for osmoregulatory functions
- a flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for (1) normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging; and (2) maintaining spawning sites in suitable condition for egg attachment, eggs sheltering, resting, and larvae staging
- water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages
- sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages

- safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., a river unobstructed by any permanent structure, or a dammed river that still allows for passage)

Most features of the critical habitat are not applicable to the marine portions of the Study Area. The Panama City OPAREA and the Naval Surface Warfare Center Panama City Division Testing Range overlap with Gulf sturgeon critical habitat (Figure 3.6-4, Critical Habitat for ESA-Listed Gulf Sturgeon Designated within the Study Area). This critical habitat (Unit 11) encompasses nearshore Gulf of America waters off Escambia, Santa Rosa, Okaloosa, Walton, Bay, and Gulf Counties in Florida. Unit 11 provides a migration corridor for Gulf sturgeon transiting from winter habitat and feeding grounds in the Gulf of America to spring and summer (and possibly fall) spawning and hatching habitat in the Yellow, Choctawhatchee, and Apalachicola Rivers. Gulf sturgeon inhabit the nearshore coastline between Pensacola and Apalachicola bays, in depths of less than 6 m during winter.

F.4.2.4.2 Habitat and Geographic Range

The Gulf sturgeon is a long-lived, riverine and estuarine habitat-dependent, iteroparous, and anadromous species. This species occurs in the Gulf of Mexico Large Marine Ecosystem in bays, estuaries and rivers, and in the marine environment from Florida to Louisiana (National Marine Fisheries Service, 2022f), including the nearshore portion of the Panama City OPAREA. The spring spawning migration toward natal rivers begins as riverine water temperatures reach approximately 64 to 72°F (Edwards et al., 2003; Heise et al., 2004; National Marine Fisheries Service, 2022f; Rogillio et al., 2007). Spawning areas include the Suwannee, Apalachicola, Escambia, Choctawhatchee, Yellow/Blackwater, and Pascagoula Rivers (Chapman & Carr, 1995; Craft et al., 2001; Fox et al., 2000; Wooley & Crateau, 1985). Spawning occurs during autumn in some watersheds (e.g., Suwannee River) (Randall & Sulak, 2012). Post-spawned adults often inhabit estuaries and nearshore bays in water less than 10 m deep (Ross et al., 2009). In the marine environment, sub-adults and adults are generally thought to remain near the shoreline. For example, an acoustic tagging study found that Gulf sturgeons located offshore of the Florida Panhandle remained within 1,000 m of the shoreline during 2 of the 3 years of study, although sturgeons were detected farther offshore (at least 1,250 m; maximum distance unknown) during 1 year (Robydek & Nunley, 2012). Some individuals, particularly females between spawning years (Fox et al., 2002; Ross et al., 2009) move into deeper offshore waters for short periods during cold weather (Sulak et al., 2009). Gulf sturgeons have been captured or detected from 11 to 16.7 km offshore of the Suwannee River mouth (68 *Federal Register* 13369).

Sub-adult and adult foraging grounds include barrier island inlets with strong tidal currents and estuaries less than 2 m deep with clean sand substrate (Fox et al., 2002; Harris et al., 2005; Ross et al., 2009). Gulf sturgeon winter near beaches of northwestern Florida and southeast of the mouth of St. Andrew Bay (U.S. Fish and Wildlife Service & National Marine Fisheries Service, 2009), while others moved northeast of St. Andrew Bay at depths ranging from 4 to 12 m (12 to 40 ft.) at 0.5 to 2 miles (mi.) offshore, and likely feeding on prey associated with fine sand and shell hash substrates (U.S. Fish and Wildlife Service & National Marine Fisheries Service, 2009).

By December, only young-of-the-year and juveniles remain in the rivers (Carr et al., 1996; Foster & Clugston, 1997). Young-of-the-year nursery habitat includes riverine sandbars and shoals (Carr et al., 1996). Juveniles show high site fidelity rates for riverine habitats used during spring and summer (Rudd et al., 2014), prefer sand or vegetated habitats (Wakeford, 2001), tolerate high salinity levels for extended durations, and appear to use estuaries infrequently (Sulak et al., 2009). Adults inhabit nearshore waters from October to February (Robydek & Nunley, 2012) with distribution influenced by prey availability (Ross et al., 2009), particularly within the Suwannee River estuary (Harris et al., 2005).

Whereas sturgeons are a benthic species, they have also been observed leaping from the water in riverine habitats (Dunbar, 2015; Thorn & Falgiani, 2013). Most of their time is likely spent near the bottom, based on 8 years of tracking data from 69 Atlantic sturgeon and shortnose sturgeon adults with depth-sensing acoustic tags in the Penobscot River, Maine Dunbar (2015). Of the hundreds of thousands of data points collected for the study, only 33 were from depths of less than 0.5 m; these were assumed to be associated with surfacing behavior. As described in Section F.4.2.2.2 (Atlantic Sturgeon, Habitat and Geographic Range), studies of Chinese sturgeons found that individuals surfaced only occasionally, presumably to take in air to help maintain neutral buoyancy.

F.4.2.4.3 Population Trends

Gulf sturgeon populations are stable or slowly increasing in eastern river systems, particularly the Suwannee River (U.S. Fish and Wildlife Service & National Marine Fisheries Service, 2009, 2022). The current status of populations in the western portion of the range (Louisiana and Mississippi) is uncertain but abundance is thought to be lower than that of eastern populations, possibly due in part to the effects of hurricanes. The results of a modeling effort suggest that current population levels in four of the seven evaluated river systems are likely at or exceeding the mean carrying capacity, given the current levels of available habitat (Ahrens & Pine, 2014). The implication is that, if the results are accurate, further population increases are unlikely unless habitat improvement or restoration occurs. In the remaining three rivers, extant Gulf Sturgeon populations are likely below their estimated carrying capacity levels. Population estimates in the Pearl and Pascagoula Rivers are lacking because research is limited (Rogillio et al., 2007).

F.4.2.4.4 Predator and Prey Interactions

Prey varies by life stage, but Gulf sturgeon is considered an opportunistic feeder. Adults typically do not feed while in freshwater and may lose from 12 to 30 percent of their body weight while inhabiting rivers. In estuarine and marine habitats, they prey upon a wide range of benthic invertebrates (Florida Museum of Natural History, 2017). Sharks are likely predators while sturgeon inhabit the marine environment (Florida Museum of Natural History, 2017).

F.4.2.4.5 Species-Specific Threats

Factors contributing to the decline include overfishing and habitat loss. Threats include dams (e.g., Pearl, Alabama, and Apalachicola Rivers), dredged material disposal, channel maintenance, oil and gas exploration, shrimp trawling, and poor water quality (U.S. Fish and Wildlife Service & National Marine Fisheries Service, 2009). Other threats include potential hybridization with non-native sturgeon from aquaculture farms and diseases.

F.4.2.5 Smalltooth Sawfish (*Pristis pectinata*)

F.4.2.5.1 Status and Management

The DPS of smalltooth sawfish in the United States, which occurs between Florida and Cape Hatteras, North Carolina, was listed as endangered under the ESA by NMFS in 2003 and by the USFWS in 2005 (70 *Federal Register* 69464), and it is co-managed by both agencies (National Marine Fisheries Service, 2010d). Other DPSs of smalltooth sawfish (e.g., Bahamas and Cuba) are not expected in the Study Area. The most recent 5-year review of smalltooth sawfish concluded that no change to the status of the species is warranted at this time (National Marine Fisheries Service, 2018b).

In September 2009, NMFS designated approximately 840,472 acres in two units of critical habitat occupied by the U.S. DPS of smalltooth sawfish (74 *Federal Register* 45353). The two units determined for critical habitat designations are the Charlotte Harbor Estuary Unit, which comprises approximately

221,459 acres of habitat, and the Ten Thousand Islands/Everglades Unit, which comprises approximately 619,013 acres of habitat. The two units are located along the southwestern coast of Florida between Charlotte Harbor and Florida Bay.

These areas contain the following physical and biological features that are essential to the conservation of smalltooth sawfish and that may require special management considerations or protection: red mangroves and shallow euryhaline habitats characterized by water depths between the mean high water line and 3 ft. (0.9 m) measured at mean lower low water. The Key West Range Complex does not overlap these areas; the northeastern boundary (Warning Area-174) of the Key West Range Complex is within approximately 9 NM of critical habitat at its closest point.

F.4.2.5.2 Habitat and Geographic Range

The smalltooth sawfish typically inhabit shallow tropical or subtropical estuarine and marine waters associated with sandy and muddy deep holes, limestone hard bottom, coral reefs, sea fans, artificial reefs, and offshore drilling platforms (Poulakis & Seitz, 2004). Mating likely occurs during spring (March to April) in Florida Bay (National Marine Fisheries Service, 2018b; Papastamatiou et al., 2015). Nursery areas of the smalltooth sawfish include estuaries and mangroves with the roots providing refuge from predators (National Marine Fisheries Service, 2009a, 2010d; Seitz & Poulakis, 2006; Simpfendorfer & Wiley, 2005). Juveniles exhibit a high site fidelity to nearshore areas and residence up to 55 days, and upstream movement toward preferred lower salinity conditions (Poulakis et al., 2012; Simpfendorfer et al., 2011). Larger individuals may occur to a depth of about 120 m (Poulakis & Seitz, 2004), although adults are known to spend more time in shallower habitat (e.g., river mouths) than in deeper waters (Simpfendorfer & Wiley, 2005). One study found that larger juveniles and adults primarily occupy waters of less than 20-m depth near coastal mangroves (Carlson et al., 2014). Observations in offshore waters are rare.

The range of the species has been contracting based on a time series of observations (National Marine Fisheries Service, 2018b). The species has been recorded in the Southeast U.S. Continental Shelf and Gulf of Mexico Large Marine Ecosystem areas of the Study Area, but its range is primarily southern Florida. The most recent 5-year review indicated the species has been observed in nearshore bays and estuaries from eastern Louisiana to Kings Bay, Georgia, from 1990 to 2015 (National Marine Fisheries Service, 2018b). In more recent years, acoustic tag monitoring off the coast of Cape Canaveral has documented the occurrence of several smalltooth sawfish north of southern Florida (Iafrate et al., 2022).

F.4.2.5.3 Population Trends

No population estimates exist for the smalltooth sawfish. The best available data suggest that the current population is a small fraction of its historical size and restricted mostly to southern Florida (National Marine Fisheries Service, 2018b; Poulakis & Seitz, 2004; Simpfendorfer, 2006; Simpfendorfer et al., 2011). Data collected in the Everglades National Park since 1972 suggest that the population has stabilized and may be increasing. Completing a similar analysis with updated data, Carlson and Osborne (2012) found the abundance trend was stable to slightly increasing (approximately 5 percent per year), although variation was high. Evidence from other data sources also indicate the current population of smalltooth sawfish is at least stable throughout its core abundance area with the potential for expansion from Charlotte Harbor to Florida Bay (National Marine Fisheries Service, 2018b). Recent studies have also shown that the species' growth rate is faster (Scharer et al., 2012; Simpfendorfer et al., 2008), and that individuals mature earlier (Carlson & Simpfendorfer, 2015), than previously thought. In the context of population modeling, these characteristics suggest the population can recover faster than once thought, as long as current stressors do not increase substantially (Carlson & Simpfendorfer, 2015). Increased occurrence in Biscayne Bay and the adjacent reef tract was reported in a recent study

(McDonnell et al., 2020). Overall, population data indicate the potential for eventual recovery of the species in the United States and possibly other regions (Brame et al., 2019).

F.4.2.5.4 Predator and Prey Interactions

Adult sawfishes have very few predators, although individuals may be preyed upon by various large shark species (Florida Museum of Natural History, 2018a, 2018b). Juveniles are preyed upon by crocodiles, large sharks, and dolphins (Florida Museum of Natural History, 2018a, 2018b; National Marine Fisheries Service, 2018b). Whereas the final listing rule for smalltooth sawfish did not identify predation as a causal listing factor, current data from acoustic monitoring, public encounter database data, satellite archival tagging data, and photographs suggests that small juveniles use red mangrove habitat to avoid predators (National Marine Fisheries Service, 2018b). Smalltooth sawfish are nocturnal feeders and use the saw-like rostrum to disrupt the substrate to expose crustaceans and to stun and slash schooling fish.

F.4.2.5.5 Species-Specific Threats

Factors contributing to the historic population decline included habitat degradation, commercial harvest, gear entanglements, bycatch in fisheries, poaching, and the illegal market for the saw-like rostrum (WildEarth Guardians, 2009). The most recent 5-year review concluded that mortality from fisheries bycatch, and habitat loss likely represent the largest threats continuing to impact smalltooth sawfish recovery (National Marine Fisheries Service, 2018b). Other stressors of unknown significance to smalltooth sawfish populations include marine pollution and debris, boating activity (causing degradation of habitat and physical disturbance or strike hazard), and extreme natural events (e.g., hurricanes, red tides, unusually cold water temperature). Recent data on fisheries bycatch from shrimp trawling (2009–2015) and the shark longline fishery (1994–2018) suggest interactions with smalltooth sawfish are rare and the survival rate of released individuals is probably high for at least some types of incidental capture (longlines and gillnets) (National Marine Fisheries Service, 2018b). For example, only nine smalltooth sawfish were caught in Florida shrimp trawls from 2009 to 2015, and there have been only 34 interactions in the shark longline fishery since 1994. Habitat loss is associated with permitted wetland conversions, erosion of coastal wetlands adjoining artificially hardened shorelines, growth of urban areas/impervious surfaces, water management practices in coastal watersheds, point- and non-point sources of pollution (e.g., stormwater discharge), channel dredging, as well as habitat effects resulting from changes in salinity, sea level, and temperature (National Marine Fisheries Service, 2018b).

F.4.2.6 Giant Manta Ray (*Mobula birostris*)

F.4.2.6.1 Status and Management

In January 2018, NMFS listed the giant manta ray as threatened throughout its range (83 *Federal Register* 2916). In December 2019, NMFS determined that designation of critical habitat is not prudent (84 *Federal Register* 66652). NMFS determined that there are currently no identifiable physical or biological features that are essential to conservation of the giant manta ray within areas under U.S. jurisdiction, and that therefore there are no areas that meet the definition of critical habitat for the species.

F.4.2.6.2 Habitat and Geographic Range

Giant manta rays are considered seasonal visitors to productive coastlines with regular upwelling, including oceanic island shores, and offshore pinnacles and seamounts. The species has also been observed in estuarine waters near oceanic inlets. They may occur in water depths from less than 10 m to over 1,000 m. They use sandy bottom habitat and seagrass beds, as well as shallow reefs, and the ocean

surface both inshore and offshore. The species ranges globally and is distributed in tropical, subtropical, and temperate waters. They can migrate seasonally, usually more than approximately 621 mi. (1,000 km), however, they are not likely to cross ocean basins (National Marine Fisheries Service, 2022d). Data from a tagging study indicate at least some populations may not be as migratory as previously thought (Miller & Klimovich, 2016). The timing of migratory movements seems to vary between regions and may be influenced by zooplankton movements, water currents and tidal patterns, water temperature, and possibly mating behavior.

Farmer et al. (2022) integrated decades of sightings and survey effort data from multiple sources in a distribution model for giant manta ray off the eastern United States, including the Gulf of America. The results indicate the species is most commonly detected at productive nearshore and shelf-edge upwelling zones at surface thermal frontal boundaries within a temperature range of approximately 15 to 30°C. Oceanic mantas in other parts of the world have exhibited reverse diel vertical migrations (i.e., ascend during the day, descent at night), which was attributed to such thermal fronts (Andrzejaczek et al., 2021).

Giant manta rays occur in the Northeast U.S. Continental Shelf Large Marine Ecosystem, where they feed on plankton in the upwelling region from Cape Hatteras to the Gulf of Maine. Farmer et al. (2022) predicted high nearshore concentrations of giant manta ray off northeast Florida during April, with the distribution extending northward along the shelf-edge as temperatures warm. Seasonal movements were predicted to result in higher numbers north of Cape Hatteras, North Carolina from June to October, and then south to Savannah, Georgia, from November to March as temperatures cool. The Loop Current, which is created by oceanic waters entering the Gulf of America from the Yucatan channel and exiting through the Straits of Florida, has upwelling along its edges, in its rings, and in associated eddies (Heileman & Rabalais, 2008). These rings, eddies, and upwelling zones are areas where giant manta rays may feed. In the Gulf of America, Farmer et al. (2022) predicted the highest nearshore concentrations of giant manta ray near the Mississippi River delta from April to June and again from October to November. In the Caribbean Sea Large Marine Ecosystem, areas of high productivity include localized regions of upwelling and nearshore habitats like coral reefs, mangroves, and seagrass beds (Heileman & Mahon, 2008). These areas attract giant manta rays for feeding. In addition, manta rays occur at cleaning stations on coral reefs where fishes remove parasites from them (Miller & Klimovich, 2016).

F.4.2.6.3 Population Trends

No stock assessments exist for the giant manta ray, and information on population sizes is lacking. Most estimates of subpopulations are based on anecdotal observations by divers and fishermen, with current populations estimated between 100 and 1,500 individuals (Miller & Klimovich, 2016). Regional populations are thought to be geographically fragmented and sparsely distributed. Giant manta rays are generally solitary but aggregate at cleaning sites and to feed and mate. They reach maturity at age 10 and have one pup every 2 to 3 years (National Marine Fisheries Service, 2022d). Although there is uncertainty regarding range-wide abundance, the best available information indicates that the species has experienced potentially significant population declines because of fisheries-related mortality (Miller & Klimovich, 2016).

F.4.2.6.4 Predator and Prey Interactions

Manta rays feed primarily on zooplankton and may also consume small- to moderate-sized fishes (Miller & Klimovich, 2016). The gill plates of the giant manta ray filter the water as they swim, straining out any plankton or other prey items (Defenders of Wildlife, 2015a). Because of their size, the only predators of

giant manta rays are thought to be large sharks and toothed whales (e.g., bull sharks [*Carcharhinus leucas*] and killer whales [*Orcinus orca*]).

F.4.2.6.5 Species-Specific Threats

Threats to giant manta rays include fisheries and bycatch, destruction or modification of habitat, and disease and predation. The international market highly values the gill plates of the giant manta ray for use in traditional medicines. They also trade their cartilage and skins and consume the manta ray meat or use it for bait. Bycatch occurs in purse seine, gillnet, and trawl fisheries as well (National Marine Fisheries Service, 2022d). Fisheries exist outside the Study Area in Indonesia, Sri Lanka, India, Peru, Mexico, China, Mozambique, and Ghana (Food and Agriculture Organization of the United Nations, 2013). Other potential threats include degradation of coral reefs, interaction with marine debris, marine pollution, and boat strikes (Food and Agriculture Organization of the United Nations, 2013).

F.4.2.7 Nassau Grouper (*Epinephelus striatus*)

F.4.2.7.1 Status and Management

The Nassau grouper was previously one of the most common groupers in U.S. waters. The species is currently scarce due primarily to overfishing. NMFS listed the Nassau grouper as threatened under the ESA throughout its range in 2016.

In January 2024, NMFS designated critical habitat for the Nassau grouper (refer to Figure 3.6-6, Critical Habitat for ESA-Listed Nassau Grouper Designated in the Study Area). The designation consists of about 2,385 square km of aquatic habitat in waters off the coasts of southeastern Florida, Puerto Rico, Navassa, and the U.S. Virgin Islands. NMFS identified the following physical and biological features considered essential to the conservation of Nassau grouper:

- nearshore to offshore areas necessary for recruitment, development, and growth, containing a variety of benthic types that provide cover from predators and habitat for prey, consisting of:
    - (1) nearshore shallow subtidal marine nursery areas with substrate that consists of unconsolidated calcareous medium to very coarse sediments and shell and coral fragments and may also include cobble, boulders, whole corals and shells, or rubble mounds, to support larval settlement and provide shelter from predators during growth and habitat for prey
    - (2) intermediate hard bottom and seagrass areas in close proximity to the nearshore shallow subtidal marine nursery areas that provide refuge and prey resources for juvenile fish (The areas include seagrass interspersed with areas of rubble, boulders, shell fragments, or other forms of cover; inshore patch and fore reefs that provide crevices and holes; or substrates interspersed with scattered sponges, octocorals, rock and macroalgal patches, or stony corals.)
    - (3) offshore linear and patch reefs in close proximity to intermediate hard bottom and seagrass areas that contain multiple benthic types, for example, coral reef, colonized hard bottom, sponge habitat, coral rubble, rocky outcrops, or ledges, to provide shelter from predation during maturation and habitat for prey
    - (4) structures between the subtidal nearshore area and the intermediate hard bottom and seagrass area and the offshore reef area including overhangs, crevices, depressions, blowout ledges, holes, and other types of formations of varying sizes and complexity to support juveniles and adults as movement corridors that include

temporary refuge that reduces predation risk as Nassau grouper move from nearshore to offshore habitats

- marine sites used for spawning and adjacent waters that support movement and staging associated with spawning

Approximately 800 acres (3.2 km^2) of proposed critical habitat overlaps waters (generally 50 yards from shore) included in the Naval Air Station Key West Integrated Natural Resources Management Plan. Within this area, juvenile Nassau grouper and habitats identified as essential features (nearshore shallow subtidal marine nursery, intermediate hard bottom, and seagrass areas in close proximity to the nearshore nursery areas) may be present. NMFS determined that the Integrated Natural Resources Management Plan provides benefits to Nassau grouper and areas included in the proposed critical habitat. Therefore, pursuant to section 4(a)(3)(B)(i) of the ESA, NMFS determined that areas covered by the Integrated Natural Resources Management Plan are ineligible for designation as critical habitat for Nassau grouper.

F.4.2.7.2 Habitat and Geographic Range

Nassau grouper is a long-lived, late-maturing perch-like bony fish. This species is a solitary fish apart from spawning aggregations (Starr et al., 2007). These fish inhabit high-relief coral reefs and rocky bottoms from nearshore to a depth of 100 m and rest on or near the bottom, with juveniles inhabiting macroalgae and seagrass beds and patch reefs (Bester, 2012). Larvae are pelagic, floating with ocean currents for 1 to 2 months. This species also occupies caves and large overhangs (National Marine Fisheries Service, 2015a). Spawning aggregation sites are typically located near significant geomorphological features, such as projections of the reef as little as 50 m from the shore (81 *Federal Register* 42268).

Nassau grouper congregate in large numbers at specific areas to spawn after the appropriate water temperature and moon phase cues (usually within a period of 10 days overlapping the full moon) between November and February (Archer et al., 2012; National Marine Fisheries Service, 2015a, 2022g; Semmens et al., 2006). Spawning aggregations of several thousand individuals have been reported (Bester, 2012).

The geographic range within the Study Area is limited to around Bermuda, the southeast coast of Florida (Cape Canaveral to Florida Keys), Florida Straits (ocean corridor connecting the Gulf of America with the U.S. Southeast Continental Shelf), Dry Tortugas National Park, Pulley Ridge, Florida Bay, Flower Garden Banks, and areas around Puerto Rico (Bester, 2012; National Marine Fisheries Service, 2015a). Within the Study Area, spawning aggregations have only been documented around Bermuda, Puerto Rico and the U.S. Virgin Islands (National Marine Fisheries Service, 2015a).

F.4.2.7.3 Population Trends

Based on the size and number of spawning aggregations, the total Nassau grouper population appears to be a small fraction of its historical size (National Marine Fisheries Service, 2022g). The worldwide population is thought to have declined at one time to as few as approximately 10,000 individuals (Cornish & Eklund, 2003). More recent data indicate that abundance may be increasing in some areas. The number of individuals observed at a spawning aggregation site near St. Thomas (U.S. Virgin Islands) increased by about 87 percent between 2004 and 2009, although the total number was relatively low (118 fish in 2009) (Kadison et al., 2010). The number of individuals at a spawning site off Little Cayman Island increased from about 2,000 fish to 5,223 fish between 2003 and 2018 (Waterhouse et al., 2020).

Research has shown strong genetic differentiation in subpopulations in the Caribbean that may correlate to larvae dispersal barriers (Jackson et al., 2014).

F.4.2.7.4 Predator and Prey Interactions

Nassau groupers are preyed upon by barracuda (*Sphyraena barracuda*), king mackerel (*Scomberomorus cavalla*), moray eels (*Gymnothorax* spp.), sandbar sharks (*Carcharhinus plumbeus*), great hammerhead sharks (*Sphyrna mokarran*), and other large groupers including Nassau groupers (Bester, 2012).

Adult Nassau groupers are opportunistic ambush predators, feeding on a variety of fishes, shrimps, crabs, lobsters, and octopuses (Sadovy & Eklund, 1999). Adults have been observed feeding on the invasive lionfish in the Caribbean and are currently being studied as a potential biocontrol option (Mumby et al., 2011). Nassau grouper larvae are filter and particulate feeders that prey on dinoflagellates, fish larvae, and mysids (Sadovy & Eklund, 1999).

F.4.2.7.5 Species-Specific Threats

Nassau grouper is sensitive to overexploitation because of the slow growth rate, late reproduction age (5+ years), large size, and long lifespan (Morris et al., 2000; Sadovy & Eklund, 1999). The decline in population is the result of overharvest and collapse of spawning aggregations (Aguilar-Perera, 2006; Ehrhardt & Deleveaux, 2007) and is exacerbated by coastal development (Stallings, 2009) and lack of effective regulations in some areas (National Marine Fisheries Service, 2022g). Commercial and recreational landings declined in both pounds landed and average fish size from 1986 and 1991. As a result, moratoriums on take and possession were established in 1990 (National Marine Fisheries Service, 2015a). By 2000, abundance had decreased approximately 60 percent over the last three generations (Cornish & Eklund, 2003).

Damage to spawning sites limits reproductive success of adults if alternative habitats are unavailable. Loss of macroalgae and seagrass beds is damaging to Nassau grouper populations, as it often results in low recruitment rates (Sadovy & Eklund, 1999).

Fishing moratoriums have been ineffective at preventing illegal harvest that occurs in Puerto Rico and other U.S. waters. Declines have also resulted from overfishing with spear guns and bycatch of juvenile in fine mesh nets (National Marine Fisheries Service, 2015a).

The marine isopod *Excorallana tricornis* is a known parasite of the Nassau grouper, sometimes resulting in infestations immediately following spawning (Semmens et al., 2006).

F.4.2.8 Oceanic Whitetip Shark (*Carcharhinus longimanus*)

F.4.2.8.1 Status and Management

NMFS completed a comprehensive status review of the oceanic whitetip shark and, based on the best scientific and commercial information available, including the status review report (Young et al., 2016), proposed that this species warrants listing as a threatened species under the ESA (81 *Federal Register* 96304). On January 30, 2018, NMFS published the Final Rule listing this species as threatened. On March 5, 2020, NMFS concluded that designation of critical habitat is not prudent because there are no identifiable physical or biological features that are essential to the conservation of the oceanic whitetip shark within areas under U.S. jurisdiction, and that there are no areas outside of the geographical area occupied by the species under U.S. jurisdiction that are essential to its conservation (85 *Federal Register* 12898).

F.4.2.8.2 Habitat and Geographic Range

Oceanic whitetip sharks are found worldwide in warm tropical and subtropical waters between the 20° North and 20° South latitude near the surface of the water column (Young et al., 2016). In the Western Atlantic, oceanic whitetips occur from Maine to Argentina, including the Caribbean and Gulf of America. This species has a clear preference for open-ocean waters, with abundances decreasing nearer to continental shelves. However, individuals are occasionally found in nearshore waters (Rigby et al., 2019). Preferring warm waters near or over 20°C (68°F), and offshore areas, the oceanic whitetip shark is known to undertake seasonal movements to higher latitudes in the summer (National Marine Fisheries Service, 2022i) and may regularly survey extreme environments (deep depths, low temperatures) when foraging (Young et al., 2016). The presence of oceanic whitetip sharks increases further away from the continental shelf in deep-water areas, but the species prefers to inhabit the surface waters in deep-water areas at less than 328 ft. (Defenders of Wildlife, 2015b). Within this habitat, tagged oceanic whitetip sharks have exhibited average daily ascents to 10 to 35 m at dawn and dusk, followed by descents to 25 to 45 m during the day and 30 to 60 m at night (Tolotti et al., 2017). The variability is attributed to thermoregulation and depth of the mixing zone. The oceanic whitetip shark has declined in the northwest Atlantic, western central Atlantic, and Gulf of America (Baum et al., 2015). The species also occurs in waters of the Southeast U.S. Continental Shelf, Caribbean Sea, and Newfoundland-Labrador Shelf Large Marine Ecosystems.

F.4.2.8.3 Population Trends

Globally, catches of oceanic whitetip sharks generally peaked between 1995 and 2000, followed by precipitous declines over next 10 years (Young & Carlson, 2020). In the Atlantic region from the 1990s to the early 2000s, the oceanic whitetip shark had declined by an estimated 9 to 70 percent, depending on the data source and area. The most significant decline reported was a 99.9 percent decrease in abundance in the Gulf of America based on a comparison of longline research surveys from 1954 to 1957 and data from fisheries observers from 1995 to 1999. However, because of temporal changes in fishing gear and practices over the time period, the study may have exaggerated or underestimated the magnitude of population decline (Baum et al., 2015).

F.4.2.8.4 Predator and Prey Interactions

As one of the major apex predators in the tropical open ocean waters, the oceanic whitetip shark feeds primarily on fishes and cephalopods, although they also feed on birds, marine mammals, mollusks, and crustaceans.

F.4.2.8.5 Species-Specific Threats

Threats include pelagic longline and drift net fisheries bycatch, targeted fisheries (for the shark fin trade), and destruction or modification of its habitat and range (Baum et al., 2015; Defenders of Wildlife, 2015b). Legal and illegal fishing activities in the Atlantic have caused significant population declines for the oceanic whitetip shark. It is caught as bycatch in tuna and swordfish longlines in the northwest Atlantic and Gulf of America. Habitat degradation has occurred because of pollutants that bioaccumulate and biomagnify to high levels in their bodies as a result of their high position in the food chain, long life, and large size (Defenders of Wildlife, 2015b).

F.4.2.9 Scalloped Hammerhead Shark (*Sphyrna lewini*)

F.4.2.9.1 Status and Management

The Central and Southwest Atlantic DPS of the scalloped hammerhead shark is listed as threatened under the ESA (79 *Federal Register* 38213, July 3, 2014). The Study Area does not coincide with any

other DPSs. There are no designated critical habitat marine areas within the jurisdiction of the United States. In 2020, NOAA Fisheries completed a 5-year review of the scalloped hammerhead shark and determined there was no reason to change the status of the species or any of the four DPSs (National Marine Fisheries Service, 2020c).

F.4.2.9.2 Habitat and Geographic Range

The scalloped hammerhead shark is a coastal and semi-oceanic species distributed in temperate to tropical waters (National Marine Fisheries Service, 2020c). In the western Atlantic, their range extends from New Jersey to points south of the Study Area, including the Gulf of America and the Caribbean Sea (Bester, 1999) with seasonal migration along the eastern United States. Juveniles rear in coastal nursery areas (Duncan & Holland, 2006) with all ages occurring in the Gulf Stream, but rarely inhabits the open ocean (Kohler & Turner, 2001). Scalloped hammerhead sharks that are part of the Central and Southwest Atlantic DPS are only found in the southernmost portion of the Study Area in the vicinity of Puerto Rico. Scalloped hammerhead sharks that occur in other portions of the Study Area are not protected under the ESA.

Scalloped hammerhead sharks inhabit the surface to depths of 275 m (Duncan & Holland, 2006) or more (Daly-Engel et al., 2012). Coastal waters with temperatures between 23 and 26°C are preferred habitats (Castro, 1983; Compagno, 1984), with animals generally remaining close to shore during the day and moving into deeper waters to feed at night (Bester, 1999). Ketchum et al. (2014b) found scalloped hammerheads formed daytime schools at specific locations in the Galapagos Islands, but dispersed at night, spending more time at the northern islands during part of the warm season (December to February) compared with the cool season. Ketchum et al. (2014a) used acoustic telemetry to show that scalloped hammerheads were highly selective of location (i.e., habitat on up-current side of island) and depth (i.e., top of the thermocline) while refuging, where they may carry out essential activities such as cleaning and thermoregulation, and also perform exploratory vertical movements by diving the width of the mixed layer and occasionally diving below the thermocline while moving offshore, most likely for foraging. More recent analysis of satellite-tracked sharks, including scalloped hammerheads, in the Atlantic, Indian, and Pacific Oceans indicate the species occupies predictable habitat hotspots (Queiroz et al., 2019; Queiroz et al., 2016); scalloped hammerheads preferred fronts characterized by strong sea surface temperature and high productivity gradients (e.g., Gulf Stream edge). Hoffmayer et al. (2013) also found that tagged sharks exhibited consistent and repeated diel vertical movement patterns, making more than 76 deep nighttime dives to a maximum depth of 964 m, possibly representing feeding behavior. A genetic marker study suggests that females remain close to coastal habitats, while males disperse across larger open-ocean areas (Daly-Engel et al., 2012). However, females in the northern Gulf of America exhibited more shelf-edge (greater than 200-m depth) occurrence than males, which displayed more mid-shelf use (Wells et al., 2018).

In the southernmost portion of the Study Area, scalloped hammerhead sharks may exhibit habitat partitioning with other shark species. In tropical areas, the scalloped hammerhead was more associated with deep (70 to 80 m) seamounts, whereas other sharks occupied shallower (less than 40 m) reefs and lagoons (Tickler et al., 2017). The nursery habitat for this DPS, and for the species in general, is currently unknown. However, based on surveys of Pacific DPSs, it likely includes river deltas and nearshore reefs (National Marine Fisheries Service, 2020c). The species likely spawns in the open water throughout its range (National Marine Fisheries Service, 2020c).

F.4.2.9.3 Population Trends

The scalloped hammerhead shark has undergone substantial declines throughout its range (Baum et al., 2003). There is some evidence of population increase in the Southeast U.S. Continental Shelf Large Marine Ecosystem (Ward-Paige et al., 2012). Globally, landings of scalloped hammerhead sharks peaked at 8,000 metric tons in 2002 and declined to 1,000 metric tons in 2009 (Food and Agriculture Organization of the United Nations, 2005, 2009). Modeling results estimate the overall population range from approximately 142,000 to 169,000 individuals in 1981 and between 24,000 and 28,000 individuals in 2005 (Miller et al., 2013).

There is some evidence of population increase in the Southeast U.S. Continental Shelf Large Marine Ecosystem (Ward-Paige et al., 2012). The current 5-year status review also noted that analysis of more recent data (1994 to 2017) from the North Atlantic and Gulf of America showed a population increase after fisheries management measures were enacted (National Marine Fisheries Service, 2020c). For the Central and Southwest DPS, there was an estimated 62.7 percent decline in catch per unit effort of hammerheads from longline vessels operating in the South Atlantic from 1998 to 2007 (National Marine Fisheries Service, 2020c). This also applies to the Central and Southwest DPS because most of the South Atlantic fleet, including mostly South American vessels, overlapped with the Central and Southwest Atlantic DPS.

F.4.2.9.4 Predator and Prey Interactions

Scalloped hammerhead sharks have few predators. The most recent 5-year review concluded that predation is not considered a stressor outside of human consumption and use (National Marine Fisheries Service, 2020c). Sharks locate potential prey by odor, particularly from injured prey, or low-frequency sounds, inner ear (vibrations), lateral line (turbulence) with vision coming into play at closer range (Moyle & Cech, 2004). They feed primarily at night (Compagno, 1984) on a wide variety of fishes such as sardines, herring, anchovies, and jacks, and also feed on invertebrates, including squid, octopus, shrimp, crabs, and lobsters (Bester, 1999).

F.4.2.9.5 Species-Specific Threats

The primary threat to scalloped hammerhead populations is mortality from commercial, recreational, and artisanal longline fisheries, including at-vessel mortality (i.e., finning and bycatch) (Miller et al., 2014). This species is highly susceptible to bycatch because of schooling habits (Food and Agriculture Organization of the United Nations, 2012). For the Central and Southwest Atlantic DPS, longline fisheries off South America reported up to approximately 4 percent scalloped hammerhead of the total shark catch (many of which were juveniles) (Feitosa et al., 2018). However, none of the longline fishing trips observed in the U.S. shark fishery coincide with the area where the Central and Southwest Atlantic DPS occurs (National Marine Fisheries Service, 2020c). Of the 12 shark species observed in shark bycatch, the scalloped hammerhead was considered the most vulnerable to bycatch (Gallagher et al., 2014).

F.4.3 Species Not Listed under the Endangered Species Act

The background information for fish species not listed under the ESA in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.2.3 (Species Not Listed Under the Endangered Species Act) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

F.5 Marine Mammals

F.5.1 General Background

The following topics were updated from the 2018 Final EIS/OEIS:

- Vessel strike and environmental variability information was updated in Section F.5.1.5 and Section F.5.1.5.2, respectively.
- Unusual Mortality Event declared for North Atlantic right whales (*Eubalaena glacialis*) in Canada and the United States.
- NMFS revised the taxonomy and common name for the Gulf of America subspecies of Bryde's whale (*Balaenoptera edeni*) under the ESA. The revision classifies this new species as Rice's whales (*Balaenoptera ricei*). In July, 2023, a Proposed Rule for Critical Habitat in the Gulf of America for Rice's Whales was published in the *Federal Register*.
- A Federal Register Notice by the USFWS announced the initiation of a 5-year status review for polar bears under the ESA.
- NMFS published the proposed amendments to North Atlantic right whale vessel speed restrictions in the Federal Register as an effort to reduce vessel-whale collision potential.
- NMFS published the Proposed Rule for Critical Habitat in the Gulf of America for Rice's Whales in the Federal Register.
- The USFWS released a Proposed Rule that would recognize two subspecies of the West Indian manatee, each receiving separate listings under the ESA. The Florida manatee would be classified as a threatened species with a blanket 4(d) rule, and the Antillean manatee would be classified as endangered.
- The National Oceanic and Atmospheric Administration, with support of the U.S. Navy, is in the process of updating and revising Biologically Important Areas using new methodology and scoring criteria. Final Biologically Important Area designations and manuscripts for the East Coast and Gulf of America are currently pending.

Marine mammals are a diverse group of approximately 132 species (Committee on Taxonomy, 2023). Four main types of marine mammals are recognized: cetaceans (whales, dolphins, and porpoises), pinnipeds (seals, sea lions, and walruses), sirenians (manatees, dugongs, and sea cows), and other marine carnivores (sea otters and polar bears) (Jefferson et al., 2008; Rice, 1998). The order Cetacea is divided into two suborders – Odontoceti and Mysticeti. The different feeding strategies between mysticetes and odontocetes affect their distribution and occurrence patterns (Goldbogen et al., 2015). The toothed whales, dolphins, and porpoises (suborder Odontoceti) range in size from slightly longer than 3.3 ft. (1 m) to more than 60 ft. (18 m) and have teeth, which they use to capture and consume individual prey. The baleen whales (suborder Mysticeti) are universally large (more than 15 ft. [5 m] as adults). They are called baleen whales because, instead of teeth, they have a fibrous structure along the upper jaw made of keratin, a type of protein similar to that found in human fingernails, which enables them to filter or extract food from the water for feeding. They are batch feeders that use baleen instead of teeth to engulf, suck, or skim large numbers of prey, such as small schooling fish, shrimp, or microscopic sea animals (i.e., plankton) from the water or out of ocean floor sediments (Heithaus & Dill, 2009). Mysticetes are further divided into four families, two of which are found in the Study Area (right whales and rorquals) and two that are not found within the Study Area (gray whales and pygmy right whales). Rorquals have a series of longitudinal folds of skin, often referred to as throat grooves, running from below the mouth back toward the navel. Rorquals are slender and streamlined in shape, compared with their relatives the right whales, and most have narrow, elongated pectoral flippers. Detailed reviews of the different groups of cetaceans can be found in Perrin et al. (2009).

Pinnipeds are divided into three families: Phocidae (true seals), Otariidae (fur seals and sea lions), and Odobenidae (walrus). Most marine mammal species live in a marine habitat, though pinnipeds, sea

otters, and polar bears spend time in terrestrial habitats, while manatees and certain dolphin species sometimes occupy freshwater habitats (Jefferson et al., 2015; Rice, 1998). The exact number of formally recognized marine mammal species changes periodically with new scientific understanding or findings (Rice, 1998). For a list of current species classifications, see the formal list *Marine Mammal Species and Subspecies* maintained online by the Society for Marine Mammalogy (Committee on Taxonomy, 2023).

All marine mammals in the United States are protected under the Marine Mammal Protection Act (MMPA), while select species also receive additional protection under the ESA. Within the framework of the MMPA, a marine mammal "stock" is defined as "a group of marine mammals of the same species or smaller taxon (subspecies) in a common spatial arrangement that interbreed when mature" (16 United States Code [U.S.C.] section 1362). Per NMFS guidance, "for purposes of management under the MMPA, a stock is recognized as being a management unit that identifies a demographically independent biological population" (National Marine Fisheries Service, 2016a). However, in practice, recognized management stocks may fall short of this ideal because of a lack of information or, in some cases, stocks may even include multiple species in a management unit.

The ESA provides for listing species, subspecies, or DPSs of species, all of which are referred to as "species" under the ESA. The Interagency Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the ESA (61 *Federal Register* 4722, February 7, 1996) defines a DPS as, "any subspecies of fish or wildlife or plants, and any DPS of any species of vertebrate fish or wildlife which interbreeds when mature." If a population meets the criteria to be identified as a DPS, it is eligible for listing under the ESA as a separate species (National Marine Fisheries Service, 2016a). However, MMPA stocks do not necessarily coincide with DPSs under the ESA (81 *Federal Register* 62660, September 8, 2016).

For summaries of the general biology and ecology of marine mammals beyond the scope of this section, see Rice (1998), Twiss and Reeves (1999), Hoelzel (2002), Berta et al. (2006), (Jefferson et al., 2008), Jefferson et al. (2015), and Committee on Taxonomy (2008). Additional species profiles and information on the biology, life history, distribution, and conservation of marine mammals can also be found through the following organizations:

- NMFS Office of Protected Resources (includes species distribution maps)
- Ocean Biogeographic Information System-Spatial Ecological Analysis of Megavertebrate Populations (known as OBIS-SEAMAP) species profiles
- National Oceanic and Atmospheric Administration Cetacean Density and Distribution Mapping Working Group
- International Whaling Commission
- International Union for Conservation of Nature, Cetacean Specialist Group
- Marine Mammal Commission
- Society for Marine Mammalogy

Detailed reviews of the different groups of cetaceans can be found in Jefferson et al. (2015), Heithaus and Dill (2009), and Perrin and Geraci (2002).

Mammal species that are extralimital to the Study Area, including bowhead whale, narwhal, beluga whale, ringed seal, bearded seal, walrus, and polar bear, are unlikely to be exposed to stressors under the Proposed Action and are not included in the analysis for this Final Supplemental EIS/OEIS (See 2018 Final EIS/OEIS for additional information on these species).

F.5.1.1 Group Size

Many species of marine mammals, particularly odontocetes, are highly social animals that spend much of their lives in groups called "pods." The sizes and structures of these pods are dynamic and, based on the species, can range from several individuals to several thousand individuals. Similarly, aggregations of mysticete whales may form during particular breeding or foraging seasons, although they do not persist through time as a social unit. Marine mammals that live or travel in groups are more likely to be detected by observers, and group size characteristics are incorporated into many of the density and abundance calculations. Group size characteristics are also incorporated into acoustic effects modeling to represent a more realistic patchy distribution for the given density estimates. The behavior of aggregating into groups is also important for the purposes of mitigation and monitoring, since animals that occur in larger groups have an increased probability of being detected. A comprehensive and systematic review of relevant literature and data was conducted using available published and unpublished literature, including journals, books, technical reports, survey cruise reports; and raw data from cruises, theses, and dissertations.

F.5.1.2 Habitat Use

Marine mammals occur in every marine environment in the Study Area, from coastal and inshore waters to the open ocean. Their distribution is influenced by multiple factors, primarily patterns of major ocean currents, bottom relief, water temperature, water depth, and salinity, which, in turn, affect prey distribution and productivity. The continuous movement of water from the ocean bottom to the surface creates a nutrient-rich, highly productive environment for marine mammal prey in upwelling zones (Jefferson et al., 2015). For most cetaceans, prey distribution, abundance, and quality largely determine where they occur at any specific time (Heithaus & Dill, 2009). Most of the baleen whales are migratory, but many of the toothed whales do not migrate in the strictest sense. Instead, they undergo seasonal dispersal or shifts in density distribution and occupy habitats preferable for feeding, breeding, and other important behaviors. Pinnipeds occur mostly in coastal habitats or over continental shelves, while manatees and polar bears are strongly associated with coastal waters as habitat for reproducing, resting, and, in some cases, feeding, though polar bears can also range far offshore.

In 2011, the National Oceanic and Atmospheric Administration convened a working group to map cetacean density and distribution within U.S. waters (Ferguson et al., 2015; National Oceanic and Atmospheric Administration, 2022). The specific objective of the Cetacean Density and Distribution Mapping Working Group was to create comprehensive and easily accessible regional cetacean density and distribution maps that are time and species specific. Separately, to augment this more quantitative density and distribution mapping and provide additional context for marine mammal impact analyses, the Cetacean Density and Distribution Mapping Working Group also identified (through literature search, current science compilation, and expert elicitation) areas of importance for cetaceans, such as reproductive areas, feeding areas, migratory corridors, and areas in which small or resident populations are concentrated. Areas identified through this process have been termed as biologically important areas (Ferguson et al., 2015; Van Parijs, 2015).

It is important to note that biologically important areas were not meant to define exclusionary zones or serve as sanctuaries or marine protected areas and have no direct or immediate regulatory consequences. Ferguson et al. (2015) outlines the envisioned purpose for the biologically important area designations. The identification of biologically important areas is intended to be a "living" reference based on the best available science at the time, which has been maintained and updated with the most up-to-date information available. As new empirical data are gathered, these referenced areas can be calibrated to determine how closely they correspond to the reality of a species' habitat uses and

updated as necessary (see National Oceanic and Atmospheric Administration (2022)). This evolution may include new information that indicates a biologically important area is no longer important to an essential life function, or may show that a species may migrate to different areas due to environmental changes. Products of the initial assessment process were compiled and published in March 2015 (Ferguson et al., 2015; LaBrecque et al., 2015a, 2015b).

In 2015, 18 biologically important areas were identified for seven species within the Study Area (LaBrecque et al., 2015a, 2015b): minke whales, sei whales, fin whales, North Atlantic right whales, humpback whales, harbor porpoises, and bottlenose dolphins. The National Oceanic and Atmospheric Administration is currently in the process of updating biologically important areas for cetaceans based on a new application and scoring system by Harrison et al. (2023). However, updates for the East Coast and Gulf of America regions have not yet been made available.

Biologically important areas are considered when developing mitigation measures because they are important areas for feeding, reproduction, and migration; or because they have a small, resident population within the Study Area.

F.5.1.3 Dive Behavior

Most marine mammals spend a considerable portion of their lives underwater while traveling or feeding. Some species of marine mammals have developed specialized adaptations to allow them to make deep dives lasting over an hour, primarily for foraging on deep-water prey such as squid. Other species spend the majority of their lives close to the surface and make relatively shallow dives. The diving behavior of a particular species or individual has implications for an observer's ability to detect them for purposes of mitigation and monitoring. In addition, their relative distribution through the water column is an important consideration when conducting acoustic exposure and direct strike analyses. Information and data on diving behavior for each marine mammal species were compiled and summarized in a technical report (U.S. Department of the Navy, 2017) that provides estimates of time at depth based on available research. The dive data and group size information compiled in this technical report was incorporated into the Navy acoustic effects modeling.

F.5.1.4 Hearing and Vocalization

Refer to Appendix D (Acoustic and Explosive Impacts Supporting Information) for summary and details regarding the hearing and vocalization of marine mammals.

F.5.1.5 General Threats

Marine mammal populations can be influenced by various natural factors and human activities. There can be direct effects, such as from disease or activities such as hunting and whale watching, or indirect effects, such as reduction in prey availability or lowered reproductive success of individuals. Twiss and Reeves (1999) and the National Marine Fisheries Service (2011a) provide a general discussion of marine mammal conservation and the threats they face. New research published on threats to marine mammals does not dispute information in the 2018 Final EIS/OEIS, but does provide verification of emerging threats, and updates on existing threats. The information in the 2018 Final EIS/OEIS remains valid for qualitative effects analysis of general threats to marine mammals.

F.5.1.5.1 Vessel Strike

Ship strikes are a growing issue for most large marine mammals and mortality is a major concern for endangered species, especially those that occupy areas with high levels of vessel traffic, because the likelihood of vessel strike is greater (Currie et al., 2017; Van der Hoop et al., 2013; Van der Hoop et al., 2015). Marine mammals that spend increased amounts of time at or near the surface face an increased

risk of a collision. Vessel strike could result in debilitating or fatal impacts that include blunt force injuries (fractures, abrasions, and contusions) or sharp force injuries (cuts, gashes, and lacerations) (Campbell-Malone et al., 2008; Hill et al., 2017; Rommel et al., 2007; Schoeman et al., 2020). Collision risk is also increased for species inhabiting coastal waters of urbanized areas with increased traffic of small- and medium-sized vessels (Neilson et al., 2012).

The reasons that marine mammals are struck by vessels are likely several fold, including acoustic shadowing of an approaching vessel (i.e., the vessel body interferes with sound from the propulsion unit propagating forward), complex acoustic propagation conditions (Gerstein et al., 2005), and vessels approaching at speeds where avoidance is difficult (Martin et al., 2015; McKenna et al., 2015). Additionally, research has indicated the risk of an animal-vessel collision has a greater likelihood of occurrence with increases vessel traffic transiting through areas containing high densities of marine mammals (Cates et al., 2017; Redfern et al., 2019; Rockwood et al., 2017). However, no single factor exists to explain differences in vessel collision risk between species or individuals, and further species-specific research is necessary to better quantify this variability (Schoeman et al., 2020).

The severity of injuries is typically dependent on the size and speed of the vessel (Knowlton & Kraus, 2001; Laist et al., 2001; Vanderlaan & Taggart, 2007). An examination of all known ship strikes from all shipping sources (civilian and military) indicates vessel speed is a principal factor in whether a strike is fatal (Jensen & Silber, 2003; Knowlton & Kraus, 2001; Laist et al., 2001; Vanderlaan & Taggart, 2007). In assessing records in which vessel speed was known, Laist et al. (2001) found a direct relationship between the occurrence of a whale strike and the speed of the vessel involved in the collision. The authors concluded that most fatalities occurred when a vessel was traveling more than 13 knots. Jensen and Silber (2003) detailed 292 records of known or probable ship strikes of all large whale species from 1975 to 2002. Of these, vessel speed at the time of collision was reported for 58 cases. Of these cases, 39 (or 67 percent) resulted in serious injury or death. Operating speeds of vessels that struck various species of large whales ranged from 2 to 51 knots. The majority (79 percent) of these strikes occurred at speeds of 13 knots or greater. The average speed that resulted in serious injury or death was 18.6 knots (Jensen & Silber, 2003). Pace and Silber (2005) found that the probability of death or serious injury increased rapidly with increasing vessel speed. Specifically, the predicted probability of serious injury or death increased from 45 percent to 75 percent as vessel speed increased from 10 to 14 knots and exceeded 90 percent at 17 knots. Higher speeds during collisions result in greater force of impact, but higher speeds also appear to increase the chance of severe injuries or death by pulling whales toward the vessel. Computer simulation modeling showed that hydrodynamic forces pulling whales toward the vessel hull increase with increasing speed (Clyne et al., 1999; Knowlton et al., 1995; Silber et al., 2010).

In the Northwest Atlantic, vessel strikes are thought to be a leading cause of anthropogenic mortality in humpback whales, North Atlantic right whales, fin whales, and other large whale species (Hayes et al., 2022; Stepanuk et al., 2021). Since 2017, ongoing Unusual Mortality Events, also known as a mass die-off, have been declared for the North Atlantic right whales (National Marine Fisheries Service, 2024d) and humpback whales along the Atlantic coast in response to an increase in strandings (National Marine Fisheries Service, 2024b). While not every deceased individual was able to be examined post-mortem, a large proportion of those that were documented suggest pre-mortem entanglement or vessel strike to be the preliminary cause of mortality (Hayes et al., 2023; National Marine Fisheries Service, 2024d).

In August of 2022, NMFS proposed changes to the North Atlantic right whale vessel speed regulations (87 *Federal Register* 46921). Anthropogenic-induced trauma for both adults and juveniles was the leading cause of mortality from 2003 to 2018 (Sharp et al., 2019), and mortality rates continue to outnumber reproductive output, considering there are less than 100 reproductively active females in

the population. Adjustments outlined in the Proposed Rule include: (1) spatial and temporal modifications of current speed restriction areas known as Seasonal Management Areas, (2) speed restrictions for vessels between 35 ft. (10.7 m) and 65 ft. (19.8 m), (3) the creation of a Dynamic Speed Zone Framework for the implementation of speed restrictions for the presence of whales outside of Seasonal Management Areas, and (4) updates to the speed rule's safety deviation process. These changes are considered essential to mitigate the ongoing species decline and further enhance conservation measures (87 *Federal Register* 46921).

F.5.1.5.2 Environmental Variability

As the state of the global climate remains in flux, marine mammal populations are exposed to the ongoing effects of changing oceanic conditions, which is an emerging factor pertaining to marine mammal conservation and management (Baker et al., 2016; Fleming et al., 2016; Salvadeo et al., 2010; Shirasago-Germán et al., 2015; Silber et al., 2017; Simmonds & Eliott, 2009). The ecological impacts of oceanographic change have been documented to affect marine mammal species directly through habitat loss (especially for species that depend on ice or terrestrial areas) or gain, which may result in shifting distribution to match physiological tolerance under changing environmental conditions (Silber et al., 2017). Indirect effects to marine mammals include changes in prey quality and quantity, shifting prey distribution, as well as oceanographic variability (Gulland et al., 2022; van Weelden et al., 2021). Research by (Lettrich et al., 2023) found that 72 percent of U.S. pinniped and cetacean populations in the western North Atlantic, Gulf of America, and Caribbean Sea are considered highly susceptible to climate-induced ecological change. Specifically, exposure to changes in water temperature, pH, and dissolved oxygen are leading factors that indirectly increase marine mammal climate vulnerability in terms of prey distribution, availability, and nutritional quality, as well as acoustic propagation, and habitat preference (Lettrich et al., 2023). For example, North Atlantic right whales have exhibited a summertime divergence from traditional foraging habitats in the Gulf of Maine, Bay of Fundy, and Scotian Shelf. In response to climate-induced shifts in prey distribution, a sizeable portion of the population now feeds in the southern Gulf of St. Lawrence, which increases the whales' susceptibility to vessel strikes and gear entanglements (Meyer-Gutbrod et al., 2023; Meyer-Gutbrod et al., 2021; Record et al., 2019).

Species or populations with limited ranges, specialized diets, or similarly limiting ecological features may be particularly vulnerable to climate-induced ecosystem shifts (Baker et al., 2016), especially if species management relies on historical distributions (Record et al., 2019). In more northern latitudes, the loss of sea ice coverage and changing pack ice habitat are impacting marine mammals species that are dependent on ice for resting, foraging, and reproduction (Jay et al., 2012; Laidre et al., 2015; Rode et al., 2014). Changes in prey can influence marine mammal foraging success, which in turn affects reproductive success and survival. Warmer ocean temperatures may appear to benefit cold-sensitive marine species, such as the Florida manatee; however, findings suggest that major threats to manatee populations, including vessel strikes from increased vessel traffic and harmful algal blooms, would likely increase with continued fluctuations in ocean conditions (Edwards, 2013).

Harmful algal blooms may become more prevalent in warmer ocean temperatures with increased salinity levels, such that blooms will begin earlier, last longer, and cover a larger geographical range; with a projected potential to shift northward. (Edwards, 2013; Gobler, 2020; Moore, 2008; Townhill et al., 2018). Similarly, the neurotoxins produced from these blooms are known to have detrimental consequences on species across the marine food web including species of fish, marine mammals, invertebrates, and humans (Griffith & Gobler, 2020; Landsberg, 2002). For example, warming ocean waters have been linked to the spread of harmful algal blooms into the North Pacific where waters had

previously been too cold for most of these algae to thrive. The spread of the algae and associated blooms has led to disease in marine mammals in locations where algae-caused diseases had not been previously known (Lefebvre et al., 2016).

Environmentally influenced ecological change may indirectly affect marine mammals through changes in human behavior, such as increased shipping and oil and gas extraction, which benefit from sea ice loss (Alter et al., 2010). Ultimately, impacts from these changes may result in an intensification of current and ongoing threats to marine mammals (Edwards, 2013). In addition, the ability of marine mammals to alter behaviors may serve as a buffer against measurable impacts and could delay or mask any adverse effects until critical thresholds are reached (Baker et al., 2016).

Marine mammals are influenced by climate-related phenomena, such as storms and other extreme weather patterns such as the 2015 to 2016 El Niño in the ocean off the west coast of the United States. Generally, little is known about how large storms and other weather patterns affect marine mammals other than the fact that mass strandings (when two or more marine mammals become beached or stuck in shallow water) sometimes coincide with hurricanes, typhoons, and other tropical storms (Bradshaw et al., 2006; Marsh, 1989; Rosel & Watts, 2008) or other oceanographic conditions. There have also been correlations in time and space between strandings and the occurrence of earthquakes. However, there has been no scientific investigation demonstrating evidence for or against a relationship between earthquakes and the occurrence of marine mammal strandings. Indirect impacts may include altered water chemistry in estuaries (low dissolved oxygen or increased nutrient loading), causing quantifiable die-offs of fish species (Burkholder et al., 2004), as well as changing prey distribution and availability for cetaceans (Stevens et al., 2006). Human responses to extreme weather events may indirectly affect behavior and reproductive rates of marine mammals. For example, Miller et al. (2010) reported an increase in reproductive rates in bottlenose dolphins in the Mississippi Sound after Hurricane Katrina, presumably resulting from an increase in fish abundance due to a reduction in fisheries landings, a decrease in recreational and commercial boat activities (National Marine Fisheries Service, 2007a), and an increase in the number of reproductively active females available during the breeding seasons following the storm. Smith et al. (2013) supplemented the findings from this study and documented a marked increase in foraging activity in newly identified foraging areas that were observed during the 2-year study period after the storm.

Habitat deterioration and loss is a major concern for almost all coastal and inshore species of marine mammals, with effects ranging from depleting a habitat's prey base to the complete loss of habitat (Ayres et al., 2012; Kemp, 1996; Smith et al., 2009). Many researchers predict that if oceanic temperatures continue to rise with an associated effect on marine habitat and prey availability, then either changes in foraging or life history strategies, including poleward shifts in many marine mammal species distributions, should be anticipated (Alter et al., 2010; Fleming et al., 2016; Ramp et al., 2015; Salvadeo et al., 2010; Sydeman et al., 2015). Poloczanska et al. (2016) analyzed impact data that integrated multiple climate-influenced changes in ocean conditions (i.e., temperature, acidification, dissolved oxygen, and rainfall) to assess anticipated changes to a number of key ocean fauna across representative areas.

In relation to the Study Area, the density of krill, an important prey item for marine mammals, has likely decreased in the southwest Atlantic because phytoplankton, a food source for krill, are also declining with warming temperatures and decreasing sea ice extent (Poloczanska et al., 2016). However, Poloczanska et al. (2016) also reports that zooplankton have displayed the highest rate of range expansion within the northeast Atlantic, supporting the general expectation that marine species will shift poleward within open oceans. On the other hand, for the northern Gulf of America where

coastlines prohibit poleward distributional shifts, marine species distributions, including fish and marine invertebrates, have displayed a depth shift toward cooler waters (Poloczanska et al., 2016). A similar marine mammal distributional response may occur based on observations made on select prey species, but marine mammal responses to environmental variability are currently unknown (Poloczanska et al., 2016).

Copepod distribution is also being affected by changing temperatures in the Northwest Atlantic. It is predicted that the North Atlantic ecosystem will become more favorable to carnivorous copepods in the next century while in contrast the prevalence of herbivorous copepods will diminish as waters become warmer (McGinty et al., 2021). Species turnover in copepod communities are predicted to range from 5 to 75 percent with the highest turnover rates concentrated in regions of pronounced temperature increases and decreases, such as the cooling, freshening area in the subpolar North Atlantic south of Greenland, and in an area of significant warming along the Scotian shelf (McGinty et al., 2021). Large copepods (greater than 2.5 mm), a crucial food source for whales, may have an advantage in the cooling waters due to their life-history strategy (McGinty et al., 2021). Deoxygenation, another consequence of changing ocean conditions and increasing sea temperatures, has also been shown to reduce copepod growth rates (Roman & Pierson, 2022).

F.5.2 Endangered Species Act-Listed Species

As shown in Table 3.7-1 (Marine Mammal Occurrence within the Study Area), there are marine mammal species and applicable stocks listed under the ESA and occurring within in the Study Area.

F.5.2.1 North Atlantic Right Whale (*Eubalaena glacialis*)

F.5.2.1.1 Status and Management

The North Atlantic right whale is considered one of the most critically endangered populations of marine mammals in the world (Clapham et al., 1999; National Marine Fisheries Service, 2017). The size of this stock is considered extremely low relative to the Optimum Sustainable Population in the U.S. Atlantic Exclusive Economic Zone, and this species is listed as endangered under the ESA. A recovery plan for the North Atlantic right whale is in effect (National Marine Fisheries Service, 2005). The North Atlantic right whale has been protected from commercial whaling since 1949 by the International Convention for the Regulation of Whaling (62 Stat. 1716; 161 United Nations Treaty Series 72). Since the Convention's inception, the United States has remained a member nation under the Whaling Convention Act of 1949 (16 U.S.C. § 916 - 916l). An ESA status review by the National Marine Fisheries Service in 2017 concluded that the western North Atlantic stock remains endangered and has been declining since 2011 (Pace III et al., 2017). Relative to populations of southern right whales, there are also concerns about growth rate, percentage of reproductive females, and calving intervals in the North Atlantic right whale population. The total level of human-caused mortality and serious injury is unknown, but average annual detected (i.e., observed) human-caused mortality from 2014 through 2018 was 8.15 (Hayes et al., 2021; Henry et al., 2021). Any mortality or serious injury to individuals within this stock should be considered significant. This is a strategic stock because the average annual human-related mortality and serious injury rates exceed potential biological removal and because the North Atlantic right whale is an endangered species.

F.5.2.1.2 Habitat and Geographic Range

The western North Atlantic right whale population ranges primarily from calving grounds in coastal waters of the southeastern United States to summer feeding grounds in the Great South Channel, Jordan Basin, Georges Bank along its northeastern edge, Cape Cod and Massachusetts Bays, the Bay of

Fundy, and the Roseway Basin on the Scotian Shelf. However, recent acoustic data suggests broad-scale use of the U.S. Eastern seaboard during much of the year (Davis et al., 2017). Movements within and between habitats are extensive. Telemetry data show lengthy and somewhat distant excursions, including into deep water off the continental shelf (Baumgartner & Mate, 2005; Mate et al., 1997).

LaBrecque et al. (2015a) identified three seasonal right whale feeding areas located in or near the Study Area (Figure F.5-1) based on vessel and aerial survey efforts: (1) February to April in Cape Cod Bay and Massachusetts Bay, (2) April to June in the Great South Channel and on the northern edge of Georges Bank, and (3) June to July and October to December on Jeffreys Ledge in the western Gulf of Maine. A potential mating area was identified in the central Gulf of Maine (from November through January) based on a demographic study of North Atlantic right whale habitats, and the migratory corridor area along the U.S. East Coast between the southern calving grounds and northern feeding areas. The migratory corridor was substantiated through vessel- and aerial-based survey data, photo-identification data, radio-tracking data, and expert judgment. Reproductive female North Atlantic right whales generally migrate south to calving grounds in November and December and migrate north to the feeding areas in March and April.

An important shift in habitat use patterns in 2010 was highlighted in an analysis of right whale acoustic presence along the U.S. Eastern seaboard from 2004 to 2014 (Davis et al., 2017). This shift was also reflected in visual survey data in the greater Gulf of Maine region. Between 2012 and 2016, visual surveys detected fewer individuals in the Great South Channel and the Bay of Fundy (Davies et al., 2019), while the number of individuals using Cape Cod Bay in spring increased (Mayo et al., 2018). In addition, right whales abandoned the Jordan Basin in the central Gulf of Maine in winter (Cole et al., 2013) but have since been seen in large numbers in a region south of Martha's Vineyard and Nantucket Islands (Leiter et al., 2017), an area outside of the 2016 Northeastern U.S. Foraging Area Critical Habitat. Since 2013, increased detections and survey effort in the Gulf of St. Lawrence indicate right whale presence in late spring through early fall (Cole et al., 2016; Khan et al., 2016; Khan et al., 2018; Simard et al., 2019). Aerial surveys of the Gulf of St. Lawrence between 2015 and 2019 showed that 40 percent of the population now utilizes this habitat area with potential residencies up to 5 months (Crowe et al., 2021). Updated density information quantifies and supports the distribution shifts in this species between 2003-2009 and 2010-2020, as well as correlates positively with acoustic detections for this species along the U.S. Eastern Seaboard (Roberts et al., 2024; Salisbury et al., 2015).

The winter range for North Atlantic right whales includes the Southeast U.S. Continental Shelf Large Marine Ecosystem. (LaBrecque et al., 2015a) used habitat analyses of sea surface temperature, water depth, and aerial sighting data to delineate a calving area in the southeast Atlantic, extending from Cape Lookout, North Carolina, to Cape Canaveral, Florida, that overlaps with the Study Area (Figure F.5-2).

This area, identified as biologically important, encompasses waters from the shoreline to the 25-m isobath from mid-November through late April. Passive acoustic monitoring conducted offshore of Cape Hatteras and in Onslow Bay, North Carolina, in 2011 and 2007, respectively, confirmed winter occurrence of North Atlantic right whales in these areas (McLellan et al., 2014).

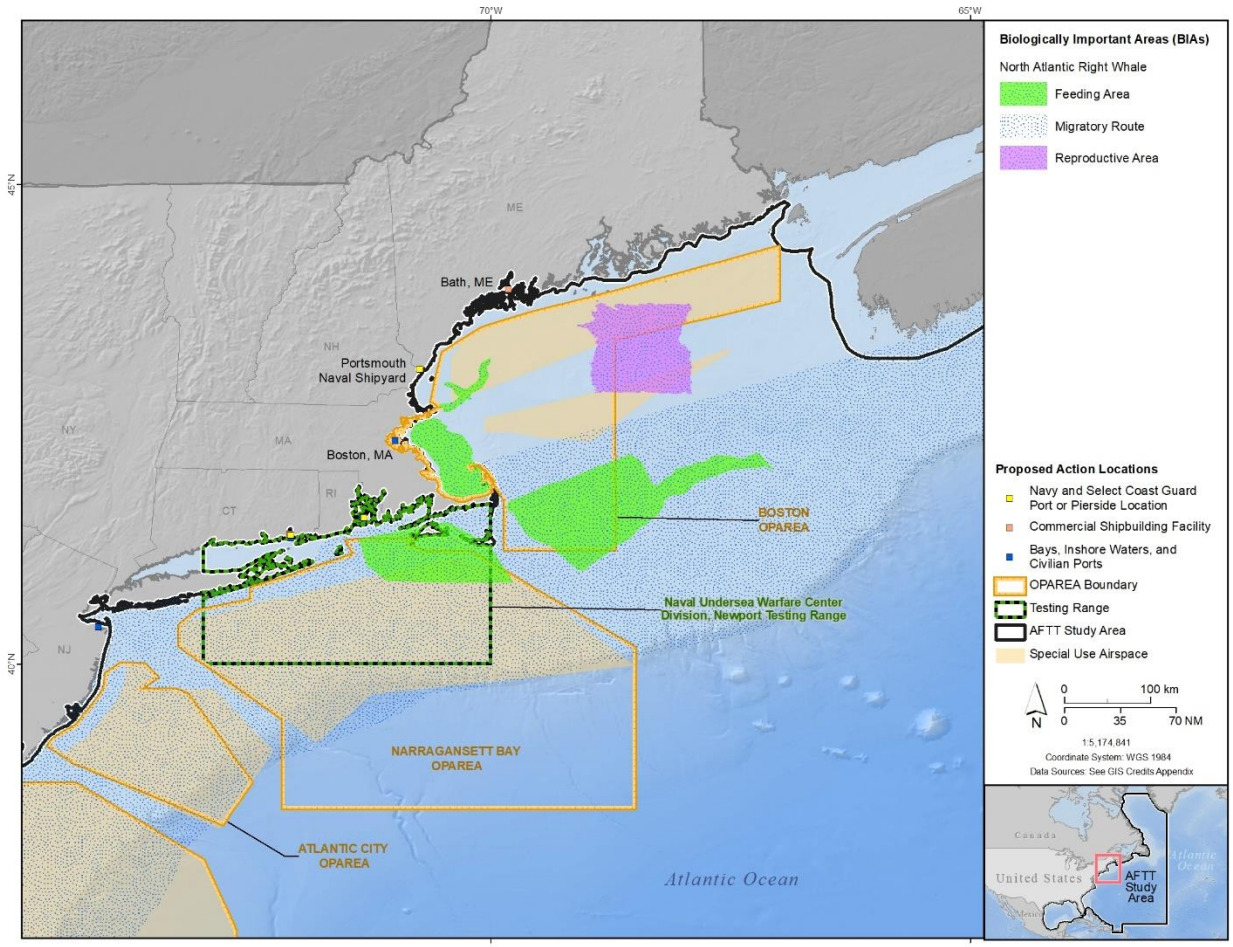


Figure F.5-1: Biologically Important Areas for North Atlantic Right Whales in the Study Area – Northeast

Four right whale sightings were documented during monthly aerial surveys approximately 50 mi. (80 km) offshore of Jacksonville, Florida, from 2009 to May 2016, including a female that was observed giving birth in 2010 (Foley et al., 2011). These sightings occurred well outside existing ESA-designated critical habitat (Foley et al., 2011; U.S. Department of the Navy, 2011). While sightings have generally occurred within nearshore continental shelf waters off northeastern Florida and southeastern Georgia, detections of North Atlantic right whales were recorded in deeper waters during these monitoring efforts (Davis et al., 2017; Kumar et al., 2013; Norris et al., 2012), suggesting that distribution of this species extends further offshore than sighting data previously indicated (Oswald et al., 2016). A noteworthy number of right whales (36 unique individuals, or approximately 10 percent of the estimated population at the time) were seen mid-shelf and offshore of Virginia during the 2022-2023 winter months and were sighted in the same areas on multiple days of survey effort (Aschettino et al., 2024), indicating that the whales are not simply migrating through the area. Recent studies have indicated that migration in North Atlantic right whales is "condition-dependent partial migration," where full migration to the breeding grounds can be skipped if tradeoffs such as reproductive costs or foraging opportunities are present for an individual whale (Gowan et al., 2019). Habitat shifts such as ocean warming are influencing right whale movement overall (Meyer-Gutbrod et al., 2021).

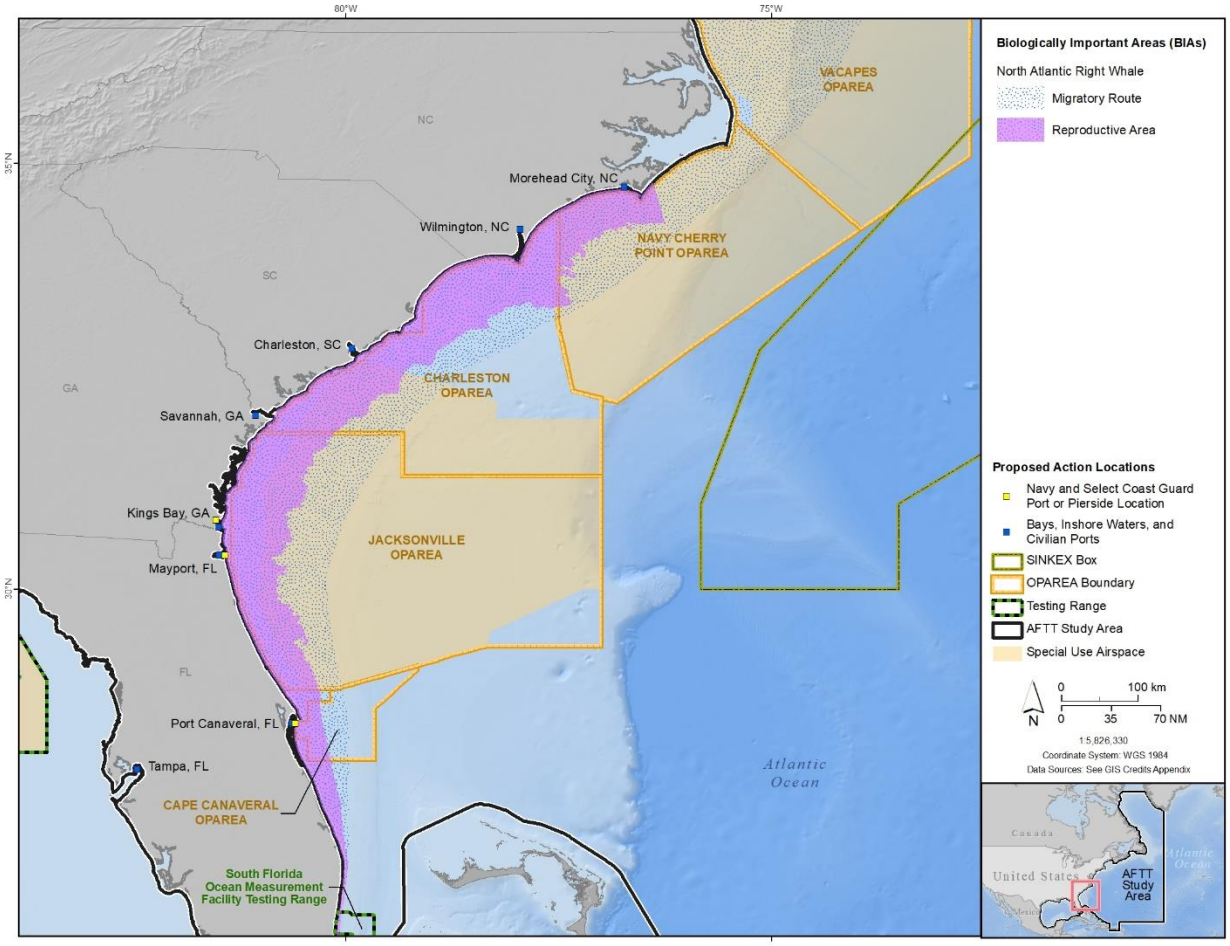


Figure F.5-2: Biologically Important Areas for North Atlantic Right Whales in the Study Area – Southeast

Right whales have occasionally been recorded in the Gulf of Mexico Large Marine Ecosystem (Moore & Clark, 1963; Ward-Geiger et al., 2011), but their occurrence there is likely extralimital. The few published records from the Gulf of America represent either distributional anomalies, normal wanderings of occasional animals, or a more extensive historical range beyond the currently known calving and wintering ground in the waters of the southeastern United States (Moore & Clark, 1963; Ward-Geiger et al., 2011).

Two critical habitats (Figure 3.7-1, Designated Critical Habitat for North Atlantic Right Whales in the Study Area) are designated by NMFS for North Atlantic right whales to encompass physical oceanographic and biological features essential to conservation of the species (81 *Federal Register* 4838). The northern foraging unit includes the Gulf of Maine and Georges Bank region where oceanographic and bathymetric conditions favor the distribution and aggregation of *Calanus finmarchicus*, a fundamental prey source. The southern calving unit includes the coast of North Carolina, South Carolina, Georgia, and Florida. The essential features for this unit include calm sea surface conditions, a sea surface temperature range between 7 to 17˚C, and depths of 6 to 28 m (81 *Federal Register* 4838). These two ESA-designated critical habitats were designated in January 2016 to replace three smaller previously designated critical habitats (Cape Cod Bay/Massachusetts

Bay/Stellwagen Bank, Great South Channel, and the coastal waters of Georgia and Florida in the southeastern United States) that had been designated by NMFS in 1994 (81 *Federal Register* 4838). Two additional critical habitat areas in Canadian waters, Grand Manan Basin and Roseway Basin, were identified in Canada's final recovery strategy for the North Atlantic right whale (Brown et al., 2009).

F.5.2.1.3 Population Trends

Examination of the abundance estimates for the years 1990–2011 (see Hayes et al., 2022, Figures 2a, 2b) suggests that abundance increased at about 2.8 percent per annum from posterior median point estimates of 270 individuals in 1990 to 481 in 2011, but that there was a 100 percent chance that abundance declined from 2011 to 2019 when the final estimate was 368 individuals (Hayes et al., 2022). The overall abundance decline between 2011 and 2019 was 23.5 percent (confidence interval = 21.4 percent to 26.0 percent) (Hayes et al., 2022). There has been a considerable change in right whale habitat use patterns in areas where most of the population had been observed in previous years (e.g., Davies et al., 2019), exposing the population to new anthropogenic threats (Hayes et al., 2018). Pace III et al. (2021) found a significant decrease in mean survival rates since 2010, correlating with the observed change in area-use patterns. There were 17 right whale mortalities reported in 2017 (Daoust et al., 2017). This number exceeds the largest estimated mortality rate during the past 25 years. Further, despite high survey effort, only five and zero calves were detected in 2017 and 2018, respectively. In 2019, seven calves were identified (Pettis et al., 2022). Calf numbers slightly improved in 2020, 2021, and 2022 with 10, 20, and 15 calves, respectively (National Marine Fisheries Service, 2024f).

F.5.2.1.4 Predator and Prey Interactions

Killer whales and large sharks are known predators of the North Atlantic Right Whale. Calves and juveniles are known to be the primary target of killer whales, and analysis of scars on some individuals suggests that they are also attacked by false killer whales (Jefferson et al., 2015; Kenney, 2009).

The North Atlantic right whale feeds primarily on the copepod *Calanus finmarchicus* (a type of zooplankton) and on other copepods and small invertebrates, such as krill and larval barnacles (Jefferson et al., 2015). Right whales are skim feeders and are known to feed below or at the surface (Kenney et al., 2001) or within a few meters of the seafloor on near-bottom aggregations of copepods (Baumgartner, 2009; Baumgartner et al., 2009; Warren, 2009). The copepod *C. finmarchicus* is one of the most common species of prey found throughout the North Atlantic right whale's range (Baumgartner & Mate, 2003; Jefferson et al., 2015).

F.5.2.1.5 Species-Specific Threats

Primary sources of human-caused serious injury and mortality include entanglement in fishing gear and ship strikes. The estimated annual rate of total mortality is 18.6 animals for the period 2013 through 2017 (Pace, 2021). This estimate accounts for detected mortality and serious injury, as well as undetected (cryptic) mortality within the population. The detection rate of mortality and serious injury for the 5-year period 2013 through 2017 was 51 percent of the model's annual mortality estimates (Pace, 2021).

Entanglement records from 1990 through 2007 maintained by NMFS Northeast Regional Office included 46 confirmed right whale entanglements, including right whales in weirs (stationary nets fixed in place), gillnets, and trailing line and buoys. From 2017 to 2023, 9 mortalities, 22 serious

injuries, and 31 sub-lethal injuries have been attributed to entanglement (National Marine Fisheries Service, 2024d).

Because whales often free themselves of gear following an entanglement event, scarring may be a better indicator of fisheries interaction than entanglement records. A review of scars detected on identified individual right whales over a period of 30 years (1980 to 2009) documented 1,032 definite, unique entanglement events on the 626 individual whales identified (Knowlton et al., 2012). Most individual whales (83 percent) were entangled at least once, and almost half of them (306 of 626) were definitely entangled more than once. About a quarter of the individuals identified in each year (26 percent) were entangled during that year. Juveniles and calves were entangled at higher rates than were adults. Scarring rates suggest that entanglements are occurring at about an order of magnitude greater than that detected from observations of whales with gear on them.

Ship strikes pose a particularly serious threat to the North Atlantic right whale. Vessel speed as well as angle of approach can influence the severity of ship strikes (Silber et al., 2010). Research shows that the probability of right whales dying after being struck by a ship is more than 80 percent when a vessel is traveling at 15 knots or more; when speeds are reduced to 10 knots or less, the chance of mortality drops to just above 20 percent. To reduce the number of ship strikes, NMFS has established regulations (73 *Federal Register* 60173) imposing speed restrictions in seasonal management areas for commercial ships 65 ft. or longer. For additional detail on ship strikes and right whales, refer to Section 3.7.3.4 (Physical Disturbance and Strike Stressors).

F.5.2.2 Blue Whale (*Balaenoptera musculus*)

F.5.2.2.1 Status and Management

Western North Atlantic blue whales are listed as endangered under the ESA and designated as a depleted and strategic stock under the MMPA. A final recovery plan was published for the blue whale in U.S. waters in November 2020 (National Marine Fisheries Service, 2020b). Blue whales in the western North Atlantic are classified as a single stock (Hayes et al., 2021).

Widespread whaling over the last century is believed to have decreased the worldwide population to approximately 1 percent of its pre-whaling population size, although some authors have concluded that their pre-whaling population size was about 200,000 animals (Branch, 2007; Širović et al., 2004). There was a documented increase in the blue whale population size in some areas between 1979 and 1994, but there is no evidence to suggest an increase in the population since then (Barlow, 1994; Barlow & Taylor, 2001; Carretta et al., 2010).

F.5.2.2.2 Habitat and Geographic Range

The distribution of the blue whale in the western North Atlantic generally extends from the Arctic to at least mid-latitude waters. Blue whales are most frequently sighted in the waters off eastern Canada, with the majority of recent records from the Gulf of St. Lawrence. Members of the North Atlantic population spend much of their time in continental shelf waters from eastern Canada (near the Quebec north shore) to the St. Lawrence Estuary and Strait of Belle Isle. Sightings were reported along the southern coast of Newfoundland during late winter and early spring (Reeves et al., 2004). Blue whales may be found in Labrador Current, North Atlantic Gyre, and Gulf Stream open-ocean areas. Migratory movements in the western North Atlantic Ocean are largely unknown. Acoustic data indicate that blue whales winter as far north as Newfoundland and as far south as Bermuda and Florida, and they have been sighted along the mid-Atlantic ridge (Ryan et al., 2013).

The blue whale is best considered as an occasional visitor in U.S. Atlantic Exclusive Economic Zone waters, which may represent the current southern limit of its feeding range (Cetacean and Turtle Assessment Program, 1982). Historical blue whale observations collected by Reeves et al. (2004) show a broad longitudinal distribution in tropical and warm temperate latitudes during the winter months, with a narrower, more northerly distribution in summer. Blue whales tagged in the Gulf of St. Lawrence in late fall left the St. Lawrence Estuary and used habitat more than 1,000 km offshore, as well as shelf and coastal waters of the eastern United States and Canada (Lesage et al., 2016).

Although the exact extent of their southern boundary and wintering grounds are not well understood, blue whales are occasionally found in waters off the U.S. Atlantic coast (Waring et al., 2013). Yochem and Leatherwood (1985) summarized records that suggested an occurrence of this species south to Florida and the Gulf of America. Blue whale strandings have been recorded as far south as the Caribbean and the Gulf of America (Waring et al., 2010). Monthly aerial surveys were conducted offshore of Cape Hatteras (2011 to 2017) and Onslow Bay (2007 to 2011), North Carolina, with no documented visual sightings of blue whales (McLellan, 2017). Engelhaupt et al. (2020) reported two sightings of blue whales off the coast of Virginia in April 2018 and February 2019, between 100 and 135 km offshore; the whale sighted in February was seen feeding with a congregation of fin whales. Acoustic monitoring has also been conducted in the same region since 2011 and resulted in the detections of blue whales on bottom-mounted high-frequency acoustic recording packages (McLellan et al., 2014; Read et al., 2014). Davis et al. (2020) documented acoustic detections of blue whales from North Carolina north to the Davis Strait region year-round between 2004 and 2014, with a shift northward in years after 2010.

Critical habitat has not been designated for this species at this time.

F.5.2.2.3 Population Trends

There are insufficient data to determine population trends for this species (Hayes et al., 2020).

F.5.2.2.4 Predator and Prey Interactions

This species preys almost exclusively on various types of zooplankton, especially krill. They lunge feed and consume approximately 6 tons (5,500 kg) of krill per day (Jefferson et al., 2015; Pitman et al., 2007). They often feed at depths greater than 100 m, where their prey maintains dense groupings (Acevedo-Gutiérrez et al., 2002; Calambokidis et al., 2009; Croll et al., 2001). Blue whales are documented as being preyed upon by killer whales (Jefferson et al., 2015; Pitman et al., 2007). There is little evidence that killer whales attack this species in the North Atlantic or southern hemisphere, but 25 percent of photo-identified whales in the Gulf of California carry rake scars from killer whale attacks (Sears & Perrin, 2009).

F.5.2.2.5 Species-Specific Threats

Threats to the North Atlantic blue whale are poorly known but may include ship strikes, pollution, entanglement in fishing gear, and long-term changes in climate that may affect their prey distribution.

F.5.2.3 Fin Whale (*Balaenoptera physalus*)

F.5.2.3.1 Status and Management

The fin whale is found in all of the world's oceans and is the second-largest species of whale (Jefferson et al., 2015). Fin whales have three recognized subspecies: the North Atlantic fin whale (*Balaenoptera physalus physalus*), the North Pacific fin whale (*B. p. velifera*), and the southern fin whale (*B. p. quoyi*), which occurs only in the southern hemisphere (Committee on Taxonomy, 2023). Only the North Atlantic subspecies is expected to occur within the Study Area.

Fin whales in the Northwest Atlantic are listed as endangered under the ESA and the species is considered a depleted and strategic stock under the MMPA. A final recovery plan was published in August 2010 for fin whales in U.S. waters (National Marine Fisheries Service, 2010b). The International Whaling Commission recognizes seven management stocks of fin whales in the North Atlantic Ocean: (1) Nova Scotia, (2) Newfoundland-Labrador, (3) West Greenland, (4) East Greenland-Iceland, (5) North Norway, (6) West Norway-Faroe Islands, and (7) British Isles-Spain-Portugal. NMFS assumes management of the western North Atlantic stock, which is likely equivalent to the Nova Scotia management stock. The stock identity of North Atlantic fin whales has received relatively little attention, and whether the current stock boundaries define biologically isolated units has long been uncertain (Waring et al., 2016). Fin whales in the Gulf of St. Lawrence may be a separate stock (Ramp et al., 2014).

F.5.2.3.2 Habitat and Geographic Range

Fin whales prefer temperate and polar waters and are rarely seen in warm tropical waters (Reeves et al., 2002a). They typically congregate in areas of high productivity and spend most of their time in coastal and shelf waters but can also be found in waters to approximately 2,000 m deep (Aissi et al., 2008; Reeves et al., 2002a). Fin whales are often seen closer to shore after periodic patterns of upwelling (underwater motion) and the resultant increased krill density (Azzellino et al., 2008). This species is highly adaptable, following prey, typically off the continental shelf (Azzellino et al., 2008; Panigada et al., 2008). Fin whales are likely common in Labrador Current, North Atlantic Gyre, and Gulf Stream open-ocean areas while undergoing seasonal migrations. However, some fin whales remain in higher latitudes during colder months and in lower latitudes during warmer months, indicating that seasonal fin whale movements differ from the seasonal migrations of other mysticetes, such as blue whales and humpback whales (Edwards et al., 2015). Fin whales are also common off the Atlantic coast of the United States seaward to the continental shelf edge (at about the 1,000-fathom contour). In the mid-Atlantic region, they tend to occur north of Cape Hatteras where they accounted for about 46 percent of the large whales observed in surveys conducted between 1978 and 1982 (National Marine Fisheries Service, 2010b). Recent surveys under the Atlantic Marine Assessment Program for Protected Species have shown that fin whale density increases along the shelf break from Cape Hatteras northward during summer months and decreases during winter and spring (Bureau of Ocean Energy Management, 2021). During the summer, fin whales in this region tend to congregate in feeding areas between 41°20’ north and 51°00’ north, from the shore seaward to the 1,000-fathom contour. In the western Atlantic, they winter from the edge of sea ice (near the Gulf of St. Lawrence) south to the Gulf of America and the West Indies (Ramp et al., 2024).

Fin whale sightings and acoustic detections are greatest in New England waters during spring and summer, with scattered sightings over the northeast shelf in winter, indicating that some fin whales are present during the non-feeding season (Hain et al., 1992; Morano et al., 2012; Waring et al., 2014). Fin whales are also observed in the Gulf of Maine, the Bay of Fundy, the Gulf of St. Lawrence, and in offshore areas of Nova Scotia (Coakes et al., 2005; Johnston et al., 2005). Near the Bay of Fundy, fin whales are known to congregate close to the tip of Campobello Island, where they feed within localized upwelling areas and fronts in the Northeast United States Continental Shelf Large Marine Ecosystem (Johnston et al., 2005).

New England waters are considered a major feeding ground for fin whales, and there is evidence that females continually return to this area (Waring et al., 2010). Forty-nine percent of fin whales sighted on the feeding grounds of Massachusetts Bay were sighted again within the same year, and 45 percent were sighted again in multiple years (Waring et al., 2010). LaBrecque et al. (2015a) identified three feeding areas for fin whales in the North Atlantic within the Study Area: (1) June to October in the northern Gulf of Maine, (2) year-round in the southern Gulf of Maine, and (3) March to October east of

Montauk Point, as substantiated through vessel-based survey data, photo-identification data, and expert judgment (Figure F.5-3).

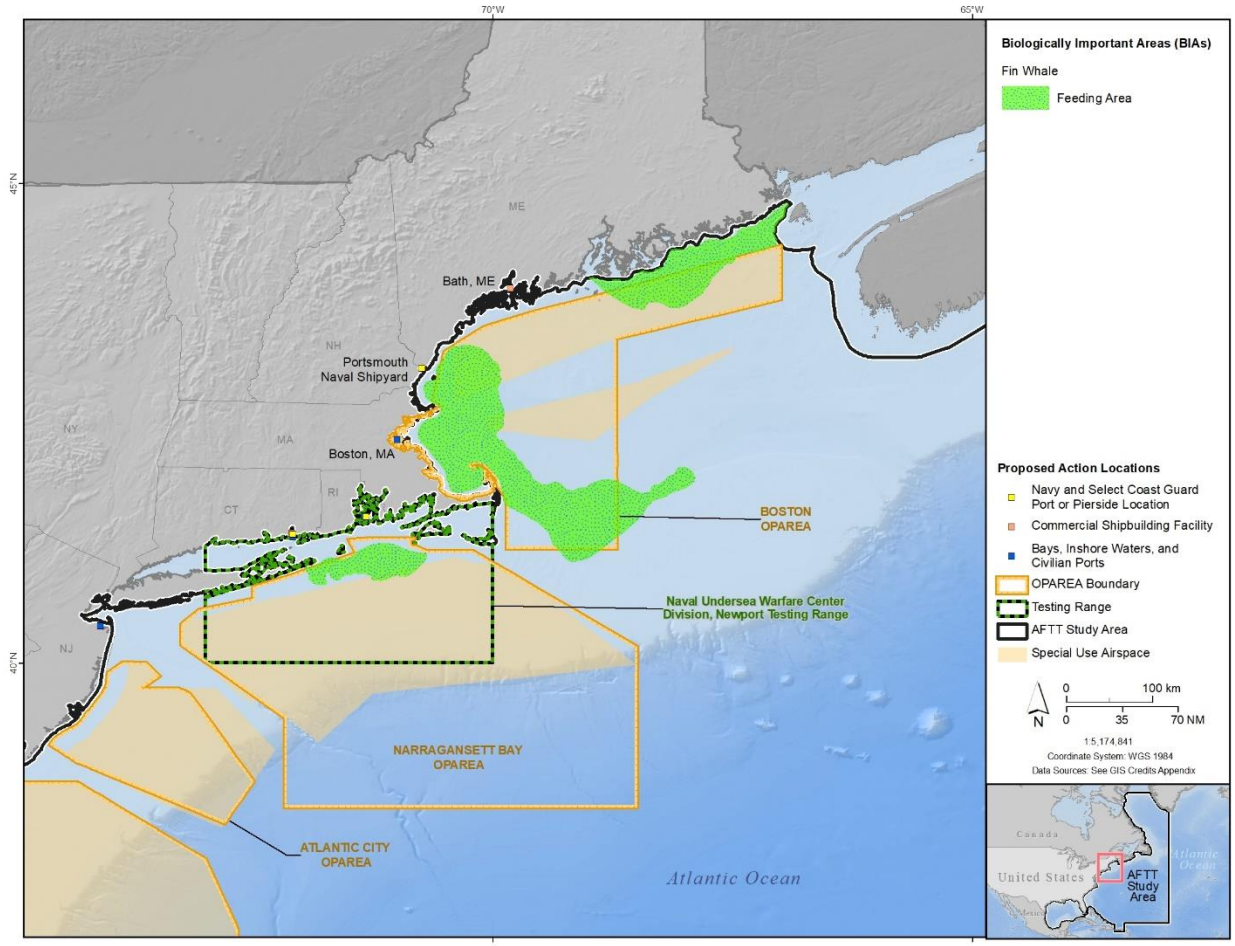


Figure F.5-3: Biologically Important Areas for Fin Whales in the Study Area

Visual and acoustic surveys between 2014 and 2023 have documented fin whale presence in the mid-Atlantic region. Biopsy samples and satellite tagging data have also been collected, including re-sights of several individuals over the continental shelf. Vessel based surveys and satellite tagging efforts in recent years have also shown fin whales frequently occur off the coast of Virginia during winter months; observations included foraging behavior as well as adult and juvenile pairs (Aschettino et al., 2024). Fin whales have been detected frequently throughout the winter months during passive acoustic monitoring efforts conducted from 2007 through 2015 within the continental shelf break and slope waters off Onslow Bay, North Carolina (Hodge et al., 2014, 2015, 2016; U.S. Department of the Navy, 2013b). Visual surveys and passive acoustic monitoring conducted from 2007 to 2011 in Onslow Bay, North Carolina, indicate fin whale occurrence in this area between late fall and early spring (Hodge, 2011). High-frequency recording packages deployed between November 2007 and April 2010 in Onslow Bay detected 20-Hz pulses from fin whales primarily in the winter months, starting in November and continuing through mid-April, suggesting that fin whales are migrating past Onslow Bay during this time (Hodge, 2011). In the western Atlantic, limited data indicate that some fin whales winter from the edge

of sea ice (near the Gulf of St. Lawrence) south to the Gulf of America and the West Indies (Clark, 1995). Critical habitat has not been designated for this species at this time.

F.5.2.3.3 Population Trends

A population trend analysis has not been conducted for this stock (Hayes et al., 2021).

F.5.2.3.4 Predator and Prey Interactions

This species preys on small invertebrates such as copepods, as well as squid and schooling fishes such as capelin, herring, and mackerel (Goldbogen et al., 2006; Jefferson et al., 2015). The fin whale is not known to have a significant number of predators. However, in regions where killer whales are abundant, some fin whales exhibit attack scars on their flippers, flukes, and flanks, suggesting possible predation by killer whales (Aguilar, 2009).

F.5.2.3.5 Species-Specific Threats

Fin whales are susceptible to both ship strikes and entanglement in fishing gear.

F.5.2.4 Rice's Whale (*Balaenoptera ricei*)

F.5.2.4.1 Status and Management

Rice's whale was formerly known as the Northern Gulf of America stock of Bryde's whale. It was designated a separate species in 2021 based on genetic and morphometric data distinguishing it from other subspecies of Bryde's whale (Rosel et al., 2021).

Rice's whale is listed as endangered under the ESA and considered depleted under the MMPA. The population is very small (fewer than 100 animals), exhibits very low genetic diversity, and has a restricted range, which places the stock at great risk of demographic and environmental stochasticity. There was no statistically significant trend in population size for this species.

F.5.2.4.2 Habitat and Geographic Range

Referred to as the core distribution area by NMFS, Rice's whales occur almost exclusively in the northeastern Gulf of America in the De Soto Canyon area, along the continental shelf break between 100 m and 400 m depth, with a single sighting at 408 m (Hansen et al., 1996; Maze-Foley & Mullin, 2006; Mullin & Fulling, 2004; Mullin & Hoggard, 2000; Rice et al., 2014; Rosel et al., 2016; Rosel et al., 2021; Širović et al., 2014; Soldevilla et al., 2017). Rice's whales have been sighted in all seasons within the De Soto Canyon area (Deepwater Horizon Marine Mammal Injury Quantification Team, 2015; Maze-Foley & Mullin, 2006; Mullin, 2007; Mullin & Hoggard, 2000). Two strandings from the southeastern U.S. Atlantic coast share the same genetic characteristics with those from the northern Gulf of America (Rosel & Wilcox, 2014; Rosel et al., 2021), but it is unclear whether these are extralimital strays (Mead, 1977) or whether they indicate the population extends from the northeastern Gulf of America to the Atlantic coast of the southern United States (Rosel & Wilcox, 2014; Rosel et al., 2021). There have been no confirmed sightings of Rice's whales along the U.S. East Coast during NMFS cetacean surveys (Rosel et al., 2016). Between 2000 and 2021, data in the OBIS-SEAMAP indicated there were eight sightings of Rice's whales in the Gulf of America portion of the Study Area, totaling 21 individuals (Halpin et al., 2009).

While their core distribution primarily lies within continental U.S. waters, research by Soldevilla et al. (2024) provides the first evidence of Rice's whale presence in Mexican waters using autonomous passive acoustic recording devices in the Mexican continental slope from 2020 to 2022. Rice's whales were detected 14.9 percent of days across a period of 680 days throughout the year, with a total of 579 western long-moan calls detected. These new findings suggest Rice's whales have a broader distribution

than previously understood, and have a transboundary range throughout the Gulf of America beyond U.S. waters (Soldevilla et al., 2024).

On July 24, 2023, NMFS released the Proposed Rule for the designation of critical habitat for the Rice's whale in the Gulf of America (Figure 3.7-3, Proposed Critical Habitat for the Rice's Whales in the Study Area) in accordance with section 4(b)(2) of the ESA (88 *Federal Register* 47453). The proposed area covers 28,270.65 square miles along continental shelf and slope waters between 100 m and 400 m isobaths; spanning from the U.S. Exclusive Economic Zone boundary off the southwestern coast of Texas, to the boundary between the South Atlantic Fishery Management Council and the Gulf Fishery Management Council off the southeastern coast of Florida (88 *Federal Register* 47453). This continental shelf and slope region is the critical habitat feature deemed biologically important (Figure F.5-4 and Figure F.5-5) and essential for Rice's whale conservation due to prey density, favorable oceanographic conditions, and productivity, as well as noise conditions sufficient for communication, navigation, foraging, and threat detection (88 *Federal Register* 47453). The area proposed for Rice's whale critical habitat overlaps with the Study Area in the Gulf of America. During the evaluation process, interference with mission-essential Department of Defense operations for training and testing was one of the many factors included when determining the critical habitat area. As such, NMFS anticipates a reinitiation of existing ESA consultations within the next decade to address effects to Rice's whale critical habitat, including a programmatic consultation with U.S. Navy AFTT operations (88 *Federal Register* 47453). A final critical habitat designation has not been assigned for this species at this time.

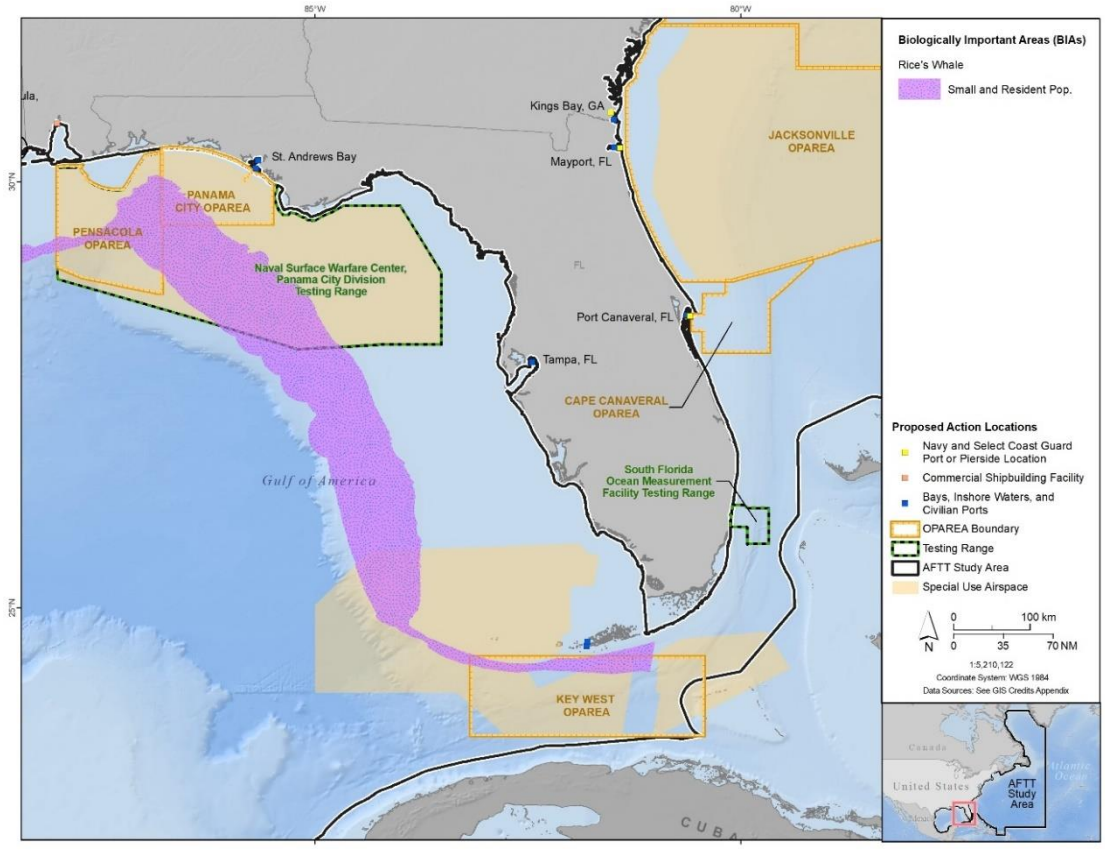


Figure F.5-4: Biologically Important Areas for Rice's Whales in the Study Area – Eastern Gulf of America

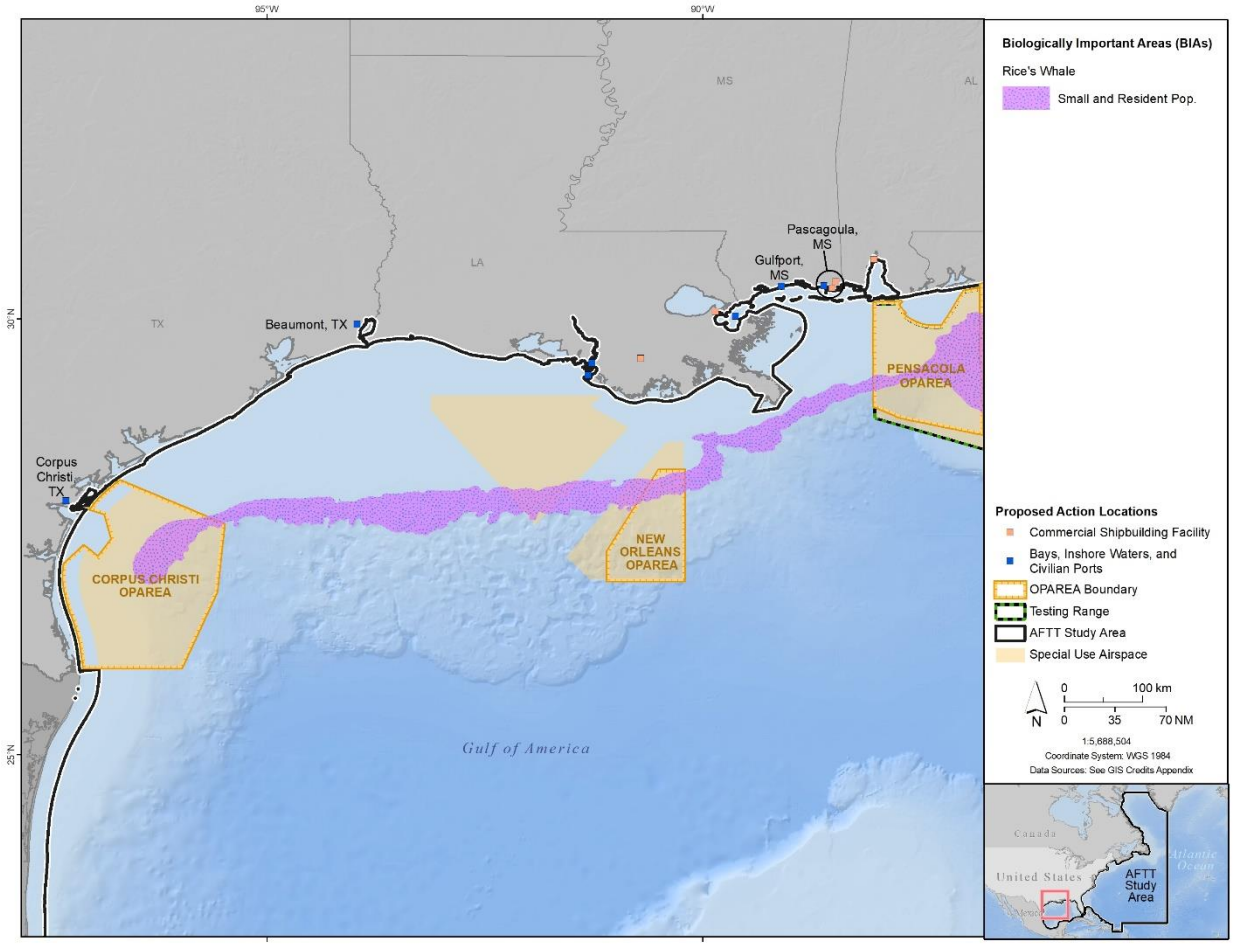


Figure F.5-5: Biologically Important Areas for Rice's Whales in the Study Area – Western Gulf of America

F.5.2.4.3 Population Trends

The best abundance estimate available for Rice's whale is 51 (coefficient of variation = 0.50). This estimate is from summer 2017 and summer/fall 2018 oceanic surveys covering waters from the 200-m isobath to the seaward extent of the U.S. Exclusive Economic Zone (Garrison et al., 2020). The statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys. In addition, because these surveys are restricted to U.S. waters, it is not possible to distinguish between changes in population size and Gulf-wide shifts in spatial distribution. However, the potential for biological removal for the Rice's whale is 0.1. The mean modeled annual human-caused mortality and serious injury due to the *Deepwater Horizon* oil spill exceeds potential biological removal for this species (Hayes et al., 2023).

F.5.2.4.4 Predator and Prey Interactions

Similar species (Bryde's whale) worldwide prey on pelagic schooling fishes such as order Clupeiformes (sardines, herring, menhaden, anchovies) or family Carangidae (Rosel et al., 2021) However, diet is poorly characterized for Rice's whale because surface feeding has never been observed (Rosel et al., 2021). Acousonde tag data from a Rice's whale in the northeastern Gulf of America revealed a diel diving

pattern with the whale staying near the surface at night and making repeated deep dives to depths greater than 200 m during the day, likely at or near the seafloor (Soldevilla et al., 2017). Some of these deep dives included lunges near the seafloor associated with foraging, which is unusual for members of the species complex. It is not known what they may have been feeding on at those depths, however it may have been lanternfish (Myctophidae) and hatchetfish (Sternoptychidae) (Rosel et al., 2021). In an attempt to understand the predator-prey dynamics of Rice's whales, Kiszka et al. (2023) conducted the first study to examine the feeding ecology and drivers of prey selection in their core habitat of the northeastern Gulf of America. Trawl surveys conducted to establish nektonic community composition, abundance, and availability, paired with analyses of biopsied skin samples using Bayesian stable isotope mixing models, Kiszka et al. (2023) identified and ranked four potential prey preferences: silver-rag driftfish (*Ariomma bondi*), Dumeril's lanternfish (*Diaphus dumerilii*), longfin inshore squid (*Doryteuthis pealeii*), and Atlantic pearlside (*Maurolicus weitzmani*). Further analysis into the dietary composition of potential prey indicated that silver-rag driftfish was significantly ($p<0.05$) more nutrient rich in terms of wet and dry energy, lipid, and protein content compared to the other three species. When evaluating potential prey quality versus quantity, the results of this study suggest Rice's whales selectively forage on prey with the highest energy content rather than species with the highest abundance (Kiszka et al., 2023). Similar to other baleen whales, Rice's whales are likely subject to occasional attacks by killer whales.

F.5.2.4.5 Species-Specific Threats

Rice's whales are under particular threat from habitat destruction, modification or curtailment of habitat range during energy exploration and development, oil spills and oil spill response, as well as marine debris (Rosel et al., 2016; Rosel et al., 2021). It is hypothesized their population was reduced by 22 percent as a result of the *Deepwater Horizon* oil spill (Hayes et al., 2023).

F.5.2.5 Sei Whale (*Balaenoptera borealis*)

F.5.2.5.1 Status and Management

The sei whale is listed as endangered under the ESA and is considered a depleted and strategic stock under the MMPA. A recovery plan for the sei whale was finalized in 2011 (National Marine Fisheries Service, 2011b). There are two stocks of sei whale in the Northwest Atlantic: a Nova Scotia stock and a Labrador Sea stock (Waring et al., 2013; Waring et al., 2016). The Nova Scotia stock is considered in the management unit under NMFS jurisdiction; it includes the continental shelf waters of the northeastern United States and extends northeastward to south of Newfoundland. The Labrador Sea stock is outside of NMFS jurisdiction but occurs within the Study Area.

F.5.2.5.2 Habitat and Geographic Range

Sei whales have a worldwide distribution and are found primarily in cold temperate to subpolar latitudes. Sei whales are typically found in the open ocean and are rarely observed near the coast (Horwood, 2009; Jefferson et al., 2015). During the winter, sei whales are found from 20° N to 23° N and during the summer from 35° North to 50° North (Horwood, 2009; Masaki, 1976, 1977; Smultea et al., 2010). They are considered absent or at very low densities in most equatorial areas and in the Arctic Ocean. Satellite tagging data indicate sei whales feed and migrate east to west across large sections of the North Atlantic (Olsen et al., 2009); however, they are not often seen within the equatorial Atlantic. In the Study Area, the open-ocean range includes the Labrador Current, North Atlantic Gyre, and Gulf Stream open-ocean areas. Habitat suitability analyses suggest that the recent distribution patterns of sei whales in U.S. waters appear to be related to waters that are cool (less than 10° C), with high levels of

chlorophyll and inorganic carbon, and where the mixed layer depth is relatively shallow (less than 50 m) (Chavez-Rosales et al., 2019; Palka et al., 2017).

Sei whales spend the summer feeding in subpolar high latitudes and return to lower latitudes to calve in winter. However, no migratory corridor for sei whales has been identified in U.S. Atlantic waters (LaBrecque et al., 2015a). There are no known sei whale mating or calving grounds in U.S. Atlantic waters (LaBrecque et al., 2015a).

(LaBrecque et al., 2015a) delineated a feeding area for sei whales in the northeast Atlantic between the 25-m contour off coastal Maine and Massachusetts to the 200-m contour in the central Gulf of Maine, including the northern shelf break area of Georges Bank (Figure F.5-6). The feeding area also includes the southern shelf break area of Georges Bank from 100 to 2,000 m and the Great South Channel. Feeding activity in the U.S. Atlantic waters is concentrated from May through November with a peak in July and August. Spring is the period of greatest abundance in Georges Bank and into the Northeast Channel area, along the Hydrographer Canyon (Cetacean and Turtle Assessment Program, 1982; Waring et al., 2010). Although uncommon near the coastline, two strandings of sei whales have been reported on the Virginia coast in 2003 and 2011 (King, 2011; Swingle et al., 2014).

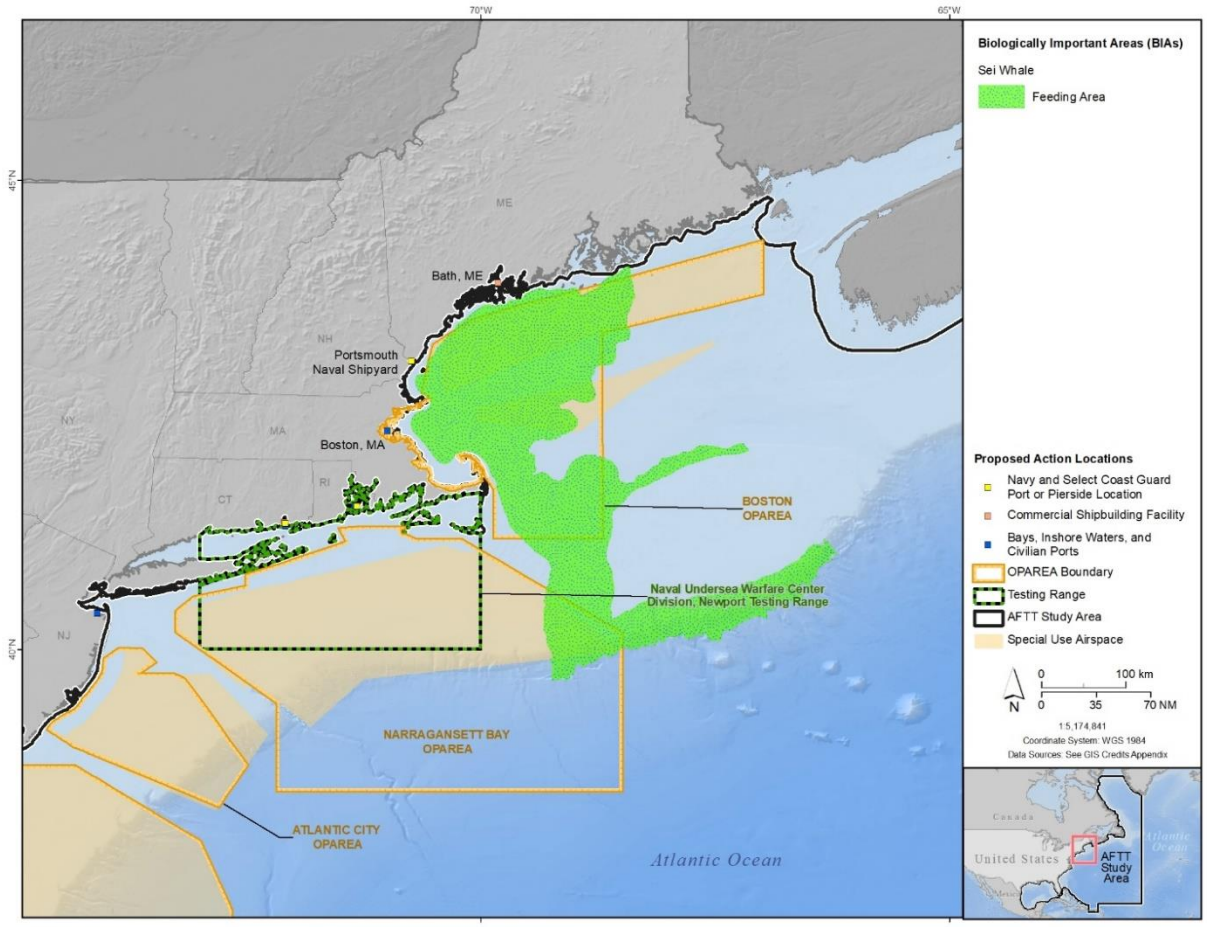


Figure F.5-6: Biologically Important Areas for Sei Whales in the Study Area

Passive acoustic monitoring conducted offshore of Cape Hatteras, North Carolina, since 2011 resulted in the detections of sei whales on bottom-mounted high-frequency acoustic recording packages that were

not observed during visual surveys (McLellan et al., 2014). Passive acoustic monitoring conducted offshore of Jacksonville, Florida, from 2009 through 2020 also included detections of sei whales on marine acoustic recording units (Oswald et al., 2016) and detections on high-frequency acoustic recording packages (Hodge & Read, 2013).

Critical habitat has not been designated for this species at this time.

F.5.2.5.3 Population Trends

Commercial whaling in the 19th and 20th centuries depleted populations in all areas throughout the species' range. While they appear to be recovering in the northern hemisphere as a result of protective legislation, a trend analysis has not been conducted for this stock (Hayes et al., 2020).

F.5.2.5.4 Predator and Prey Interactions

Sei whales feed on copepods, amphipods, euphausiids, shoaling fish, and squid (Horwood, 2009); (Nemoto & Kawamura, 1977). Feeding occurs primarily around dawn, which appears to be correlated with vertical migrations of prey species (Horwood, 2009). Unlike other rorquals, the sei whale skims to obtain its food; like other rorqual species, it does exhibit other feeding behaviors such as lunging and gulping (Horwood, 2009). Similar to other baleen whales, sei whales are likely subject to occasional attacks by killer whales.

F.5.2.5.5 Species-Specific Threats

There are no significant species-specific threats to sei whales in the northwest Atlantic.

F.5.2.6 Sperm Whale (*Physeter macrocephalus*)

F.5.2.6.1 Status and Management

The sperm whale has been listed as an endangered species since 1970 under the precursor to the ESA (National Marine Fisheries Service, 2009b) and is listed as depleted and strategic under the MMPA. Whether the northwestern Atlantic population is discrete from northeastern Atlantic is currently unresolved. The International Whaling Commission recognizes one stock for the North Atlantic, based on reviews of many types of studies (e.g., tagging, genetics, catch data, mark and recapture, biochemical markers). A recovery plan is in place for the sperm whale in U.S. waters (National Marine Fisheries Service, 2010c). There are currently two stocks of sperm whales recognized within the Study Area managed under NMFS jurisdiction: the western North Atlantic and the Gulf of America stocks. In 2013, NMFS determined that a petition to list the Gulf of America stock as a DPS was not warranted based on a review of best available information on physical, physiological, ecological, and behavioral factors (78 *Federal Register*, 68032–68037, November 13, 2013). A 5-year review for sperm whales was finalized in 2015 (National Marine Fisheries Service, 2015c).

F.5.2.6.2 Habitat and Geographic Range

Sperm whales are found throughout the world's oceans in deep waters to the edge of the ice at both poles (Leatherwood & Reeves, 1983; Rice, 1989; Whitehead, 2002). Sperm whales show a strong preference for deep waters (Rice, 1989; Whitehead, 2003). Their distribution is typically associated with waters over the continental shelf break, continental slope, and into deeper mid-ocean regions. However, in some areas, adult males are reported to consistently frequent waters with depths less than 100 m and as shallow as 40 m (Jefferson et al., 2008; Jefferson et al., 2015; Romero et al., 2001). Typically, sperm whale concentrations correlate with areas of high productivity. These areas are generally near drop-offs and areas with strong currents and steep topography (Gannier & Praca, 2007; Jefferson et al., 2015). Sperm whale migration is not well understood and is not as seasonally based as

that observed in mysticete whales. Sperm whales may be found in Labrador Current, North Atlantic Gyre, and Gulf Stream open-ocean areas. Recent surveys under the Atlantic Marine Assessment Program for Protected Species between 2010 and 2020 have shown that the density of sperm whales is higher north of Cape Hatteras, with infrequent sightings south of Cape Hatteras, and had peak average abundance estimates during summer (Bureau of Ocean Energy Management, 2021).

The nature of linkages of the U.S. habitat with those to the south, north, and offshore is unknown, but sperm whales that occur in the eastern U.S. Exclusive Economic Zone in the Atlantic Ocean likely represent only a fraction of the total stock. Historical whaling records compiled by Schmidly (1981) suggested an offshore distribution off the southeast United States, over the Blake Plateau, and into deep ocean waters. Distribution along the East Coast of the United States is centered along the shelf break and over the slope. In winter, sperm whales are concentrated east and northeast of Cape Hatteras, North Carolina. In spring, the center of distribution shifts northward to east of Delaware and Virginia and is widespread throughout the central portion of the Mid-Atlantic Bight and the southern portion of Georges Bank. In summer, the distribution is similar but now also includes the area east and north of Georges Bank and into the Northeast Channel region, as well as the continental shelf (inshore of the 100-m isobath) south of New England. In fall, sperm whale occurrence south of New England on the continental shelf is at its highest level, and there remains a continental shelf edge occurrence in the mid-Atlantic Bight. Similar inshore (less than 200 m) observations were made on the southwestern and eastern Scotian Shelf, particularly in the region of "the Gully" (Whitehead & Weilgart, 1991).

Aerial surveys conducted offshore of Cape Hatteras, North Carolina, from 2011 through 2017 have resulted in a common occurrence of sperm whales, primarily in the spring and summer months (McLellan et al., 2014).

Passive acoustic monitoring conducted in Onslow Bay, North Carolina, between 2007 and 2013 confirmed year-round occurrence of sperm whales, along with a nocturnal increase in occurrence of clicks and greater vocal activity on recorders located in deeper waters of the monitoring area (Hodge, 2011; Read et al., 2014; U.S. Department of the Navy, 2013a). Researchers confirmed occurrence of sperm whale vocalizations in Onslow Bay on a recorder deployed at water depths of 230 m and 366 m, along with regular nocturnal occurrence of sperm whale clicks near the shelf break, suggesting that foraging activities were occurring at that time (Hodge et al., 2013). This diel pattern contrasts with what was recorded offshore of Cape Hatteras (Stanistreet et al., 2013). Habitat models also support findings of sperm whale occurrence in the U.S. Economic Exclusion Zone waters offshore of Onslow Bay (Best et al., 2012). Visual surveys in Onslow Bay and analysis of remotely sensed oceanographic data were used to determine the effects of dynamic oceanography. The findings from this study indicate that the presence of Gulf Stream frontal eddies and the location of the Gulf Stream Front influenced sperm whale vocalization rates, among other species (Thorne et al., 2012).

The sperm whale is the most common large cetacean in the northern Gulf of America (Palka & Johnson, 2007). The distribution of sperm whales in the Gulf of America is strongly linked to surface oceanography, such as Loop Current eddies that locally increase production and availability of prey (O'Hern & Biggs, 2009). Most sperm whale groups were found within regions of enhanced sea surface chlorophyll abundance (O'Hern & Biggs, 2009). Ship-based and aerial-based surveys indicate that sperm whales are widely distributed only in waters deeper than 200 m in the northern Gulf of America (Waring et al., 2014), specifically inhabiting the continental slope and oceanic waters (Fulling et al., 2003; Maze-Foley & Mullin, 2006; Mullin & Fulling, 2004; Mullin & Hoggard, 2000; Mullin et al., 2004). Seasonal aerial surveys confirm that sperm whales are present in the northern Gulf of America in all seasons (Hansen et al., 1996; Mullin & Hoggard, 2000; Mullin et al., 1994b). Sperm whales aggregate at the

mouth of the Mississippi River and along the continental slope in or near cyclonic cold-core eddies (counterclockwise water movements in the northern hemisphere with a cold center) or anticyclone eddies (clockwise water movements in the northern hemisphere) (Davis et al., 2007) Habitat models for sperm whale occurrence indicate a high probability of suitable habitat along the shelf break off the Mississippi delta, Desoto Canyon, and western Florida (Best et al., 2012).

NMFS winter ship surveys of waters surrounding Puerto Rico and the U.S. Virgin Islands indicate that sperm whales inhabit continental slope and oceanic waters (Roden & Mullin, 2000; Swartz & Burks, 2000; Swartz et al., 2002). Earlier sightings from the northeastern Caribbean were reported by Erdman (1970), Erdman et al. (1973), and Taruski and Winn (1976), where these and additional sightings from Puerto Rican waters are summarized by Mignucci-Giannoni (Mignucci-Giannoni, 1988). For years up to 1989, Mignucci-Giannoni found 43 records for sperm whales in waters of Puerto Rico, U.S. Virgin Islands, and British Virgin Islands and suggested these whales occur from late fall through winter and early spring but are rare from April to September. In addition, sperm whales are one of the most common species to strand in Puerto Rico and the Virgin Islands (Mignucci-Giannoni et al., 1999). In the southeast Caribbean, both large and small adults, as well as calves and juveniles of different sizes, are reported (Watkins et al., 1985).

Critical habitat has not been designated for this species at this time.

F.5.2.6.3 Population Trends

There is no reliable estimate of total sperm whale abundance, and no trend analysis has been conducted for the North Atlantic stock of sperm whales (Hayes et al., 2020).

There has been considerable variation in point estimates of northern Gulf of America sperm whale abundance based on data collected from 1991 to 2018. Differences in temporal abundance will be difficult to interpret without a Gulf of America -wide (including waters belonging to Mexico and Cuba) understanding of sperm whale abundance, and the statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys.

F.5.2.6.4 Predator and Prey Interactions

Sperm whales socialize for predator defense as well as foraging. Sperm whales feed on squid, other cephalopods (a type of mollusk), bottom-dwelling fish, and invertebrates (Davis et al., 2007; Marcoux et al., 2007; Rice, 1989). The precise method regarding how sperm whales search for, detect, and capture their prey remains uncertain. Site-specific ecological factors, such as predation pressure and food availability, likely influence fundamental aspects of sperm whale social organization (Fais et al., 2015; Jaquet & Gendron, 2009). False killer whales, pilot whales, and killer whales have been documented harassing and, on occasion, attacking sperm whales (Baird, 2009b).

F.5.2.6.5 Species-Specific Threats

There are no significant species-specific threats to sperm whales in the northwest Atlantic or Gulf of America.

F.5.2.7 West Indian Manatee (*Trichechus manatus*)

F.5.2.7.1 Status and Management

West Indian manatees are divided into two subspecies: the Florida (*Trichechus manatus latirostris*) and Antillean (*Trichechus manatus manatus*) (Lefebvre et al., 2001). Both are currently listed as threatened under the ESA (82 *Federal Register* 16668), and are also considered a strategic stock, and depleted,

under the MMPA (U.S. Fish and Wildlife Service, 2014a, 2014b, 2023f, 2023g). The USFWS reclassified the West Indian manatee from endangered to threatened in 2017 due to substantial improvements in the species' overall status since the original listing in 1967 (81 *Federal Register* 1000). A new 5-year status review was initiated in July 2021 (86 *Federal Register* 37178), and final revised Stock Assessment Reports were made available for both the Florida and Puerto Rico stocks in March of 2023 (88 Federal Register 18572; U.S. Fish and Wildlife Service, 2023f; U.S. Fish and Wildlife Service, 2023g). In October of 2023, a Proposed Rule by the USFWS announced two 90-day findings on petitions to reclassify the West Indian manatee, including subspecies and associated populations, under the ESA. In January of 2025, the USFWS released a subsequent Proposed Rule that would recognize two subspecies of the West Indian manatee, each receiving separate listings under the ESA. The Florida manatee would be classified as a threatened species with a blanket 4(d) rule, and the Antillean manatee would be classified as endangered.

Both subspecies of West Indian manatees may be found in the Study Area, although the Antillean manatee (i.e., Puerto Rico stock) only occurs in the Caribbean Sea Large Marine Ecosystem, extending eastward to Puerto Rico (Lefebvre et al., 2001). The Florida stock is closely monitored and managed by the USFWS and the Florida Fish and Wildlife Conservation Commission (U.S. Fish and Wildlife Service, 2014b). The Florida manatee population is divided into four management units: the Upper St. Johns River, Atlantic Coast, Southwest Florida, and Northwest Florida. The Puerto Rico stock is managed by the USFWS Caribbean Ecological Services Field Office in Boquerón, Puerto Rico with jurisdiction only in Puerto Rico and the U.S. Virgin Islands (U.S. Fish and Wildlife Service, 2014a). This population is currently considered as a single population with minimal, if any subdivisions within Puerto Rico.

F.5.2.7.2 Habitat and Geographic Range

Manatees are found in coastal marine, brackish, and freshwater habitats. They are typically found in seagrass beds, canals, creeks, embayments, and lagoons near the mouths of rivers, sloughs, and salt marshes (Gaskins et al., 2020; Lefebvre et al., 2000). Habitat selection is influenced by food, water temperature, and the availability of freshwater sources. Females with calves are influenced by additional factors when selecting habitats, including ambient noise, currents, and increased amounts of forage (Gannon et al., 2007). Groups of manatees, sometimes in the hundreds, often congregate near sources of warm water during the colder winter months (Deutsch et al., 2003; Jefferson et al., 2008) (Jefferson et al., 2015).

As part of the 12-month finding to revise critical habitat, the USFWS recognized the significance of warm water to the survival of the Florida manatee and the importance of availability and adequacy of warm-water refuges. Additional features essential to conservation that were considered in the analysis for revising critical habitat included adequate forage within dispersal distance of a warm-water refuge, areas needed for calving and nursing, and important travel corridors for movements throughout Florida and beyond (75 *Federal Register* 1574).

Florida manatees are found throughout the southeastern United States and their distribution shifts seasonally. Since manatees are a subtropical species with little tolerance for cold, they are generally restricted to the inland and coastal waters of peninsular Florida during the winter, when they shelter in or near warm-water springs, industrial effluents, and other warm-water sites (Hartman, 1979; Lefebvre et al., 2001). The Florida manatee, in particular, is highly susceptible to cold stress and mortality when water temperatures drop below 20° C (68° F) (Irvine, 1983).

In the Study Area, the West Indian manatee (Florida subspecies/stock) has the potential to occur from the mid-Atlantic United States to the Caribbean. The primary range extends along both the Atlantic and

Gulf coasts of Florida, while the secondary range extends as far north as the Chesapeake and Delaware Bays on the east side and into the northern Gulf of America as far west as Texas. Occasional animals have been sighted as far north as Massachusetts and as far south as the Bahamas and Cuba (U.S. Fish and Wildlife Service, 2023f). During the winter, Florida manatees shelter in or near warm-water springs and spring complexes, heated industrial effluents, and other warm-water sites such as passive thermal basins (U.S. Fish and Wildlife Service, 2023f). During the warmer months, manatees are reported regularly in Florida, coastal Georgia, South Carolina, Alabama, Mississippi, and eastern Louisiana (Cloyed et al., 2019; Hieb et al., 2017), but can leave these areas to disperse great distances (Lefebvre et al., 2001; U.S. Fish and Wildlife Service, 2023f); and increased sightings have been reported in the mid-Atlantic states such as North Carolina and Virginia between June and October (Cummings et al., 2014).

The Antillean subspecies of the West Indian manatee is only found in eastern Mexico and Central America, northern and eastern South America, and in the Greater Antilles (Lefebvre et al., 1989) within the Caribbean Large Marine Ecosystem. All studies suggest that manatees in Puerto Rico are most often detected in protected areas around cays, in secluded bays, and in shallow seagrass beds east of San Juan; the east, south, and southwest coasts; and not far from freshwater sources (U.S. Fish and Wildlife Service Caribbean Field Office, 2009). Lefebvre et al. (2000) debates that manatees in Puerto Rico most likely do not exhibit seasonal long-distance travel patterns because, unlike the manatees in Florida, they do not need to seek thermal refuges during the winter months. Telemetry studies confirm that individual manatees in Puerto Rico have fidelity to relatively discrete areas but may move longer distances through nearshore and coastal waters to other use areas (Slone et al., 2006).

The distribution of the Antillean manatee extends eastward only to Puerto Rico, except for a few extralimital sightings: one sighting reported in 1988 in St. Thomas, U.S. Virgin Islands, and a more recent confirmed sighting of two manatees in St. Croix (May to June 2018), and transient animals are known to occur in the Lesser Antilles (Lefebvre et al., 2001). Manatees in Puerto Rico are thought to be more widespread than previously understood (Collazo et al., 2019). Manatee distribution in Puerto Rico during surveys from June 2010 to March 2014 followed the general historical distribution for the island (Collazo et al., 2019). The distribution and area-specific concentrations observed (e.g., Ceiba, Patillas, Guayama, Salinas, Guayanilla, Guánica, and Cabo Rojo–Mayagüez), validates the selection of hotspots as the most important areas for manatees, with the exception of Rio Grande's Ensenada Comezón and Punta Petrona in Santa Isabel, which should be considered hotspots in future studies (Collazo et al., 2019). The offshore islands of Puerto Rico including Caja de Muertos, Culebra, and Vieques are considered significant biogeographic features, although manatees do not use the western offshore islands of Mona and Desecheo (U.S. Fish and Wildlife Service, 2014a). Mona Passage constitutes a migratory barrier to these islands since it is characterized by strong currents and high surf. There have been few sightings in Caja de Muertos on the south and Culebra Island on the east. In contrast, Vieques Island contains extensive seagrass beds and manatees have been observed traveling to and from the east coast of Puerto Rico across the Vieques Sound (i.e., Pasaje de Vieques) (Magor, 1979; Slone et al., 2006). Radio tagging techniques in Puerto Rico have documented the general behavior of manatee populations, where males displayed more extensive movements than females (Slone et al., 2006). Areas of higher manatee use and activity are associated with low wave action, available food, and sources of freshwater for drinking (Collazo et al., 2019; Slone et al., 2006). As such, manatees are sighted more frequently in protected coastal areas having any three of the above characteristics (U.S. Fish and Wildlife Service, 2023g).

Critical habitat is designated at multiple inland rivers and coastal waterways throughout Florida (Figure 3.7-2, Designated Critical Habitat for West Indian Manatees in the Study Area), although the

designation does not define any primary constituent elements. The designated critical habitat only overlaps with the Study Area within the St. Johns River (Mayport), Banana River (Port Canaveral), St. Marys River entrance channel (Kings Bay), and a small portion of inland waters encompassed by the South Florida Ocean Measurement Facility Testing Range boundary. However, the Mayport basin and the Trident basin are not considered critical habitat by the USFWS. A petition to revise manatee critical habitat was submitted in 2009. A 12-month finding on the petition, the USFWS stated that revisions should be made, including defining primary constituent elements. However, sufficient funding is not currently available (75 *Federal Register* 1574). In 2012, the USFWS issued a final rule establishing a manatee refuge in Kings Bay, Citrus County, Florida, which includes its tributaries and connected waters (77 *Federal Register* 15617). However, this new refuge does not overlap with the Study Area.

F.5.2.7.3 Population Trends

Demographic analyses indicates that the Florida stock of manatees is increasing or stable throughout much of their Florida range (Runge et al., 2004; Runge et al., 2007; Runge et al., 2017). However, several recent unusual mortality events have been declared for the West Indian manatee due to the high levels of mortalities of this species (Florida Fish and Wildlife Conservation Commission, 2022; U.S. Fish and Wildlife Service, 2023f). In 2021, there were 1,101 manatee mortalities, which is considerably higher compared to the 5-year average from 2016 to 2020 of 625 individuals (Florida Fish and Wildlife Conservation Commission, 2022). From 1996 to 2007, a total of 6 unusual mortality events were declared due to red tide (~450 deaths), and in 2010 through 2011 winter cold kills resulted in over 670 deaths. An adult survival rate analysis for the Florida manatee, conducted through the winter of 2005 to 2006, identified a range-wide survival rate of 96 percent (C.A. Langtimm, USGS, pers. Comm., 2011). A more recent analysis from data collected over 10 winters from 2008 to 2017, provided survival rate estimates by age class. Annual survival rate ranges were calculated as 0.85 to 0.89 for manatees less than 1 year old, and for those ages 4+, from 0.88 to 0.96 (Gowan et al., 2021). However, manatee survival rates will likely be revised in consideration of the higher-than-normal mortality rates in recent years.

Population modeling of the Florida manatee by Runge et al., in 2015 and 2017 predicted that, assuming all current threats remain constant, there is less than a 2.5 percent chance that the southeastern U.S. population of Florida manatees will fall below 4,000 individuals over the next 100 years (Runge et al., 2015; Runge et al., 2017). An integrated population model developed in 2021 provided a retrospective analysis estimating the abundance of the West Indian manatee at 2,014 individuals in 1997 (the 95 percent credible interval was 1,861 to 2,229) to 3,019 in 2013 (credible interval: 2,668 to 3,431), and showed a general pattern of slow, but variable, population growth (Hostetler et al., 2021). The red tide event of 2013 contributed to an estimated net drop in the population of 331 (217 to 459) manatees for an annual population growth rate of 0.89 (0.85 to 0.93) (Hostetler et al., 2021). The estimate for 2016 was 2,966 manatees (credible interval: 2,551 to 3,434), with an average growth rate of 2 percent (credible interval: 1 to 3 percent) (Hostetler et al., 2021). Hostetler et al. (2018) estimated that the number of manatees in Florida in 2015 to 2016 was 8,810 (95 percent credible interval 7,520 to 10,280), of which 4,810 (credible interval: 3,820 to 6,010) were on the west coast of Florida and 4,000 (credible interval: 3,240 to 4,910) were on the east coast. The most recent data available from the 2021 to 2022 aerial surveys conducted by the Florida Fish and Wildlife Commission estimated a statewide abundance of 9,790 (credible interval: 8,350 to 11,730) individuals. This estimate is further divided into 2 coast wide estimates. The west coast abundance is 4,630 (credible interval: 3,960 to 5,420) individuals, and the east coast has an estimated 5,160 (credible interval: 3,940 to 6,980) individuals (Gowan et al., 2023).

The USFWS suggests that the Puerto Rico stock of manatees (Antillean subspecies) is at least stable and is possibly exhibiting a slight increase due to increasing numbers detected in annual surveys (U.S. Fish and Wildlife Service, 2014a). However, they caution that information from direct counts cannot be used to determine population trends. Population viability analyses used to predict the likely future status of a given population describes the Antillean manatee population with positive growth, which would continue as long as human-induced mortality does not exceed 5 percent of the population (Castelblanco-Martinez et al., 2012). Antillean manatee population estimates in Puerto Rico were developed from several surveys between June 2010 and March 2014 (Collazo et al., 2019). The average minimum island-wide estimate was 386 ± 89, which was similar to the maximum estimate of 360 suggested in 2005, but fewer than the 700 recently suggested by the Puerto Rico Manatee Conservation Center, and below the 532 average island-wide estimate suggested by the USFWS in 2017 (82 *Federal Register* 16668; Collazo et al. (2019). The USFWS's downlisting of the West Indian manatee from endangered to threatened in May 2017 indicates that populations are improving. Although the ranking of threats to the species have not changed, the impacts of those threats is considered lower due to a better understanding of the resiliency of the population (Runge et al., 2015). High adult survival provides the Florida manatee population with strong resilience to a variety of current and future threats, and a large estimated carrying capacity provides a buffer to short-term reductions in the population from episodic threats (Runge et al., 2017).

F.5.2.7.4 Predator and Prey Interactions

West Indian manatees are herbivorous and are known to consume more than 60 species of plants. They typically feed on bottom vegetation, plants in the water column, and shoreline vegetation, such as hyacinths and marine seagrasses (Reynolds et al., 2009). In some areas, they are known to feed on algae and parts of mangrove trees (Jefferson et al., 2015; Mignucci-Giannoni & Beck, 1998).

Although large sharks, crocodiles, and killer whales are all considered to be potential predators, there is little evidence to confirm this (Weller, 2009).

F.5.2.7.5 Species-Specific Threats

Threats to the Florida manatee include vessel strikes, cold stress, hurricanes, toxic red tide poisoning, habitat destruction (such as loss of seagrass), entrapment and/or crushing in water-control structures (e.g., gates, locks, etc.), entanglement in fishing gear, ingestion of marine debris, and other natural and human-made factors (U.S. Fish and Wildlife Service, 2023f). Vessel strikes are the single greatest cause of death for Florida manatees, which accounts for 20 to 25 percent of reported mortalities and are the leading human related threat to the West Indian manatee (Bassett et al., 2020). A review of research on the effectiveness of laws reducing boat speeds in areas of known manatee habitat indicated that reducing boat speeds in specific areas is an appropriate, reasonable, and defensible management action, although more studies on the effectiveness of boat speed reduction have been recommended (Calleson & Frohlich, 2007). A more recent investigation of manatee behavioral responses to boats in Florida found that boat speed did not affect the occurrence or intensity of manatee response, but that slower boat passes allowed manatees more time to respond, concluding that faster boats likely pose a greater risk of collision than slower boats (Rycyk et al., 2018). Entanglement and ingestion of marine debris is also a concern. In over 6,500 necropsy reports from 1993 to 2012, over 11 percent had ingested or showed evidence of entanglement in marine debris, or both (Reinert et al., 2017). Fifty of those manatees were found to have died as a direct result of entanglement or marine debris ingestion, with fishery related gear involved in 70 percent of those cases.

Expected losses of warm-water habitat are likely to cause a major change in the distribution of the population from the regions where manatees rely heavily on power-plant effluents for warmth in winter (Southwest and Atlantic regions), to the regions where manatees primarily use natural springs in winter (Northwest and Upper St. Johns regions) (Runge et al., 2017). An unusual mortality event was declared in December 2020 in the Atlantic Ocean and Florida for the West Indian manatee due to the high levels of mortalities of this species, and of particular concern are the starvation deaths due to lack of seagrass habitat, especially in the Indian River Lagoon (Florida Fish and Wildlife Conservation Commission, 2022; U.S. Fish and Wildlife Service, 2023f). In recent years, poor water quality in the lagoon has led to harmful algal blooms and widespread seagrass loss (Florida Fish and Wildlife Conservation Commission, 2022).

Unlike the Florida manatee, mass mortalities due to red tide or need for warm water habitats do not pose a threat to the Antillean manatee, given their location in tropical habitats. A single mass mortality (four males and one female) was documented in 2006 when the individuals were impacted by a large vessel in the San Juan Bay (U.S. Fish and Wildlife Service, 2014a). Similar to the Florida manatee, vessel strikes are the leading cause of human-induced mortalities of Antillean manatees (U.S. Fish and Wildlife Service, 2014a, 2023f, 2023g).

F.5.3 Species Not Listed under the Endangered Species Act

F.5.3.1 Bryde's Whale (*Balaenoptera brydei/edeni*)

F.5.3.1.1 Status and Management

Bryde's whales are among the least known of the baleen whales. The species-level taxonomy remains unresolved as well as the number of species or subspecies (Alves et al., 2010; Jefferson et al., 2015; Kato & Perrin, 2009; Rosel et al., 2021). The Society for Marine Mammalogy's Committee on Taxonomy (2023) recognizes two subspecies of Bryde's whale: (1) *B. edeni* (Eden's whale) and (2) *B. brydei* (offshore Bryde's whale). In addition, the "pygmy form" of Bryde's whales is known as the Omura's whale (Kato & Perrin, 2009; Rice, 1998) has been described. Rosel et al. (2021) determined that Bryde's whales found in the Gulf of America are in fact a distinct species, now designated as Rice's whales (*Balaenoptera ricei*) (Section F.5.2.4.4, Predator and Prey Interactions). The International Whaling Commission continues to use the name *Balaenoptera edeni* for all Bryde's-like whales, although at least three species are recognized.

Current genetic research confirms that gene flow among Bryde's whale populations is low and suggests that management actions treat each as a distinct entity to ensure survival of the species (Kanda et al., 2007).

F.5.3.1.2 Habitat and Geographic Range

Unlike other baleen whale species, Bryde's whales are restricted to tropical and subtropical waters and do not generally occur beyond latitude 40° in either the northern or southern hemisphere (Jefferson et al., 2015; Kato & Perrin, 2009). The primary range of Bryde's whales in the Atlantic is in tropical waters south of the Caribbean, outside the Study Area although may range as far north as Virginia (Kato & Perrin, 2009). Long migrations are not typical of Bryde's whales, although limited shifts in distribution toward and away from the equator in winter and summer have been observed (Best, 1996; Cummings, 1985).

F.5.3.1.3 Population Trends

A trend analysis has not been conducted for this stock.

F.5.3.1.4 Predator and Prey Interactions

Bryde's whales primarily feed on schooling fishes and are lunge feeders. Prey includes anchovy, sardine, mackerel, herring, krill, and pelagic red crab (Baker & Madon, 2007; Jefferson et al., 2015; Nemoto & Kawamura, 1977). Like humpback whales, Bryde's whales were observed using "bubble nets" to herd prey (Jefferson et al., 2015; Kato & Perrin, 2009). Bryde's whales are known to be prey for killer whales, as evidenced by an aerial observation of 15 killer whales attacking a Bryde's whale in the Gulf of California (Weller, 2009).

F.5.3.1.5 Species-Specific Threats

There are no significant species-specific threats to Bryde's whales, though they are susceptible to vessel strike and fishing gear entanglement.

F.5.3.2 Humpback Whale (*Megaptera novaengliae*)

F.5.3.2.1 Status and Management

Humpback whales, as a globally distributed species, are divided into 14 DPSs and NMFS revised the listing status of each breeding population in 2016 (81 *Federal Register* 62259). The West Indies DPS that occurs within the Study Area did not warrant listing under the ESA, as they are neither in danger of extinction nor likely to become so in the foreseeable future. All humpback whales feeding in the North Atlantic are considered part of the West Indies DPS (Bettridge et al., 2015), including the Gulf of Maine stock. The West Indies DPS feeding range primarily includes the Gulf of Maine, eastern Canada, as well as western Greenland, and breeding grounds include waters of the Dominican Republic and Puerto Rico (81 *Federal Register* 62259).

For management purposes in U.S. waters, NMFS identified stocks that are based on feeding areas. Although the western North Atlantic population was once treated as a single management stock, the Gulf of Maine stock has been identified as a discrete subpopulation based on strong fidelity of humpbacks feeding in that region (Waring et al., 2016). The Gulf of Maine stock is the only stock of humpbacks in the Atlantic managed under NMFS jurisdiction. However, it should be noted that several other discrete humpback whale subpopulations, based on feeding grounds, are in the western North Atlantic, including the Gulf of St. Lawrence, Newfoundland/Labrador, and western Greenland (Waring et al., 2016), though all belong to the West Indies DPS.

F.5.3.2.2 Habitat and Geographic Range

Humpback whales are distributed worldwide in all major oceans and most seas. Most humpback whale sightings are in nearshore and continental shelf waters; however, humpback whales frequently travel through deep oceanic waters during migration (Calambokidis et al., 2001; Clapham & Mattila, 1990). Humpback whales of the western North Atlantic are typically found in Labrador Current, North Atlantic Gyre and Gulf Stream open-ocean areas during seasonal migrations from northern latitude feeding grounds, occupied during the summer, to southern latitude calving and breeding grounds occupied in the winter (Waring et al., 2016). The Gulf of St. Lawrence, Newfoundland Grand Banks, West Greenland, and Scotian Shelf are summer feeding grounds for humpbacks (Cetacean and Turtle Assessment Program, 1982; Kenney & Winn, 1986; Stevick et al., 2006; Whitehead, 1982). The Gulf of Maine is also one of the principal summer feeding grounds for humpback whales in the North Atlantic. The largest numbers of humpback whales are present from mid-April to mid-November. Other feeding locations in this ecosystem are Stellwagen Bank, Jeffreys Ledge, the Great South Channel, the edges and shoals of Georges Bank, Cashes Ledge, and Grand Manan Banks (Cetacean and Turtle Assessment Program, 1982; Kenney & Winn, 1986; Stevick et al., 2006; Weinrich et al., 1997; Whitehead, 1982). LaBrecque et al.

(2015a) delineated a humpback whale feeding area in the Gulf of Maine, Stellwagen Bank, and Great South Channel, substantiated through vessel-and aerial-based survey data, photo-identification data, radio-tracking data, and expert judgment (Figure F.5-7). Humpback whales feed in this area from March through December. Humpback feeding habitats are typically shallow banks or ledges with high seafloor relief (Hamazaki, 2002; Payne et al., 1990).

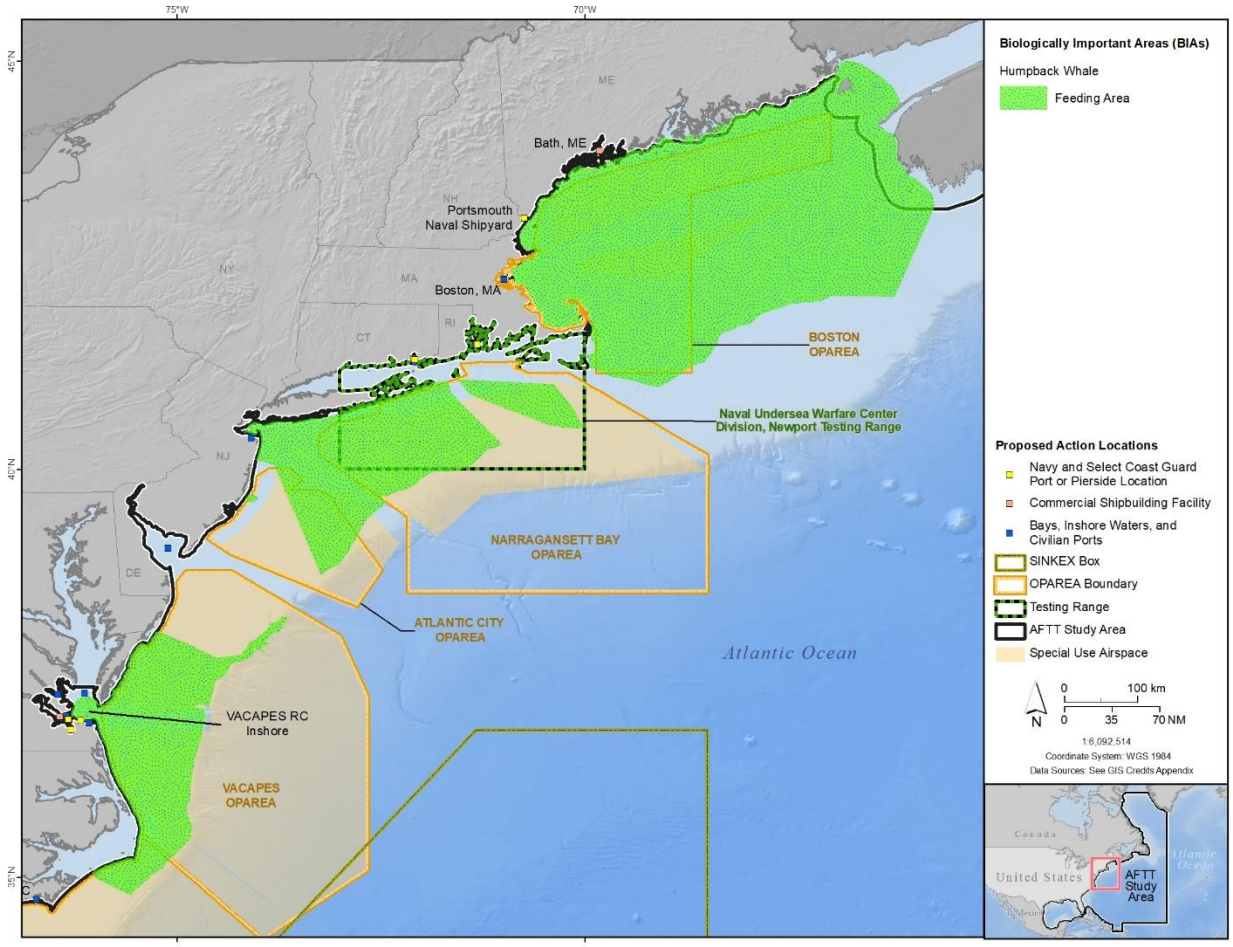


Figure F.5-7: Biologically Important Areas for Humpback Whales in the Study Area

Additionally, as the West Indies population increases and is no longer considered at risk for extinction, their distribution has expanded outside of their known primary feeding areas into nearshore urban waterways such as the New York-New Jersey Harbor estuary and New York Bight apex (Brown et al., 2018; Brown et al., 2019; King et al., 2021; Smith et al., 2022b; Zoidis et al., 2021), which increases exposure to heavy commercial and recreational vessel presence (Brown et al., 2019; King et al., 2021; Zoidis et al., 2021). Using opportunistic sighting data and known catalogued individuals that feed in the Gulf of Maine, a study (Brown et al., 2022), showed site fidelity of predominately juvenile individuals in the New York Bight apex with a 31.3 percent annual return rate, while the presence of adults and mother-calf pairs were rare. Long-term data for humpback whale presence in this area is lacking, and therefore more research is needed to infer conclusions regarding population trends, sighting increases, and additional factors driving shifts in distribution throughout the northwest Atlantic (Brown et al., 2022).

Individual variability in the timing of migrations may result in the presence of individuals in high-latitude areas throughout the year (Straley, 1990). Records of humpback whales off the United States mid-Atlantic coast (New Jersey to North Carolina) from November through March suggest these waters may represent a supplemental winter-feeding ground used by juvenile and mature humpback whales of U.S. and Canadian North Atlantic stocks (LaBrecque et al., 2015a).Humpbacks are most likely to occur near the mouth of the Chesapeake Bay and coastal waters of Virginia Beach between November and March; however, they could be found in the area year-round, based on sighting and stranding data in both mid-Atlantic waters and the Chesapeake Bay itself (Aschettino et al., 2022; Barco et al., 2002). Photo-identification data support the repeated use of the mid-Atlantic region by individual humpback whales (Aschettino et al., 2022; Barco et al., 2002). Vessel surveys offshore of Virginia show site fidelity in the winter months for some individuals, and hierarchical state-space modeling of humpback whale tag data shows a high level of occurrence (82 percent of all modeled whale locations) within the shipping channels—an important high-use area by both the Action Proponent and commercial traffic (Aschettino et al., 2020).

Aerial and vessel monitoring conducted offshore of Cape Hatteras, North Carolina, in Onslow Bay, North Carolina, and offshore of Jacksonville, Florida confirmed winter occurrence of humpback whales in these three areas of the Atlantic (Surrey-Marsden et al., 2018; U.S. Department of the Navy, 2013a; Zoodsma et al., 2016), as well as observations in Onslow Bay during the spring months (U.S. Department of the Navy, 2013a).

There are occasional reports of humpback whales in the Gulf of America, but those sightings should be considered extralimital.

F.5.3.2.3 Population Trends

Current data suggest that the Gulf of Maine humpback whale stock is steadily increasing in numbers (Waring et al., 2016). This is consistent with an estimated average growth trend of 3.1 percent (Standard Error =0.005) in the North Atlantic population overall for the period between 1979 through 1993 (Stevick et al., 2003).

F.5.3.2.4 Predator and Prey Interactions

Humpback whales feed on a variety of invertebrates and small schooling fishes. The most common invertebrate prey are krill; the most common fish prey are herring, mackerel, sand lance, sardines, anchovies, and capelin (Clapham & Mead, 1999). Feeding occurs both at the surface and in deeper waters, wherever prey is abundant. The humpback whale is the only species of baleen whale that shows strong evidence of cooperation when feeding in large groups (D'Vincent et al., 1985). Humpback whales were observed using “bubble nets” to herd prey (Jefferson et al., 2015). Bubble nets are a feeding strategy where the whales dive and release bubbles of air that float up in a column and trap prey inside; the humpbacks then lunge through the column of trapped prey to feed at the surface (Hain et al., 1982).

Sensors attached to humpback whales foraging in Stellwagen Bank, Massachusetts, allowed researchers to measure in fine detail the orientation and movement patterns of both humpback whales and their prey at meaningful ecological scales (Friedlaender et al., 2009). Findings indicate that differences between surface and bottom feeding behaviors in humpback whales correlated with vertical changes in the distribution and abundance of their primary prey, sand lance. In addition to prey abundance, other factors relate to humpback whale surface feeding in the Gulf of Maine, such as time of day and tidal height (Hazen et al., 2009). Characteristics of the prey, such as light emitted and the shape of the schools, also relate to humpback whale surface feeding.

This species is known to be attacked by both killer whales and false killer whales, as evidenced by tooth rake scars on their bodies, including pectoral flippers and tail flukes (Jefferson et al., 2015).

F.5.3.2.5 Species-Specific Threats

NMFS has declared an unusual mortality event for humpback whales along the Atlantic coast beginning in January 2016 (National Marine Fisheries Service, 2024b). Increased mortalities have been observed from Maine through North Carolina. As of winter 2023, 178 stranding cases have been reported and about half of those cases have been examined. Of those examined, 40 percent of cases showed evidence of human interaction either in the form of entanglement or vessel strike; however, investigations are still underway to determine the cause of many of the strandings.

F.5.3.3 Minke Whale (*Balaenoptera acutorostrata*)

F.5.3.3.1 Status and Management

Minke whales are the smallest species of mysticete in the Study Area and are classified as a single species with three subspecies recently recognized: *Balaenoptera acutorostrata* in the North Atlantic, *Balaenoptera acutorostrata scammoni* in the North Pacific, and a subspecies that is not formally but generally called the dwarf minke whale, which mainly occurs in the southern hemisphere (Hayes et al., 2022; Jefferson et al., 2015).

There are four recognized populations in the North Atlantic: Canadian east coast, west Greenland, central North Atlantic, and northeastern North Atlantic (Donovan, 1991). As stock structure is still being researched, minke whales off the eastern coast of the United States are considered, for now, to be part of the Canadian east coast stock, which inhabits the area from the western half of the Davis Strait (45° West) to the Gulf of America (Hayes et al., 2022). The relationship between this stock and the other three stocks is uncertain.

F.5.3.3.2 Habitat and Geographic Range

Minke whales have a cosmopolitan distribution in temperate and tropical waters and generally occupy waters over the continental shelf, including inshore bays and even occasionally estuaries (Hayes et al., 2020). There appears to be a strong seasonal component to minke whale distribution on both the continental shelf and in deeper, off-shelf waters. Spring to fall are times of relatively widespread and common acoustic occurrence on the shelf (e.g., Risch et al., 2013)., while September through April is the period of highest acoustic occurrence in deep-ocean waters throughout most of the western North Atlantic. The minke whale is common and widely distributed within the U.S. Exclusive Economic Zone in the Atlantic Ocean (Cetacean and Turtle Assessment Program, 1982).

During summer and early fall, minke whales are found throughout the lower Bay of Fundy (Ingram et al., 2007). Spring and summer are times of relatively widespread and common occurrence and are the seasons when the whales are most abundant in New England waters. In New England waters during fall there are fewer minke whales, while during winter the species appears to be largely absent.

LaBrecque et al. (2015a) delineated two minke whale feeding areas: (1) waters less than 200 m in the southern and southwestern section of the Gulf of Maine, including Georges Bank, the Great South Channel, Cape Cod Bay, Massachusetts Bay, and Stellwagen Bank, and (2) shallow waters around Parker Ridge and Cashes Ledges in the central Gulf of Maine (Figure F.5-8). These feeding areas were substantiated by vessel- and aerial-based surveys, sightings from whale-watching vessels, and expert judgment. Minke whales would be expected in both feeding areas from March through November.

Minke whales occur in the warmer waters of the southern United States during winter. While no minke whale mating or calving grounds have been found in U.S. Atlantic waters LaBrecque et al. (2015a), some data suggest a potential winter breeding area offshore of the southeastern United States and the Caribbean based on seasonal migration patterns, acoustic survey results, calf-stranding records, and sightings of mother-calf pairs in Onslow Bay, North Carolina, and offshore of Jacksonville, Florida (Risch et al., 2014). Acoustic monitoring using marine autonomous recording units deployed between 60 and 150 km offshore of Jacksonville, Florida, revealed continuous vocalizations at the deep-water sites during the winter, while vocalization events were completely absent during the fall suggesting a strong seasonal pattern of occurrence in this area (Oswald et al., 2016). Between 2015 and 2021, 12 minke whales were sighted during Navy visual surveys off the coast of Virginia Beach, Virginia. Ongoing acoustic monitoring efforts offshore of Cape Hatteras since March 2012 in water depths of 950 m resulted in frequent detections of minke whales (Debich et al., 2016; Stanistreet et al., 2013), suggesting spring occurrence in this area as minke whales begin to migrate to northern feeding grounds for the summer months.

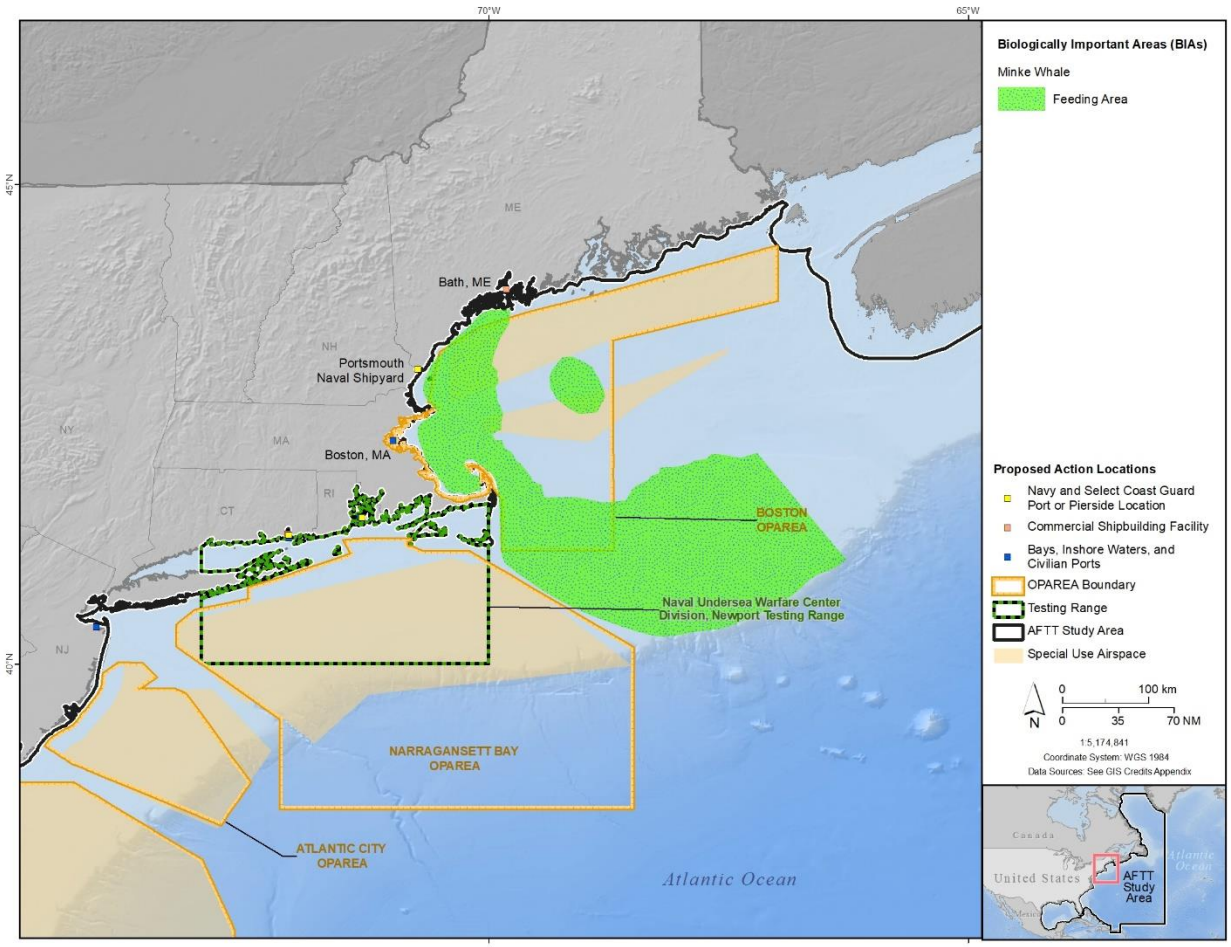


Figure F.5-8: Biologically Important Areas for Minke Whales in the Study Area

(Mitchell, 1991) summarized several winter records of minke whale sightings off the southeast United States, Cuba, Puerto Rico, and the Antilles, hinting at a possible winter distribution in the West Indies, and in the mid-ocean south and east of Bermuda. Although they are not typically expected to occur

within the Gulf of America, observation records also exist for mostly immature individuals in the Gulf of America and Florida Keys (Stewart & Leatherwood, 1985; Waring et al., 2013).

F.5.3.3.3 Population Trends

A trend analysis has not been conducted for this stock (Waring et al., 2016).

F.5.3.3.4 Predator and Prey Interactions

This species preys on small invertebrates and schooling fishes, such as capelin, haddock, sand eels, pollock, herring, and cod (Jefferson et al., 2015; Kuker et al., 2005; Lindstrom & Haug, 2001; Reeves et al., 2002b). Similar to other rorquals, minke whales are lunge feeders, often plunging through patches of shoaling fish or krill (Hoelzel et al., 1989; Jefferson et al., 2015).

Minke whales are prey for killer whales (Ford et al., 2005); a common minke was observed under attack by killer whales near British Columbia (Weller, 2009).

F.5.3.3.5 Species-Specific Threats

Minke whales are documented as bycatch in gillnets in the mid-Atlantic and northeast fisheries. This species was also documented as bycatch in pelagic longline fisheries operating in the Atlantic Ocean, Caribbean, and Gulf of America (Zollett, 2009). Minke whale mortality and serious injury has also been documented as a result of interactions with an unknown Canadian fishery.

An unusual mortality event for minke whales was declared from 2017 to 2024 along the Atlantic Coast (National Marine Fisheries Service, 2024c). During that timeframe, 172 minke whale mortalities were observed from Maine to South Carolina. Full or partial necropsy examinations were conducted on more than 60 percent of the whales, with preliminary findings showing evidence of human interactions or infectious diseases in many of the whales. However, these findings are not consistent across all of the whales examined.

F.5.3.4 Dwarf/Pygmy Sperm Whale (*Kogia sima* and *Kogia breviceps*)

F.5.3.4.1 Status and Management

Before 1966, dwarf and pygmy sperm whales were thought to be a single species, until form and structure distinction were shown (Handley, 1966); misidentifications of these two species are still common (Jefferson et al., 2015). Dwarf and pygmy sperm whales are not often observed at sea, but they are among the more frequently stranded cetaceans (Caldwell & Caldwell, 1989; Jefferson et al., 2015; McAlpine, 2009). Rare sightings indicate they may avoid human activity, and they are rarely active at the sea surface. They usually appear slow and sluggish, often resting motionless at the surface with no visible blow (Baird, 2005; Jefferson et al., 2015). Because of the scarcity of biological information

available for individual dwarf and pygmy sperm whales, the difficulty of species-level identifications, and the lack of data on individual stock structure and abundance estimates, dwarf and pygmy sperm whales are presented collectively here with species-specific information if available.

Although virtually nothing is known of population status for these species, stranding frequency suggests they may not be as uncommon as sighting records would indicate (Jefferson et al., 2015; Maldini et al., 2005). The western North Atlantic population(s) and the northern Gulf of America population(s) are considered separate stocks for management purposes, but there is no genetic evidence that these two populations differ (Hayes et al., 2021).

F.5.3.4.2 Habitat and Geographic Range

Dwarf and pygmy sperm whales appear to be distributed worldwide from temperate to tropical waters (Caldwell & Caldwell, 1989; McAlpine, 2002). Both species may be found in the Gulf Stream and North Atlantic Gyre open-ocean areas. Most sightings are in the Gulf Stream, perhaps an artifact of survey effort rather than a reflection of actual distribution. Dwarf and pygmy sperm whales can occur close to shore and occasionally over the outer continental shelf. However, several studies show that they may also occur beyond the continental shelf edge (Bloodworth & Odell, 2008; MacLeod et al., 2004). The pygmy sperm whale may frequent more temperate habitats than the dwarf sperm whale, which is more of a tropical species. The dwarf sperm whale may also have a more pelagic distribution, and dive deeper during feeding bouts, than pygmy sperm whales (Barros & Wells, 1998). Hodge and Read (2018) used passive acoustic monitoring to determine that dwarf and pygmy sperm whales are common in deep waters along the continental shelf break and slope between Virginia and Florida, and more common than suggested by visual sightings. Passive acoustics have also been used to estimate density of dwarf/pygmy sperm whales in the Gulf of America, finding that densities derived from acoustic data are substantially higher than those developed from visual sighting data (Hildebrand et al., 2019). At these recording sites, vocalizations were detected more during the day than night hours, and some level of seasonality was evident in the recordings (Hildebrand et al., 2019). A relative lack of oceanic sightings may have more to do with the difficulty of detecting and identifying these animals at sea and lack of effort, in comparison to any real distributional preferences.

In the Study Area, dwarf and pygmy sperm whales are found primarily in the Northeast and Southeast United States Continental Shelf Large Marine Ecosystems, the Gulf of America, and Caribbean Sea (Bloodworth & Odell, 2008; Caldwell & Caldwell, 1989; Cardona-Maldonado & Mignucci-Giannoni, 1999). A stranded pygmy sperm whale on the north shore of the Gulf of St. Lawrence represents the northernmost record for this species in the western Atlantic (Measures et al., 2004).

Despite the difficulty of sighting these species visually, aerial surveys of mid-Atlantic portions of the Study Area (near Norfolk Canyon) in 2018 and 2019 resulted in 10 observations totaling 17 individuals; 4 encounters involved mother-calf pairs (Cotter, 2019).

Pygmy sperm whales were one of the most sighted species in the northern Gulf of America from 1992 to 1994 and from 1996 to 2001 (Mullin & Fulling, 2004). Fulling and Fertl (2003) noted a concentration of sightings in continental slope waters near the Mississippi River Delta. The delta is considered an important area for cetaceans in the northern Gulf of America because of its high levels of productivity associated with oceanographic features. Data from the Gulf of America suggest that dwarf and pygmy sperm whales may associate with frontal regions along the continental shelf break and upper continental slope, where squid densities are higher (Baumgartner et al., 2001; Jefferson et al., 2015).

F.5.3.4.3 Population Trends

Trend analyses have been conducted for dwarf/pygmy sperm whales in both the Gulf of America and Western North Atlantic stocks. However, for both regions, there is high uncertainty in the abundance estimates, and methodological factors make it difficult to compare across years. While there appears to be an increasing trend in the Western North Atlantic stock, this should be interpreted with caution (Hayes et al., 2021).

F.5.3.4.4 Predator and Prey Interactions

Dwarf and pygmy sperm whales feed on cephalopods and, less often, on deep-sea fishes and shrimp (Beatson, 2007; Caldwell & Caldwell, 1989). A study showed cephalopods (squid) were the primary prey

of pygmy sperm whales in the Pacific Ocean, making up 78.7 percent of prey abundance and 93.4 percent contribution by mass. Stomach samples revealed an extreme diversity of cephalopod prey, with 38 species from 17 families (West et al., 2009).

Dwarf and pygmy sperm whales are likely subject to occasional killer whale predation, as are other whale species.

F.5.3.4.5 Species-Specific Threats

The northern Gulf of America stocks of dwarf and pygmy sperm whales were among the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill. Injury quantification determined that 15 percent of dwarf and pygmy sperm whales in the Gulf of America were exposed to oil, resulting in 5 percent excess mortality above baseline conditions, 7 percent excess failed pregnancies, and a 6 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America dwarf and pygmy sperm whale stocks will take an estimated 11 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.5 Beaked Whales (Various Species)

Six species of beaked whales are known in the western North Atlantic Ocean: goose-beaked whale (formerly Cuvier's beaked whale) (*Ziphius cavirostris*), northern bottlenose whale (*Hyperoodon ampullatus)* discussed in Section F.5.3.6, and four members of the genus *Mesoplodon* — True's (*M. mirus*), Gervais' (*M. europaeus*), Blainville's (*M. densirostris*), and Sowerby's (*M. bidens*) beaked whales. Goose-beaked, Blainville's, and Gervais' beaked whales are also known to regularly occur in the Gulf of America based on stranding or sighting data (Hansen et al., 1995; Würsig et al., 2000). Sowerby's beaked whale in the Gulf of America is considered extralimital because there is only one known stranding of this species (Bonde & O'Shea, 1989) and occurrence is normally in northern temperate waters of the North Atlantic (Mead, 1989a). With the exception of the goose-beaked whale and northern bottlenose whale, beaked whales are nearly indistinguishable at sea (Coles, 2001). Because of the scarcity of biological information available for individual species, the difficulty of species-level identifications for *Mesoplodon*, and the lack of data on individual stock structure and abundance estimates, goose-beaked, True's, Gervais', Blainville's, and Sowerby's beaked whales are presented collectively here with species-specific information if available.

F.5.3.5.1 Status and Management

Stock structure of beaked whales in the Atlantic, Gulf of America, and U.S. Virgin Islands is unknown; however, these are assumed separate for management purposes.

F.5.3.5.2 Habitat and Geographic Range

Goose-beaked, True's, Gervais', Blainville's, and Sowerby's beaked whales are found in Labrador Current, North Atlantic Gyre, and Gulf Stream open-ocean areas and are also known to occur in the Northeast U.S. Continental Shelf, Scotian Shelf, and Newfoundland-Labrador Shelf Large Marine Ecosystems. The continental shelf margins from southern Nova Scotia to Cape Hatteras have been identified as key areas for beaked whales in a global review by MacLeod and Mitchell (2006). Goose-beaked, Gervais', Blainville's, and True's beaked whales may also occur in the Southeast U.S. Continental Shelf Large Marine Ecosystem, while goose-beaked, Gervais' and Blainville's beaked whales may occur in the Gulf of Mexico and Caribbean Sea Large Marine Ecosystems.

Goose-beaked whale is one of the more commonly seen and the best known. Similar to other beaked whale species, this oceanic species generally occurs in waters past the edge of the continental shelf and occupies almost all temperate, subtropical, and tropical waters of the world, as well as subpolar and

even polar waters in some areas (Waring et al., 2014). The distribution of goose-beaked whales is poorly known and is based mainly on stranding records (Leatherwood et al., 1976). Strandings were reported from Nova Scotia along the eastern U.S. coast south to Florida, around the Gulf of America, and within the Caribbean (Cetacean and Turtle Assessment Program, 1982; Heyning, 1989; Houston, 1990; Leatherwood et al., 1976; MacLeod, 2006; Mignucci-Giannoni et al., 1999). Goose-beaked whale sightings have occurred principally along the continental shelf edge in the mid-Atlantic region off the northeast U.S. coast (Cetacean and Turtle Assessment Program, 1982; Hamazaki, 2002; Palka, 2006; Waring et al., 1992; Waring et al., 2001) in late spring or summer, although strandings and sightings were reported in the Caribbean Sea and the Gulf of America as well (Dalebout et al., 2006). Goose-beaked whales are generally sighted in waters with a bottom depth greater than 200 m and are frequently recorded in waters with bottom depths greater than 1,000 m (Falcone et al., 2009; Jefferson et al., 2008; Jefferson et al., 2015).

True's beaked whales appear to occur only in temperate waters, and possibly only in warm temperate waters. Most records of occurrence in the northwest Atlantic suggest a probable relation with the Gulf Stream (MacLeod, 2000; Mead, 1989b).

Gervais' beaked whale occurs only in the Atlantic Ocean and Gulf of America, within a range both north and south of the equator to a latitude of 40° (Jefferson et al., 2008; Jefferson et al., 2015; MacLeod, 2006). Although the distribution seems to range across the entire temperate and tropical Atlantic, most records are from the western North Atlantic waters from New York to Texas (more than 40 published records), and they are the most common species of *Mesoplodon* to strand along the U.S. Atlantic coast (Waring et al., 2014).

Sowerby's beaked whales appear to inhabit more temperate waters than many other members of the genus. They are the most northerly distributed of Atlantic species of *Mesoplodon*, and are found in cold temperate waters of the North Atlantic Ocean, generally north of 30˚ N. In the Study Area, they range from Massachusetts to Labrador (MacLeod et al., 2006; Mead, 1989a). There were several at-sea sightings off Nova Scotia and Newfoundland, from New England waters north to the ice pack (MacLeod et al., 2006; Waring et al., 2010). Sowerby's beaked whale occurrence in the Gully Marine Protected Area (east of Nova Scotia) increased during the period from 1988 to 2011 (Whitehead, 2013).

Blainville's beaked whales are one of the most widely distributed of the distinctive toothed whales in the *Mesoplodon* genus (Jefferson et al., 2008; MacLeod et al., 2006). In the Study Area, this species is known to occur in enclosed deep-water seas, such as the Gulf of America and Caribbean Sea. There are records for this species from the eastern coast of the United States and Canada, from as far north as Nova Scotia and south to Florida and the Bahamas (MacLeod & Mitchell, 2006; Mead, 1989a).

Starting January 2015, aerial surveys conducted in the offshore area from Wilmington, North Carolina to near Norfolk Canyon and have resulted in sightings of True's (Number [N] = 2), Sowerby's (N = 1), and Gervais' (N = 8) beaked whales, in addition to sightings only identified to *Mesoplodon* species (N = 27) (Cotter, 2019). Aerial sightings of goose-beaked whale were more common (N = 69). Vessel-based surveys offshore of Norfolk, Virginia, sighted True's (N = 3), Sowerby's (N = 3), and goose-beaked (N = 5) beaked whales, as well as unidentified *Mesoplodons* (N = 4) and unidentified beaked whales (N = 4) between 2016 and 2021 (Halpin et al., 2009).

McLellan et al. (2018) determined that Cape Hatteras is an exceptionally important habitat area for both goose-beaked and *Mesoplodon* species, while (Foley et al., 2021) noted that satellite-tagged goose-beaked whales demonstrate high site fidelity in small core areas in this region. During aerial surveys conducted between May 2011 and December 2014, beaked whales were observed in every month of

the year offshore of Cape Hatteras, with goose-beaked whale being the most commonly encountered beaked whale species (McLellan et al., 2015). The highest number of beaked whale sightings occurred between May and August and all sightings occurred along the continental shelf break (McLellan et al., 2015). These results suggest some degree of residency for beaked whales in this area (McLellan et al., 2015). Median water depths at tagging locations ranged from 1,725 to 2,274 m, with a maximum water depth of 3,015 m. Diving data captured by the tags showed a maximum dive depth of 2,800 m suggesting that many of the dives were likely to, or close to, the seafloor (McLellan et al., 2015).

Passive acoustic monitoring conducted between 2007 and 2013 in Onslow Bay, North Carolina resulted in detections of multiple beaked whale vocalization events. Beaked whale detections were documented throughout the monitoring period with no specific diel pattern (Hodge & Read, 2015). Gervais' beaked whales were detected significantly more than any other beaked whale species. Goose-beaked whale clicks were detected in November 2012 and Blainville's beaked whale clicks were detected primarily in April and May 2013 (Hodge & Read, 2015). True's and Sowerby's beaked whales were not detected during this effort, but there were two detections in December 2012 of a click type assigned to an unidentified beaked whale species. Passive acoustic monitoring conducted offshore of Cape Hatteras between March and April 2012 recorded beaked whale clicks on nearly 40 percent of the recording days (Stanistreet et al., 2013). Closer examination of these beaked whale click events suggested they belonged to goose-beaked and Gervais' beaked whales (Stanistreet et al., 2012).

MacLeod and Mitchell (2006) described the northern Gulf of America continental shelf margin as "a key area" for beaked whales. Beaked whales were seen in all seasons during GulfCet aerial surveys of the northern Gulf of America (i.e., U.S. Gulf of America) (Hansen et al., 1996; Mullin & Hoggard, 2000). Some of the aerial survey sightings may have included goose-beaked whale, although identification of beaked whale species from aerial surveys is problematic. Beaked whale sightings made during spring and summer vessel surveys were widely distributed in waters greater than 500 m deep. Between 2000 and 2021, vessel surveys in the Gulf of America documented 14 sightings of beaked whales (1 Gervais and 13 goose-beaked) (Halpin et al., 2009). While these survey data include large temporal gaps, they indicate a regular and recurring presence of goose-beaked whales in the Gulf of America.

F.5.3.5.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic goose-beaked whale stock. Additionally, trend analyses have not been conducted for any of the four species of *Mesoplodon* in the western North Atlantic (Waring et al., 2014).

A trend analysis for goose-beaked whale was conducted for data from 2003 to 2018, but the statistical power of this analysis is limited due to the available data (Hayes et al., 2021). Further analysis and additional data are required to determine a true change in abundance versus a distributional shift across the Gulf of America (Hayes et al., 2020). There are insufficient data to determine population trends for Blainville's and Gervais' beaked whales in the northern Gulf of America.

F.5.3.5.4 Predator and Prey Interactions

Beaked whales are generally deep-water feeders and prey on both squid and fish. Examination of stomach contents from stranded *Mesoplodon* indicates that they feed primarily on deep-water cephalopods (MacLeod et al., 2003). Stomach content analyses of captured and stranded *Mesoplodon* suggest that beaked whales are deep divers that feed at or close to the bottom in deep oceanic waters, taking whatever suitable prey they encounter or feeding on whatever species are locally abundant (Ohizumi, 2002). Stomach content analyses from goose-beaked whales show that they feed mostly on deep-sea squid, fish,

and crustaceans (Hickmott, 2005; Santos et al., 2007). Data show that goose-beaked whales use suction to ingest prey (Jefferson et al., 2008; Jefferson et al., 2015; Werth, 2006).

F.5.3.5.5 Species-Specific Threats

Impacts from anthropogenic noise have become a serious concern with regard to beaked whales over the past decade. In addition, disturbance by anthropogenic noise may prove to be an important habitat issue in some areas of beaked whales' range, notably in areas of concentrated military activity, oil and gas activity, or shipping. Ongoing studies are being conducted to address this issue and its impact, if any, on this and other marine species.

Gulf of America stocks of Blainville's, goose-beaked, and Gervais' beaked whales were among the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 12 percent of these beaked whale species in the Gulf of America were exposed to oil, resulting in 4 percent excess mortality above baseline conditions, 5 percent excess failed pregnancies, and a 4 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the Gulf of America Blainville's, goose-beaked, and Gervais' beaked whale stocks will take an estimated 10 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.6 Northern Bottlenose Whale (*Hyperoodon ampullatus*)

F.5.3.6.1 Status and Management

There are two populations of northern bottlenose whales in the western North Atlantic: one on the Scotian Shelf in the area referred to as the Gully and a second in Davis Strait off northern Labrador. The Gully is a unique ecosystem that appears to have long provided a stable year-round habitat for a distinct population of bottlenose whales (Dalebout et al., 2006). The Scotian Shelf population of northern bottlenose whales is listed as endangered by the Committee on the Status of Endangered Wildlife in Canada and the Davis Strait-Baffin Bay-Labrador Sea population is designated as a population of special concern (Committee on the Status of Endangered Wildlife in Canada, 2011).

F.5.3.6.2 Habitat and Geographic Range

Northern bottlenose whales are largely a deep-water species and seldom found in waters less than 2,000 m deep (Mead, 1989b). Distribution is concentrated in areas of high relief, including shelf breaks and submarine canyons.

Northern bottlenose whales are commonly found in the Labrador Current and likely occur in the Gulf Stream open-ocean areas. The Gully straddles the Scotian Shelf and Gulf Stream areas.

Northern bottlenose whales are distributed in the North Atlantic primarily from Nova Scotia to about 70° in the Davis Strait, along the east coast of Greenland to 77°, and from England to the west coast of Spitzbergen (Waring et al., 2015). There are two main centers of bottlenose whale distribution in the western North Atlantic: the Scotian Shelf (including the Gully), and Davis Strait off northern Labrador (Reeves et al., 1993). Genetic studies have shown that these two populations are likely distinct from one another (Dalebout et al., 2006). Northern bottlenose whales have been sighted in deep waters off New England but are uncommon in U.S. waters. Strandings have occurred as far south as North Carolina, although that is outside of the natural range or at the edge of the southern range for this more subarctic species (Jefferson et al., 2008; Jefferson et al., 2015; MacLeod et al., 2006).

F.5.3.6.3 Population Trends

There is insufficient data to determine the population trends for this species (Waring et al., 2015).

F.5.3.6.4 Predator and Prey Interactions

This species preys primarily on squid of the genus *Gonatus* but will also take fishes, sea cucumbers, sea stars, and prawns, as confirmed by stomach content analyses (Clarke & Kristensen, 1980; Gowans, 2009). They appear to be more benthic (bottom of the sea) feeders, foraging at depths of between 500 and 1,500 m (Hooker & Whitehead, 2002; Jefferson et al., 2015).

F.5.3.6.5 Species-Specific Threats

There are no significant species-specific threats to northern bottlenose whales in the northwest Atlantic.

F.5.3.7 Atlantic Spotted Dolphin (*Stenella frontalis*)

F.5.3.7.1 Status and Management

The Atlantic spotted dolphin occurs in two forms that may be distinct subspecies (Perrin, 2009a; Perrin et al., 1987; Rice, 1998): the large, heavily spotted form, which inhabits the continental shelf and is usually found inside or near the 200-m isobath; and the smaller, less spotted island and offshore form, which occurs in the Atlantic Ocean but is not known to occur in the Gulf of America (Fulling et al., 2003; Mullin & Fulling, 2003, 2004). The western North Atlantic population is considered a separate stock from the Gulf of America stock(s) for management purposes based on genetic analysis (Waring et al., 2014; Waring et al., 2016). The Puerto Rico and U.S. Virgin Islands population is also considered a separate stock, although there is currently no information to differentiate this stock from the Atlantic Ocean and Gulf of America stocks.

F.5.3.7.2 Habitat and Geographic Range

The Atlantic spotted dolphin is found in tropical to warm-temperate waters, predominantly over the continental shelf and upper slope (Waring et al., 2013, 2014). In the eastern Gulf of America, for instance, the species often occurs over the mid-shelf (Griffin & Griffin, 2003). In the western Atlantic, this species is distributed from New England to Brazil and is found in the Gulf of America as well as the Caribbean Sea (Perrin, 2009a). Atlantic spotted dolphins may occur in the Gulf Stream open-ocean area.

The large, heavily spotted coastal form of the Atlantic spotted dolphin typically occurs over the continental shelf but is often at least several miles offshore (Davis et al., 1998; Perrin, 2002, 2009a). Atlantic spotted dolphin sightings have been concentrated in the slope waters north of Cape Hatteras, but in the shelf waters south of Cape Hatteras, sightings extend into the deeper slope and offshore waters of the mid-Atlantic (Mullin & Fulling, 2003; Waring et al., 2014). Vessel surveys conducted between January 2009 and December 2014 offshore of Cape Hatteras, North Carolina resulted in multiple sightings of Atlantic spotted dolphins annually (Foley et al., 2015). Vessel surveys conducted from 2016 to 2021 offshore of Virginia Beach sighted this species a total of 36 times, with 2 to 12 sightings annually (Ocean Biodiversity Information System – Spatial Ecological Analysis of Megavertebrate Populations, 2024). Aerial surveys in the Norfolk Canyon area detected Atlantic spotted dolphins between April and October of 2016 through 2019, with sightings of both inshore and offshore ecotypes (Cotter, 2019). Aerial and shipboard surveys conducted between 2007 and 2010 in offshore waters of Onslow Bay, North Carolina, indicate that spotted dolphins have a strong preference for waters over the continental shelf and do not typically occur beyond the shelf break (Read et al., 2014). Numerous re-sightings of multiple individuals over several years and across seasons supports the existence of considerable fine-scale population structure and a degree of residency for Atlantic spotted dolphins in Onslow Bay (Swaim et al., 2014).

Photo-identification catalogs of Atlantic spotted dolphins from Cape Hatteras, Onslow Bay, and Jacksonville survey areas have been compared, but no matches have been identified (Foley et al., 2015;

Swaim et al., 2014) suggesting a high degree of residency to these areas. Atlantic spotted dolphins were one of the dominant species sighted during vessel surveys conducted along the continental shelf break and pelagic waters offshore of Jacksonville, Florida from July 2009 through December 2013 (Swaim et al., 2014). Sightings were restricted to the relatively shallow shelf waters of the survey area.

Higher numbers of spotted dolphins are reported over the west Florida continental shelf from November to May than during the rest of the year, suggesting that this species may migrate seasonally (Griffin & Griffin, 2003).

In the Gulf of America, Atlantic spotted dolphins occur primarily from continental shelf waters 10-200 m deep to slope waters greater than 500 m deep (Fulling et al., 2003; Maze-Foley & Mullin, 2006; Mullin & Fulling, 2004). Atlantic spotted dolphins were seen in all seasons during GulfCet aerial surveys of the northern Gulf of America from 1992 to 1998 (Hansen et al., 1996; Mullin & Hoggard, 2000).

F.5.3.7.3 Population Trends

A trend analysis has been conducted for the North Atlantic stock of Atlantic spotted dolphins, using data from surveys in 2004, 2011, and 2016 (Hayes et al., 2020). A significant decrease in population size was detected; however, the analysts noted uncertainty in whether interannual abundance changes are related to the population size or changes in spatial distribution due to environmental variation.

There are insufficient data to determine population trends for the Northern Gulf of America stock of Atlantic spotted dolphins (Waring et al., 2013) and for the Puerto Rico and U.S. Virgin Islands stock of Atlantic spotted dolphins (Waring et al., 2012).

F.5.3.7.4 Predator and Prey Interactions

Atlantic spotted dolphins feed on small cephalopods, fishes, and benthic invertebrates. Atlantic spotted dolphins in the Gulf of America were observed feeding cooperatively on clupeid fishes and are known to feed in association with shrimp trawlers (Fertl & Leatherwood, 1997; Fertl & Würsig, 1995). In the Bahamas, this species was observed to chase and catch flying fish (MacLeod et al., 2004). The diet of the Atlantic spotted dolphin varies depending on its location (Jefferson et al., 2015). This species was documented to be prey for killer whales and sharks (Jefferson et al., 2015).

F.5.3.7.5 Species-Specific Threats

The northern Gulf of America stock of Atlantic spotted dolphins was included as 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification was completed for continental shelf dolphins, which entailed a combination of shelf bottlenose dolphins and Atlantic spotted dolphins. It was determined that 13 percent of continental shelf dolphins, including Atlantic spotted dolphins in the Gulf of America were exposed to oil, resulting in 4 percent excess mortality above baseline conditions, 6 percent excess failed pregnancies, and 5 percent higher likelihood for other adverse health effects. The maximum reduction of combined Atlantic spotted dolphins and bottlenose dolphins was only 3 percent; therefore, it was not possible to calculate the number of years it would take for these stocks to recover (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.8 Atlantic White-Sided Dolphin (*Lagenorhynchus acutus*)

F.5.3.8.1 Status and Management

Three population units of Atlantic white-sided dolphins in the western North Atlantic Ocean are suggested for conservation management of this stock: Gulf of Maine, Gulf of St. Lawrence, and Labrador Sea (Palka et al., 1997; Waring et al., 2004). Evidence for stock differentiation between the Gulf of

Maine and Gulf of St. Lawrence comes from reduced summer sightings along the eastern side of Nova Scotia (Hayes et al., 2020). No genetic analysis has been done to confirm this separation. The species is considered abundant in the North Atlantic (Jefferson et al., 2008; Waring et al., 2013).

A proposed taxonomic revision for this species is in progress (Hayes et al., 2020; Vollmer et al., 2019). However, until the new classification is officially accepted, the current species names are used.

F.5.3.8.2 Habitat and Geographic Range

This species is found primarily in cold temperate to subpolar continental shelf waters to the 328 ft. (100 m) depth contour (Cetacean and Turtle Assessment Program, 1982; Mate et al., 1994; Selzer & Payne, 1988). Occurrence of Atlantic white-sided dolphins in the northeastern United States probably reflects fluctuations in food availability as well as oceanographic conditions (Palka et al., 1997; Selzer & Payne, 1988). Before the 1970s, Atlantic white-sided dolphins were found primarily offshore in waters over the continental slope; however, since then, they occur primarily in waters over the continental shelf, replacing white-beaked dolphins, which were previously sighted in the area. This shift may have been the result of an increase in sand lance and a decline in herring in continental shelf waters (Payne et al., 1990). Areas of feeding importance are around Cape Cod and on the northwest edge of Georges Bank, in an area defined as the Great South Channel-Jeffreys Ledge corridor (Cetacean and Turtle Assessment Program, 1982; Palka et al., 1997). Selzer and Payne (1988) sighted white-sided dolphins more frequently in areas of high seafloor relief and where sea surface temperatures and salinities were low, although these environmental conditions might be only secondarily influencing dolphin distribution; seasonal variation in sea surface temperature and salinity as well as local nutrient upwelling in areas of high seafloor relief may affect preferred prey abundances, which in turn might affect dolphin distribution (Selzer & Payne, 1988).

Atlantic white-sided dolphins would be expected to occur in the Labrador Current and possibly in the northern extent of the Gulf Stream open-ocean area. Atlantic white-sided dolphins are common in waters of the continental slope from New England to southern Greenland (Cipriano, 2009; Jefferson et al., 2008; Jefferson et al., 2015). Along the Canadian and U.S. Atlantic coast, this species is most common from Hudson Canyon north to the Gulf of Maine (Palka et al., 1997). From January to May, low numbers of white-sided dolphins may be found from Georges Bank to Jeffreys Ledge. Even lower numbers are found south of Georges Bank (Palka et al., 1997; Payne et al., 1990; Waring et al., 2004). From June through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of Fundy (Payne et al., 1990; Waring et al., 2004). During this time, strandings occur from New Brunswick to New York (Palka et al., 1997). From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to the southern Gulf of Maine. Sightings occur year-round south of Georges Bank, particularly around Hudson Canyon, but in low densities (Cetacean and Turtle Assessment Program, 1982; Palka, 1997; Payne et al., 1990; Waring et al., 2004). A few strandings were collected on Virginia and North Carolina beaches, which appear to represent the southern edge of the range for this species (Cipriano, 2009).

F.5.3.8.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic stock of Atlantic white-sided dolphins (Waring et al., 2015).

F.5.3.8.4 Predator and Prey Interactions

The stomach contents of Atlantic white-sided dolphins caught through fishing bycatch, as well as those stranded off the coast of New England, have included at least 26 fish species and 3 cephalopod species. The most prominent species were the silver hake, spoonarm octopus, and haddock. Sand lances were

found in the stomach of one stranded white-sided dolphin (Hayes et al., 2018). There is seasonal variation in the diet; Atlantic herring was found in more dolphins during the summer than in winter (Craddock et al., 2009). This species is known to feed in association with other delphinid (dolphin-like) and large whale species (Jefferson et al., 2015; Palka et al., 1997).

This species was not documented to be prey for any other species (Jefferson et al., 2015).

F.5.3.8.5 Species-Specific Threats

This species is susceptible to mass strandings, as well as fishery-related mortality.

F.5.3.9 Clymene Dolphin (*Stenella clymene*)

F.5.3.9.1 Status and Management

The Clymene dolphin has an extensive range in the tropical Atlantic Ocean. The western North Atlantic and Northern Gulf of America populations are managed as separate stocks.

F.5.3.9.2 Habitat and Geographic Range

Clymene dolphins are a tropical to subtropical species, primarily sighted in deep waters well beyond the edge of the continental shelf (Fertl et al., 2003). Clymene dolphins likely occur in the Gulf Stream open-ocean area.

In the western North Atlantic, Clymene dolphins were observed as far north as New Jersey, although sightings were primarily in offshore waters east of Cape Hatteras over the continental slope and are likely to be strongly influenced by oceanographic features of the Gulf Stream (Fertl et al., 2003; Moreno et al., 2005; Mullin & Fulling, 2003). Vessel and aerial surveys conducted offshore of Cape Hatteras from 2011 through 2017 have resulted in 18 Clymene dolphin sightings during summer and fall, including one sighting of Clymene dolphins in a mixed group of spinner dolphins within the northern offshore waters of the survey area in 2011 (U.S. Department of the Navy, 2013a). Vessel-based surveys offshore of Virginia Beach between 2016 and 2021 did not identify any sightings of this species (Ocean Biodiversity Information System – Spatial Ecological Analysis of Megavertebrate Populations, 2024).

Clymene dolphins in the Gulf of America are observed most frequently on the lower slope and deep-water areas, primarily west of the Mississippi River, in regions of cyclonic or confluent circulation (Davis et al., 2002; Mullin et al., 1994a). Clymene dolphins were seen in the winter, spring, and summer during GulfCet aerial surveys of the northern Gulf of America during 1992 to 1998 (Hansen et al., 1996; Mullin & Hoggard, 2000).

F.5.3.9.3 Population Trends

There are insufficient data to determine population trends for the western North Atlantic stock of Clymene dolphins (Waring et al., 2013, 2014). In the Gulf of America, a trend analysis documented significant differences between abundance estimates in 2004, 2009, and 2017 (Hayes et al., 2021). However, the statistical power in this analysis is low due to lack of annual survey data, and it is not possible to determine whether the results indicate a change in abundance versus a change in distribution of the animals throughout the Gulf of America (Hayes et al., 2021).

F.5.3.9.4 Predator and Prey Interactions

Available information on feeding habits is very limited. This species preys on small fish and squid at moderate depths and feeds primarily at night (Fertl et al., 1997; Jefferson et al., 2015; Perrin et al., 1981).

This species is possibly preyed on by killer whales and large sharks, as evidenced by scars observed on their bodies, although actual predation was not observed (Jefferson, 2009a; Jefferson et al., 2008; Jefferson et al., 2015).

F.5.3.9.5 Species-Specific Threats

The northern Gulf of America stock of Clymene dolphins was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 7 percent of Clymene dolphins in the Gulf of America were exposed to oil, resulting in 2 percent excess mortality above baseline conditions, 3 percent excess failed pregnancies, and 3 percent higher likelihood for other adverse health effects. The maximum reduction of the Clymene dolphin population was only 3 percent; therefore, the trustees were not able to calculate the number of years it would take for this stock to recover (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.10 Common Bottlenose Dolphin (*Tursiops truncatus*)

F.5.3.10.1 Status and Management

There are currently 53 management stocks identified by NMFS in the western North Atlantic and Gulf of America, including oceanic, coastal, and estuarine stocks (Waring et al., 2016). Most stocks in the Study Area are designated as strategic or depleted under the MMPA. For a complete listing of currently identified stocks within the Study Area, see Table 3.7-1 (Marine Mammal Occurrence within the Study Area).

F.5.3.10.2 Habitat and Geographic Range

The bottlenose dolphin occurs in tropical to temperate waters of the Atlantic Ocean as well as inshore, nearshore, and offshore waters of the Gulf of America and U.S. East Coast (Waring et al., 2016). They generally do not range north or south of 45° latitude (Jefferson et al., 2008; Jefferson et al., 2015; Wells & Scott, 2009). They occur in most enclosed or semi-enclosed seas in habitats ranging from shallow, murky, estuarine waters to deep, clear offshore waters in oceanic regions (Jefferson et al., 2008; Jefferson et al., 2015; Wells et al., 2009). Open-ocean populations occur far from land; however, population density appears to be highest in nearshore areas (Scott & Chivers, 1990). Bottlenose dolphins occur in the North Atlantic Gyre and Gulf Stream open-ocean areas.

There are two morphologically and genetically distinct bottlenose dolphin morphotypes (distinguished by physical differences) (Duffield et al., 1983) described as coastal and offshore forms. In a decade-long collaborative study using DNA and morphological data, it has recently been proposed that the coastal form is a separate species than their offshore counterparts, and are more closely related to coastal populations from the Gulf of America and Caribbean. While a definitive distinction as a separate species has yet to be codified, the coastal form are currently being referred to as a Tamanend's bottlenose dolphin (*Tursiops erebennus*) (Costa et al., 2022). Both inhabit waters in the western North Atlantic Ocean and Gulf of America (Curry & Smith, 1997; Hersh & Duffield, 1990; Mead & Potter, 1995) along the U.S. Atlantic coast. The coastal morphotype of bottlenose dolphin is continuously distributed along the Atlantic coast south of Long Island, New York, around the Florida peninsula, and along the Gulf of America coast. The range of the offshore bottlenose dolphin includes waters beyond the continental slope (Kenney, 1990), and offshore bottlenose dolphins may transit between the Gulf of America and the Atlantic (Wells et al., 1999). Dolphins with characteristics of the offshore ecotype have stranded as far south as the Florida Keys.

In Canadian waters, bottlenose dolphins were occasionally sighted on the Scotian Shelf, particularly in the Gully (Gowans & Whitehead, 1995). Seasonally, bottlenose dolphins occur over the outer continental shelf and inner slope as far north as Georges Bank (Cetacean and Turtle Assessment Program, 1982; Kenney,

1990). Sightings occurred along the continental shelf break from Georges Bank to Cape Hatteras during spring and summer (Cetacean and Turtle Assessment Program, 1982; Kenney, 1990).

Several lines of evidence support a distinction between coastal stock dolphins and those present primarily in the inshore waters of the bays, sounds, and estuaries (LaBrecque et al., 2015b). Photo-identification and genetic studies support the existence of more than 40 stock populations in bays, sounds, and estuaries. These populations inhabit estuaries and bays from North Carolina to the Gulf of America coast (Caldwell, 2001; Gubbins, 2002; Gubbins et al., 2003; Litz, 2007; Mazzoil et al., 2005; Zolman, 2002).

LaBrecque et al. (2015a) identified nine small and resident bottlenose dolphin population ranges within estuarine areas along the U.S. east coast (Figure F.5-9 and Figure F.5-10). These ranges include estuarine and nearshore areas extending from Pamlico Sound, North Carolina down to Florida Bay, Florida and were substantiated through vessel- and aerial-based survey data, photo-identification data, genetic analyses, and expert judgment (LaBrecque et al., 2015a). The Northern North Carolina, Southern North Carolina, and Charleston Harbor Populations partially overlap with nearshore portions of the Navy Cherry Point Range Complex, while the Jacksonville Estuarine System Populations partially overlap with nearshore portions of the Jacksonville Range Complex. The Southern Georgia Estuarine System Population also overlap the Jacksonville Range Complex, specifically within Naval Submarine Base Kings Bay, Georgia and includes estuarine and intracoastal waterways from Altamaha Sound to the Cumberland River (LaBrecque et al., 2015a). The remaining four biologically important areas are outside but adjacent to the Study Area boundaries.

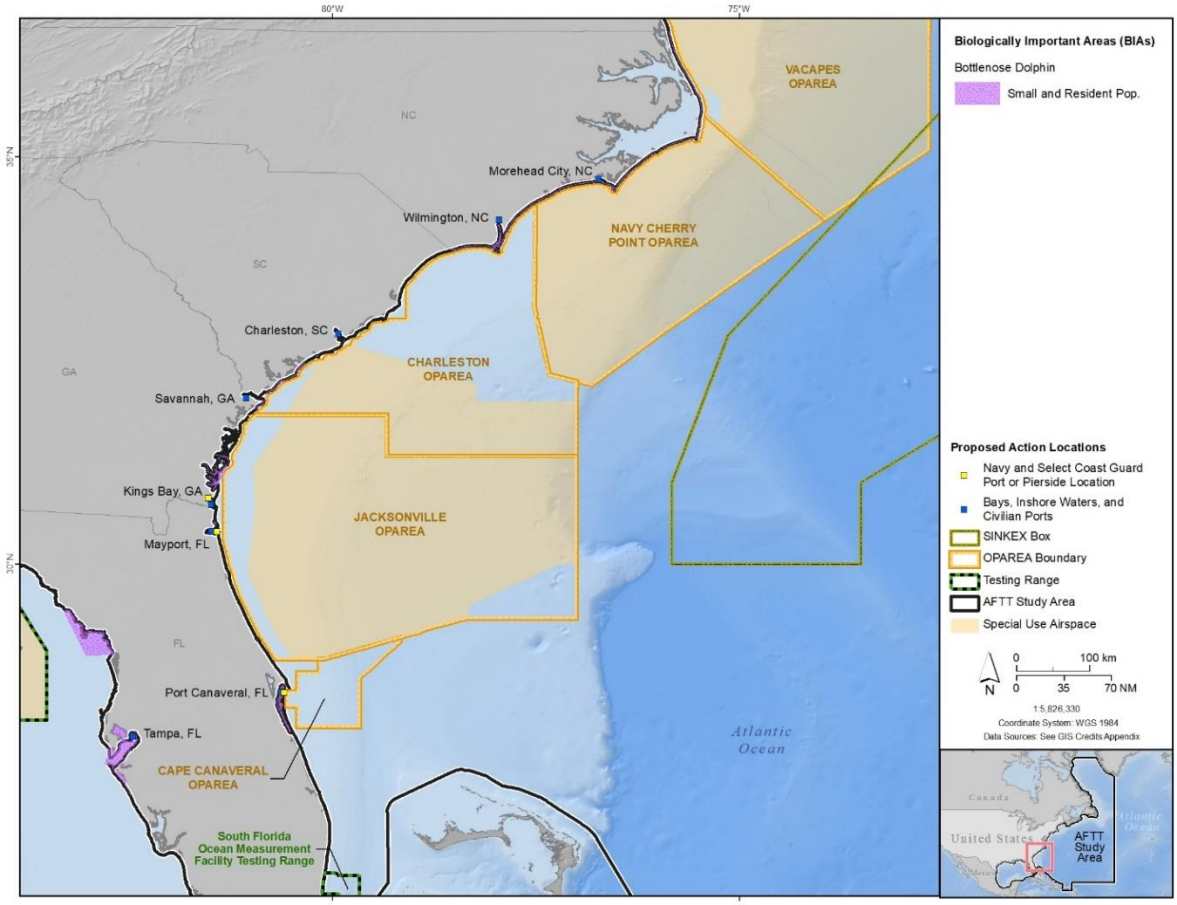


Figure F.5-9: Biologically Important Areas for Bottlenose Dolphins in the Study Area – Southeast

Off the coast of Virginia within the Study Area, three stocks of bottlenose dolphins are common in the waters of Chesapeake Bay and along the state's coastline. Engelhaupt et al. (2022) established dolphin density was highest inshore during the warmer months from June to November, although more than 200 individuals remained present during the winter and spring months, which had not been previously considered or reported (Barco et al., 1999; Cetacean and Turtle Assessment Program, 1982). Photo identification results indicate bottlenose dolphin presence in this area consist of short-term visits, with 82.9 percent of individuals sighted only once, while re-sightings in the Cape Henry region show clear indication of localized site fidelity with overlapping ranges of individual stocks (Engelhaupt et al., 2022).

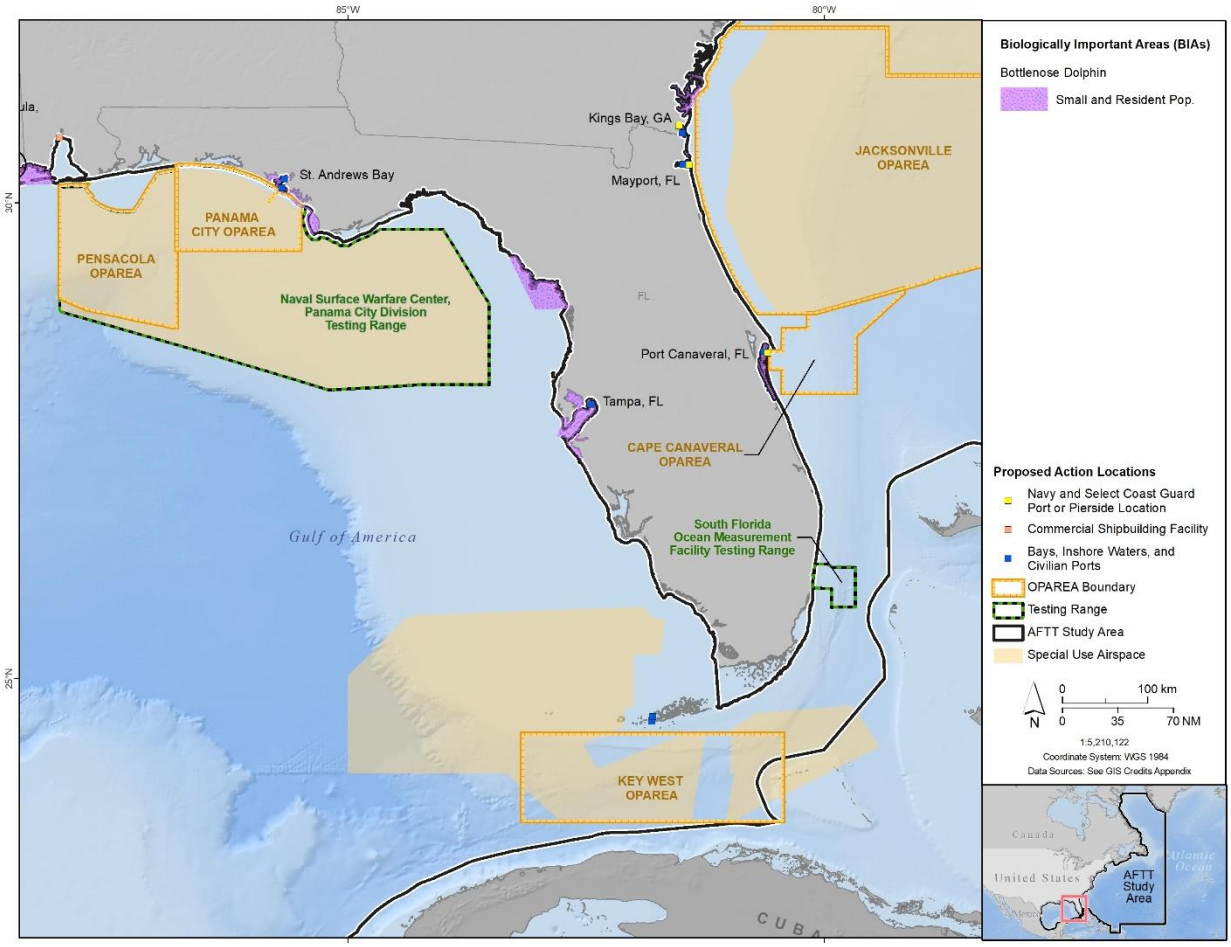


Figure F.5-10: Biologically Important Areas for Bottlenose Dolphins in the Study Area – South Florida and Gulf of America

In the Gulf of America alone, 32 distinct stocks are recognized, although the structure of these stocks is uncertain but appears to be complex. Residency patterns of dolphins in bays, sounds, and estuaries range from transient, seasonally migratory, and stable resident communities, where various stocks may overlap at times. Year-round residency patterns of some individual bottlenose dolphins in bays, sounds, and estuaries have been reported for almost every survey area where photo-identification or tagging studies have been conducted.

LaBrecque et al. (2015b) delineated 11 small and resident population areas for bottlenose dolphins within the Gulf of America (Figure F.5-11). These areas include bays, sounds, and estuaries ranging from Aransas Pass, Texas, to the Florida Keys, Florida, and were substantiated through a combination of extensive photo-identification data, genetic analyses, radio-tracking data, and expert knowledge (LaBrecque et al., 2015b). Of the 11 biologically important areas identified for bottlenose dolphins in the Gulf of America, 3 overlap with the Gulf Range Complex (Aransas Pass Area, Texas; Mississippi Sound Area, Mississippi; and St. Joseph Bay Area, Florida) and 8 are located adjacent to the Study Area boundaries.

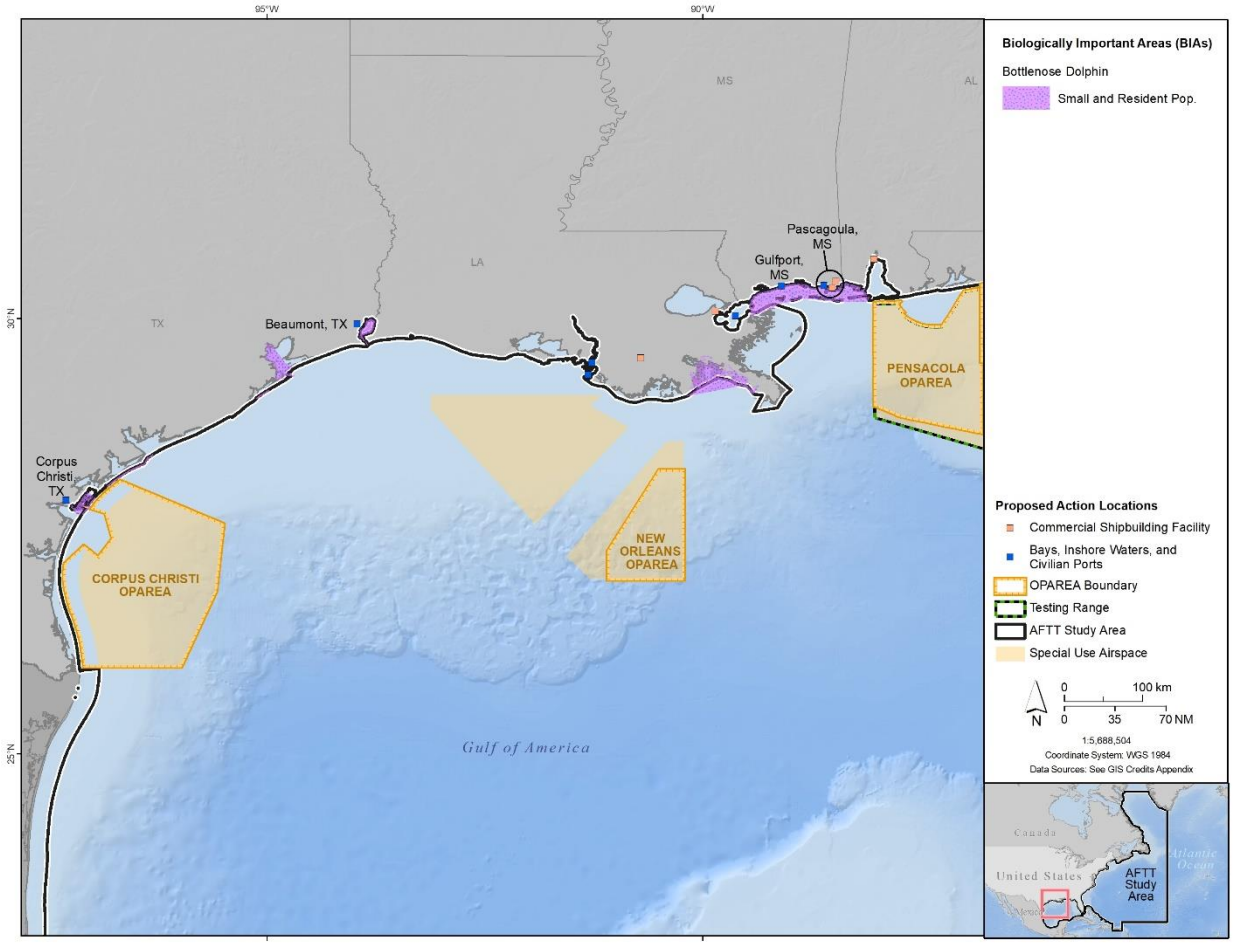


Figure F.5-11: Biologically Important Areas for Bottlenose Dolphins in the Study Area – Gulf of America

F.5.3.10.3 Population Trends

Trend analyses have been conducted for the Western North Atlantic Northern and Southern Migratory Coastal stocks. While power is limited to detect a trend in either stock separately, a combined analysis indicates a potential decline in population over the last two decades (Hayes et al., 2021).

There are insufficient data to determine the population trends for the following stocks of bottlenose dolphins: Northern Gulf of America Continental Shelf stock; Northern South Carolina Estuarine System stock; Charleston Estuarine System stock; Northern Georgia/Southern South Carolina Estuarine System stock; Central Georgia Estuarine System stock; Southern Georgia Estuarine System stock; Jacksonville

Estuarine System stock; Indian River Lagoon Estuarine System stock; Biscayne Bay stock; Florida Bay stock; Gulf of America Eastern Coastal stock; Gulf of America Northern Coastal stock; Gulf of America Western Coastal stock; most of the Northern Gulf of America Bay, Sound, and Estuary stocks; Barataria Bay Estuarine System stock; Mississippi Sound stock; Lake Borgne Bay Boudreau stock; St. Joseph Bay stock; Choctawhatchee Bay stock; and Puerto Rico and U.S. Virgin Islands stock (Waring et al., 2012; Waring et al., 2015).

A trend analysis has not been conducted for the following stocks of bottlenose dolphins: Northern North Carolina Estuarine System stock; Southern North Carolina Estuarine System stock; Western North Atlantic Offshore stock and Northern Gulf of America Oceanic (Waring et al., 2015).

There are limited data available to assess population trends for the following stocks of bottlenose dolphins: Western North Atlantic South Carolina-Georgia Coastal stock, Western North Atlantic Northern Florida Coastal stock, and Western North Atlantic Central Florida Coastal stock (Waring et al., 2013, 2014).

F.5.3.10.4 Predator and Prey Interactions

Bottlenose dolphins are opportunistic feeders, taking a variety of fishes, cephalopods, and crustaceans (Wells & Scott, 1999) and using a variety of feeding strategies (Barros & Myrberg, 1987; Barros & Wells, 1998; Shane et al., 1986). Nearshore bottlenose dolphins prey predominantly on coastal fishes and cephalopods, while offshore individuals prey on open-ocean cephalopods and a large variety of near-surface and mid-water fishes (Mead & Potter, 1995).

This species is known to be preyed on by killer whales and sharks (Wells & Scott, 1999). As many as half of the observed bottlenose dolphins in Florida exhibit scars from shark attacks. Primary shark predators are considered to be the bull, tiger, great white, and dusky sharks (Wells & Scott, 1999).

F.5.3.10.5 Species-Specific Threats

Thirteen stocks of bottlenose dolphins in the Gulf of America occur within the footprint of the 2010 *Deepwater Horizon* oil spill. In response to the oil spill, the Deepwater Horizon Natural Resource Damage Assessment Trustees prepared a *Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement* (2016) to present the impacts and injuries sustained by habitats and species within the footprint. The findings from this report are summarized here. Injuries were quantified for four bay, sound, and estuary stocks of bottlenose dolphins: Barataria Bay, Mississippi River Delta, Mississippi Sound, and Mobile Bay. Perdido Bay, Pensacola Bay, Choctawhatchee Bay, and St. Andrew Bay stocks did not show evidence of excess strandings attributed to the oil spill; therefore, they were not included in the injury quantification.

The trustees also quantified injuries for two coastal stocks (Gulf of America Western Coastal stock and the Gulf of America Northern Coastal stock) and the northern Gulf of America Oceanic stock. The northern Gulf of America Continental Shelf stock of bottlenose dolphins was combined with continental shelf Atlantic spotted dolphins in a single continental shelf dolphin category for the injury quantification. In the report, excess mortality was calculated by comparing expected annual mortality rates for each stock based on historical stranding records and annual mortality rates calculated after the oil spill. By this method, excess mortality is considered mortalities attributable to the oil spill. The trustees estimated the Mississippi River Delta stock to have the highest percentage of excess mortality (59 percent), followed by Gulf of America Northern Coastal stock (38 percent), Barataria Bay stock (35 percent), Mississippi Sound stock (22 percent), Mobile Bay stock (12 percent), continental shelf dolphins (including the northern Gulf of America Continental Shelf stock) (4 percent), northern Gulf of

America Oceanic stock (3 percent), and Gulf of America Western Coastal stock (1 percent) (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016). It is estimated that the population declined by 45 percent relative to baseline and will take 35 years to recover to 95 percent of baseline numbers (Schwacke et al., 2022). This could be due to a number of overall health impacts, including an increased rate of cardiac abnormalities in dolphins within the oil spill footprint (Linnehan et al., 2021).

An unusual mortality event was active from 2013 to 2015 along the mid-Atlantic coast of the United States (National Marine Fisheries Service, 2024a). During this timeframe, 1,614 mortalities were recorded from New York to Florida due to cetacean morbillivirus infections (92 percent of dolphins tested), or *Brucella* sp. bacterial infections (25 percent of dolphins tested.)

F.5.3.11 Common Dolphin (*Delphinus delphis*)

F.5.3.11.1 Status and Management

One stock of the short-beaked common dolphin (*D. delphis delphis*) is found within the Study Area: the western North Atlantic stock (Jefferson et al., 2009; Waring et al., 2013).

F.5.3.11.2 Habitat and Geographic Range

In the North Atlantic, common dolphins occur over the continental shelf along the 100- to 2,000-meter isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge (29° West) (Doksaeter et al., 2008; Waring et al., 2008). There is a well-studied population of short-beaked common dolphins in the western North Atlantic associated with the Gulf Stream (Jefferson et al., 2009). It occurs mainly in offshore waters, ranging from Canada maritime provinces to the Florida/Georgia border (Waring et al., 2010).

In waters off the northeastern U.S. coast, common dolphins are distributed along the continental slope and are associated with Gulf Stream features (Cetacean and Turtle Assessment Program, 1982; Hamazaki, 2002; Selzer & Payne, 1988). They primarily occur from Cape Hatteras northeast to Georges Bank (35° to 42° North) during mid-January to May (Cetacean and Turtle Assessment Program, 1982; Hain et al., 1981). Common dolphins move onto Georges Bank and the Scotian Shelf from mid-summer to autumn. Selzer and Payne (1988) reported very large aggregations (greater than 3,000 animals) on Georges Bank in autumn. Common dolphins are occasionally found in the Gulf of Maine (Selzer & Payne, 1988). Migration onto the Scotian Shelf and continental shelf off Newfoundland occurs during summer and autumn when water temperatures exceed 11° C (Gowans & Whitehead, 1995). The species is less common south of Cape Hatteras, although schools were reported as far south as the Georgia/South Carolina border (32° North) (Jefferson et al., 2009).

A single location-only satellite telemetry tag was deployed on a short-beaked common dolphin offshore of Cape Hatteras in June 2014, and location data were obtained over a 40-day period. The individual remained primarily over the continental shelf break and continental slope, and traveled north away from the tagging location to shallower continental shelf waters off New England during the mid-summer (Baird et al., 2015). The median depth of tagged animal locations over the 40-day span was 297 m (Baird et al., 2015).

Vessel-based surveys offshore of Virginia Beach between 2016 and 2021 detected common dolphins frequently; as many as 46 encounters were reported annually (Ocean Biodiversity Information System – Spatial Ecological Analysis of Megavertebrate Populations, 2024). This was the third-most common species encountered during these surveys, with 154 total sightings over the survey period. Aerial surveys of the Norfolk Canyon area detected common dolphins frequently between 2016 and 2019 (Cotter, 2019), with sightings of large groups (greater than 500 individuals) in waters beyond the shelf break.

F.5.3.11.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic stock of common dolphins (Waring et al., 2016).

F.5.3.11.4 Predator and Prey Interactions

Common dolphins feed primarily on organisms in the vertically migrating deep scattering layer, including fish and squid (dos Santos & Haimovici, 2001; Meynier et al., 2008; Overholtz & Waring, 1991; Pusineri et al., 2007). Diel (a 24-hour cycle that often involves a day and the adjoining night) fluctuations in vocal activity, with more vocal activity during late evening and early morning, appear to be linked to feeding in the deep scattering layer, which rises in this same time frame (Goold, 2000). In the western North Atlantic, oceanic dolphins feed more on squid than those in more nearshore waters (Perrin, 2009b).

Short-beaked common dolphins are known to be preyed on by killer whales (Visser, 1999) and large sharks (Leatherwood et al., 1973), although little is known about the impact of this predation on populations.

F.5.3.11.5 Species-Specific Threats

Common dolphins are susceptible to fishery interactions, such as gillnet entanglement or longline fisheries (Hamilton & Baker, 2019; Peltier et al., 2021).

F.5.3.12 False Killer Whale (*Pseudorca crassidens*)

F.5.3.12.1 Status and Management

Little is known of the status of most false killer whale populations around the world. While the species is not considered rare, few areas of high density are known. The population found in the Gulf of America is considered a separate stock from the western North Atlantic stock for management purposes; however, there are no genetic data to differentiate between the two stocks (Waring et al., 2013).

F.5.3.12.2 Habitat and Geographic Range

False killer whales occur worldwide throughout warm temperate and tropical oceans. They are found in deep open-ocean waters and around oceanic islands, and only rarely come into shallow coastal waters (Baird et al., 2008; Leatherwood & Reeves, 1983; Odell & McClune, 1999). Occasional inshore movements are associated with movements of prey and shoreward flooding of warm ocean currents.

False killer whales have been sighted in U.S. Atlantic waters from southern Florida to Maine (Schmidly, 1981), with periodic records (primarily stranding) from southern Florida to Cape Hatteras dating back to 1920 (Schmidly, 1981). There are 28 records of false killer whale sightings in the western North Atlantic in OBIS-SEAMAP dating back to 1971, with group sizes ranging from 1 to 30 animals. Nine of these sightings occurred between 2000 and 2021 (Ocean Biodiversity Information System – Spatial Ecological Analysis of Megavertebrate Populations, 2024). One additional sighting of 11 animals occurred during a shipboard survey conducted in summer 2011 (Waring et al., 2016). Deployment of high-frequency acoustic recording packages offshore of Cape Hatteras, Onslow Bay, Jacksonville, and the offshore areas near Norfolk Canyon from 2009 through 2022 have resulted in zero false killer whale detections.

Sightings of this species in the northern Gulf of America (i.e., U.S. Gulf of America) occur in oceanic waters, primarily in the eastern Gulf (Maze-Foley & Mullin, 2006; Mullin & Fulling, 2004). False killer whales were seen only in the spring and summer during GulfCet aerial surveys of the northern Gulf of America between 1992 and 1998 (Hansen et al., 1996; Mullin & Hoggard, 2000) and in the spring during vessel surveys (Mullin et al., 2004). There are 17 records of false killer whale sightings in the Gulf of America in OBIS-

SEAMAP, dating back to 1987 (Halpin et al., 2009), with group sizes ranging from 3 to 70 individuals. Six of these sightings occurred between 2000 and 2021 (Halpin et al., 2009).

F.5.3.12.3 Population Trends

There are insufficient data to determine population trends for the western North Atlantic stock of false killer whales (Waring et al., 2016). While a trend analysis has been conducted for the northern Gulf of America stock of false killer whales, the confidence is low due to imprecise abundance estimates and long intervals between surveys (Waring et al., 2013). Additionally, a Gulf-wide assessment of false killer whale abundance has not been completed (Waring et al., 2013).

F.5.3.12.4 Predator and Prey Interactions

False killer whales feed primarily on deep-sea cephalopods and fish (Odell & McClune, 1999). They may also prefer large fish species, such as mahi mahi and tuna. Twenty-five false killer whales that stranded off the coast of the Strait of Magellan (outside of the Study Area) were examined and found to feed primarily on cephalopods and fish. Squid beaks were found in nearly half of the stranded animals. The most important prey species were found to be squid, followed by Patagonian grenadier, a coastal species of fish (Koen-Alonso et al., 1999).

False killer whales have been observed attacking dolphins and large whales, such as humpback and sperm whales (Hooker et al., 2009). They are also known to behave aggressively toward small cetaceans during tuna purse seine fishing operations. Unlike other whales or dolphins, false killer whales frequently pass prey back and forth among individuals before consumption, in what appears to be a way of affirming social bonds (Baird et al., 2010). This species is believed to be preyed on by large sharks and killer whales (Baird, 2009a).

F.5.3.12.5 Species-Specific Threats

The northern Gulf of America stock of false killer whales was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 18 percent of false killer whales in the Gulf of America were exposed to oil, resulting in 6 percent excess mortality above baseline conditions, 8 percent excess failed pregnancies, and 7 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America false killer whale stock will take an estimated 42 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.13 Fraser's Dolphin (*Lagenodelphis hosei*)

F.5.3.13.1 Status and Management

The Gulf of America population of Fraser's dolphin is provisionally being considered as a separate stock for management purposes, although there are no genetic data to differentiate this stock from the western North Atlantic stock (Waring et al., 2013).

F.5.3.13.2 Habitat and Geographic Range

Fraser's dolphin is a tropical, oceanic species, except where deep-water approaches the coast (Dolar, 2009). Fraser's dolphins likely occur in the Gulf Stream open-ocean area.

This species is assumed to occur in the tropical western North Atlantic, although only a single sighting of approximately 250 individuals was recorded in waters 3,300 m deep off Cape Hatteras during a 1999 vessel survey (Hayes et al., 2019). Monthly aerial surveys offshore of Cape Hatteras from 2011 to 2017 resulted in only one sighting of Fraser's dolphins offshore of the 1,500-m isobaths (U.S. Department of the Navy, 2013a). The first record for the Gulf of America was a mass stranding in the Florida Keys in

1981 (Hersh & Odell, 1986; Leatherwood et al., 1993). Since then, there have been documented strandings on the west coast of Florida and in southern Texas (Yoshida et al., 2010). Sightings of Fraser's dolphin in the northern Gulf of America typically occur in oceanic waters greater than 200 m. This species was observed in the northern Gulf of America during all seasons.

F.5.3.13.3 Population Trends

There are insufficient data to determine population trends for the western North Atlantic stock of Fraser's dolphins (Waring et al., 2007).

There are also insufficient data to determine population trends for the northern Gulf of America stock of Fraser's dolphins. The large relative changes in the total abundances of Fraser's dolphin are probably due to a number of factors. Fraser's dolphin is most certainly a resident species in the Gulf of America but probably occurs in low numbers, and the survey effort is not sufficient to estimate the abundance of uncommon or rare species with precision. In addition, these temporal abundance estimates are difficult to interpret without a Gulf of America -wide understanding of Fraser's dolphin abundance. Studies based on abundance and distribution surveys restricted to U.S. waters are unable to detect temporal shifts in distribution beyond U.S. waters that might account for any changes in abundance (Waring et al., 2013).

F.5.3.13.4 Predator and Prey Interactions

Fraser's dolphins feed on mid-water fishes, squids, and shrimps and has not been documented to be prey to any other species (Jefferson & Leatherwood, 1994; Perrin et al., 1994a). However, this species may be subject to predation by killer whales.

F.5.3.13.5 Species-Specific Threats

There are no significant species-specific threats to Fraser's dolphins in the northwest Atlantic or Gulf of America.

F.5.3.14 Killer Whale (*Orcinus orca*)

F.5.3.14.1 Status and Management

Although some populations of killer whales, particularly in the Pacific Northwest, are extremely well studied, little is known about killer whale populations in most areas including the northwest Atlantic and Gulf of America. Throughout these regions, killer whales are not highly abundant in specific areas, but are observed in higher concentration in Antarctic waters. For management purposes, the western North Atlantic population and Gulf of America population are considered separate stocks (Waring et al., 2010, 2013; 2016).

F.5.3.14.2 Habitat and Geographic Range

Killer whales are found in all marine habitats, from the coastal zone (including most bays and inshore channels) to deep oceanic basins, and from equatorial regions to the polar pack ice zones of both hemispheres. Although killer whales are also found in tropical waters and the open ocean, they are often most numerous in coastal waters and at higher latitudes (Dahlheim & Heyning, 1999). Killer whales are likely found in Labrador Current, Gulf Stream, and North Atlantic Gyre open-ocean areas.

Killer whales are considered rare and uncommon in waters of the U.S. Exclusive Economic Zone in the Atlantic Ocean (Katona et al., 1988; Waring et al., 2010, 2013). During the 1978 to 1981 Cetacean and Turtle Assessment Program surveys, there were 12 killer whale sightings, which made up 0.1 percent of the 11,156 cetacean sightings in the surveys (Cetacean and Turtle Assessment Program, 1982; Waring et al., 2010, 2013). Nearshore observations are rare. Forty animals were observed in the southern Gulf of

Maine in September 1979 and 29 animals in Massachusetts Bay in August 1986 (Katona et al., 1988; Waring et al., 2010).

Sightings of killer whales in the Gulf of America on surveys from 1921 to 1995 were in water depths ranging from 840 to 8,700 ft., with an average of 4,075 ft., and were most frequent in the north-central region of the Gulf of America (Waring et al., 2013). Killer whales were seen only in the summer during GulfCet aerial surveys of the northern Gulf of America between 1992 and 1998 (Hansen et al., 1996; Mullin & Hoggard, 2000), were reported from May through June during vessel surveys (Maze-Foley & Mullin, 2006; Mullin & Fulling, 2004) and recorded in May, August, September, and November by earlier opportunistic ship-based sources (O'Sullivan & Mullin, 1997).

F.5.3.14.3 Population Trends

There are insufficient data to determine population trends for the western North Atlantic and Gulf of America stocks of killer whales (Waring et al., 2013).

F.5.3.14.4 Predator and Prey Interactions

Killer whales are apex predators and feed on a variety of prey, including bony fishes, elasmobranchs (a class of fish composed of sharks, skates, and rays), cephalopods, seabirds, sea turtles, and other marine mammals (Fertl et al., 1996; Jefferson et al., 2015). Some populations are known to specialize in specific types of prey (Jefferson et al., 2015; Wade et al., 2009). The killer whale has no known natural predators; it is considered to be the top predator of the oceans (Ford et al., 2005).

F.5.3.14.5 Species-Specific Threats

There are no significant species-specific threats to killer whales in the northwest Atlantic or Gulf of America.

F.5.3.15 Long-Finned Pilot Whale (*Globicephala melas*)

F.5.3.15.1 Status and Management

The structure of the Western North Atlantic stock of long-finned pilot whales is uncertain (Fullard et al., 2000; International Council of the Exploration of the Sea, 1993). Morphometric (Bloch & Lastein, 1993) and genetic (Fullard et al., 2000) studies have provided little support for stock structure across the Atlantic (Fullard et al., 2000). However, Fullard et al., (2000) have proposed a stock structure that is related to sea-surface temperature: (1) a cold-water population west of the Labrador/North Atlantic Current and (2) a warm-water population that extends across the Atlantic in the Gulf Stream. The area of overlap between the long-finned and short-finned pilot whales occurs primarily along the shelf break off the coast of New Jersey between 38° North and 40° North latitude (Waring et al., 2016).

F.5.3.15.2 Habitat and Geographic Range

Long-finned pilot whales occur along the continental shelf break, in continental slope waters, and in areas of high topographic relief, inhabiting temperate and subpolar zones from North Carolina to North Africa (and the Mediterranean) and north to Iceland, Greenland, and the Barents Sea (Abend & Smith, 1999; Buckland et al., 1993; Leatherwood et al., 1976). Long-finned pilot whales are likely found in the Gulf Stream and Labrador Current open-ocean areas and may potentially be found in the North Atlantic Gyre.

In U.S. Atlantic waters, pilot whales (*Globicephala* spp.) are distributed principally along the continental shelf edge off the northeastern U.S. coast in winter and early spring, moving onto Georges Bank and into the Gulf of Maine and more northern waters in late spring (Abend & Smith, 1999; Cetacean and Turtle

Assessment Program, 1982; Hamazaki, 2002; Payne & Heinemann, 1993). They remain in these areas through late autumn (Cetacean and Turtle Assessment Program, 1982; Payne & Heinemann, 1993). Pilot whales tend to occupy areas of high relief or submerged banks. They are also associated with the Gulf Stream wall and thermal fronts along the continental shelf edge. Long- and short-finned pilot whales overlap spatially along the mid-Atlantic shelf break between Cape Hatteras, North Carolina, and New Jersey (Payne & Heinemann, 1993).

F.5.3.15.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic stock of long-finned pilot whales (Waring et al., 2016).

F.5.3.15.4 Predator and Prey Interactions

Both pilot whale species feed primarily on squid but also eat fish, including mackerel, cod, turbot, herring, hake, and dogfish (Bernard & Reilly, 1999). They are also known to feed on shrimp (Gannon et al., 1997; Jefferson et al., 2015). Feeding generally takes place at depths between 200 and 500 m (Jefferson et al., 2015), but dives may be as deep as 800 m (Heide-Jorgensen et al., 2002). Some accounts of pilot whale attacks on small marine mammals are known, but pilot whales are not generally known to prey on marine mammals (Weller et al., 1996). Killer whales are possible predators of long-finned pilot whales.

F.5.3.15.5 Species-Specific Threats

Long-finned pilot whales were included in the Atlantic Pelagic Longline Take Reduction Plan to reduce bycatch associated with the Atlantic pelagic longline fishery to a level approaching a zero mortality and serious injury rate within 5 years of implementation (74 *Federal Register* 23349). However, in 2021, NMFS proposed removing this species from the scope of the plan. In 2023, a finalized amendment removed the western North Atlantic stock of long-finned pilot whales from the scope of the plan, as the rate of mortality and serious injury has remained below the insignificance threshold since the plan was initially implemented (88 *Federal Register* 36965*).*

F.5.3.16 Melon-Headed Whale (*Peponocephala electra*)

F.5.3.16.1 Status and Management

For management purposes, the western North Atlantic population and Gulf of America population of melon-headed whales are considered separate stocks, although genetic data that differentiate these two stocks is lacking (Waring et al., 2007; Waring et al., 2010, 2013).

F.5.3.16.2 Habitat and Geographic Range

Melon-headed whales are found worldwide in tropical and subtropical waters. They are occasionally reported at higher latitudes, but these movements are considered to be beyond their typical range, as records indicate these movements occurred during incursions of warm-water currents (Perryman et al., 1994). Melon-headed whales are most often found in offshore deep waters and could occur in the southern parts of the Gulf Stream and North Atlantic Gyre open-ocean areas.

Sightings of whales from the Western North Atlantic stock are rare, but a group of 20 whales was sighted during surveys in 1999 offshore of Cape Hatteras, and a group of 80 whales was also sighted off Cape Hatteras in 2002 in waters greater than 2,500 m deep (Waring et al., 2013). Deployment of high-frequency acoustic recording packages offshore of Cape Hatteras, Onslow Bay, Jacksonville, and the offshore areas near Norfolk Canyon from 2009 through 2015 have resulted in zero melon-headed whale detections.

This species was observed in deep waters of the Gulf of America, well beyond the edge of the continental shelf and in waters over the abyssal plain, primarily west of Mobile Bay, Alabama (Davis & Fargion, 1996; Mullin et al., 1994c; Waring et al., 2010, 2013). Sightings of melon-headed whales in the northern Gulf of America were documented in all seasons during GulfCet aerial surveys 1992 and 1998 (Hansen et al., 1996; Mullin & Hoggard, 2000).

F.5.3.16.3 Population Trends

There are insufficient data to determine the population trends for the Western North Atlantic stock of melon-headed whales (Waring et al., 2007).

While abundance estimates for the Gulf of America exist, there were no significant differences between survey years (Garrison et al., 2020), and the statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys.

F.5.3.16.4 Predator and Prey Interactions

Little is known on predators of melon-headed whales in the Atlantic, therefore information from other geographic areas is likely applicable to the Study Area. Melon-headed whales are believed to be preyed on by killer whales and were observed fleeing from killer whales in Hawaiian waters (Baird et al., 2006).

Melon-headed whales prey on squid, pelagic fishes, and occasionally crustaceans (Jefferson & Barros, 1997; Perryman, 2009). Most of the fish and squid families preyed upon by this species consist of mid-water forms found in waters up to 1,500 m deep, suggesting that feeding takes place deep in the water column (Jefferson & Barros, 1997).

F.5.3.16.5 Species-Specific Threats

The northern Gulf of America stock of melon-headed whales was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 15 percent of melon-headed whales in the Gulf of America were exposed to oil, resulting in 5 percent excess mortality above baseline conditions, 7 percent excess failed pregnancies, and 6 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America melon-headed whale stock will take an estimated 29 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.17 Pantropical Spotted Dolphin (*Stenella attenuata*)

F.5.3.17.1 Status and Management

The western North Atlantic and northern Gulf of America populations are considered separate stocks for management purposes, although there is currently not enough information to distinguish the two (Waring et al., 2016).

F.5.3.17.2 Habitat and Geographic Range

The pantropical spotted dolphin is distributed in offshore tropical and subtropical waters of the Atlantic Ocean between about 40° North and 40° South (Baldwin et al., 1999; Perrin, 2009c). The species is much more abundant in the lower latitudes of its range. It is primarily found in deeper offshore waters but do approach the coast in some areas (Jefferson et al., 2008; Jefferson et al., 2015; Perrin, 2001). Pantropical spotted dolphins may occur in the Gulf Stream open-ocean area.

The pantropical spotted dolphin is the most sighted species of cetacean in the oceanic waters of the northern Gulf of America. Pantropical spotted dolphins were seen in all seasons during GulfCet aerial surveys of the northern Gulf of America between 1992 and 1998 (Hansen et al., 1996; Mullin &

Hoggard, 2000). Most sightings of this species in the Gulf of America and Caribbean occur over the lower continental slope (Mignucci-Giannoni et al., 2003; Moreno et al., 2005). Pantropical spotted dolphins in the offshore Gulf of America do not appear to have a preference for any one specific habitat type, such as within the Loop Current, inside cold-core eddies, or along the continental slope (Baumgartner et al., 2001). Along the U.S. Atlantic coast, sightings have been concentrated in the slope waters east of New England and Florida (Waring et al., 2014). Sightings during surveys in the Atlantic, north of Cape Hatteras, have been along the continental slope, while sightings in waters south of Cape Hatteras were recorded over the Blake Plateau and in deeper offshore waters of the mid-Atlantic (Hayes et al., 2020).

F.5.3.17.3 Population Trends

There are insufficient data to determine population trends for the western North Atlantic stock of pantropical spotted dolphins. While there are available coast-wide abundance estimates for this species, the high uncertainty in these estimates limits the ability to detect a population trend. In addition, interannual variation in abundance may be caused by either changes in spatial distribution associated with environmental variability or changes in the population size of the stock.

Further analysis of Gulf of America pantropical spotted dolphin survey data from 1991 to 2009 is required to determine whether changes in abundance have occurred (Waring et al., 2015). Additionally, a Gulf-wide assessment of pantropical spotted dolphin abundance has not been made (Waring et al., 2015).

F.5.3.17.4 Predator and Prey Interactions

Pantropical spotted dolphins prey on near-surface fishes, squid, and crustaceans and on some mid-water species (Perrin & Hohn, 1994). Results from various tracking and food habit studies suggest that pantropical spotted dolphins in the eastern tropical Pacific and off Hawaii feed primarily at night on surface and mid-water species that rise after dark with the deep scattering layer (stratified zones in the ocean, usually composed of marine organisms that migrate vertically from depth to surface and back again at different times of day) (Baird et al., 2001; Evans, 1994; Robertson & Chivers, 1997). Pantropical spotted dolphins may be preyed on by killer whales and sharks and were observed fleeing killer whales in Hawaiian waters (Baird et al., 2006). Other predators may include the pygmy killer whale, false killer whale, and occasionally the short-finned pilot whale (Perrin, 2009c).

F.5.3.17.5 Species-Specific Threats

The northern Gulf of America stock of pantropical spotted dolphins was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 20 percent of pantropical spotted dolphins in the Gulf of America were exposed to oil, resulting in 7 percent excess mortality above baseline conditions, 9 percent excess failed pregnancies, and 7 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America pantropical spotted dolphin stock will take an estimated 39 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.18 Pygmy Killer Whale (*Feresa attenuata*)

F.5.3.18.1 Status and Management

For management purposes, the Gulf of America population of pygmy killer whale is considered a separate stock, although there is not yet sufficient genetic information to differentiate this stock from the western North Atlantic stocks (Waring et al., 2007; Waring et al., 2013).

F.5.3.18.2 Habitat and Geographic Range

Although the pygmy killer whale has an extensive global distribution, it is not known to occur in high densities in any region and is, therefore, probably one of the least abundant pantropical delphinids (Waring et al., 2013). The pygmy killer whale is primarily an open-ocean deep-water species (Davis et al., 2000; Würsig et al., 2000). This species has a worldwide distribution in tropical and subtropical oceans and generally does not range poleward of 40° N or of 35° S (Donahue & Perryman, 2009; Jefferson et al., 2015). This species occurs in the North Atlantic Gyre and the Gulf Stream, although sightings are rare. Most observations outside the tropics are associated with strong, warm western boundary currents that effectively extend tropical conditions into higher latitudes (Ross & Leatherwood, 1994).

A group of six pygmy killer whales were sighted during a 1992 vessel survey of the western North Atlantic off of Cape Hatteras, North Carolina, in waters greater than 1,500 m deep, but this species was not sighted during subsequent surveys (Waring et al., 2007). Deployment of high-frequency acoustic recording packages offshore of Cape Hatteras, Onslow Bay, Jacksonville, and the offshore areas near Norfolk Canyon from 2007 through 2022 have resulted in zero pygmy killer whale detections. Strandings are recorded from primarily South Carolina and Georgia, with two from North Carolina and one from Massachusetts (Hayes et al., 2020).

In the northern Gulf of America, the pygmy killer whale is found primarily in deeper waters off the continental shelf and in waters over the abyssal plain (Davis et al., 2000; Würsig et al., 2000). The majority of sightings are in the eastern oceanic Gulf of America in waters ranging from 200 to 1,200 m in depth.

F.5.3.18.3 Population Trends

There are insufficient data to determine population trends for the western North Atlantic stock of pygmy killer whales (Waring et al., 2007).

A trend analysis has not been conducted for the northern Gulf of America stock of pygmy killer whales (Waring et al., 2013). Further analysis of northern Gulf of America pygmy killer whale survey data from 1991–2009 is required to determine whether changes in abundance have occurred over this period. Additionally, a Gulf-wide assessment of pygmy killer whale abundance has not been made (Waring et al., 2013).

F.5.3.18.4 Predator and Prey Interactions

The pygmy killer whale has no documented predators in the Atlantic of Gulf of America; however, it may be subject to predation by killer whales and large sharks. Pygmy killer whales feed predominantly on fish and squid (Clarke, 1986; Donahue & Perryman, 2009; dos Santos & Haimovici, 2001). They are known to attack other dolphin species, apparently as prey, although this is not common (Jefferson et al., 2015; Perryman & Foster, 1980; Ross & Leatherwood, 1994).

F.5.3.18.5 Species-Specific Threats

The northern Gulf of America stock of pygmy killer whales was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 15 percent of pygmy killer whales in the Gulf of America were exposed to oil, resulting in 5 percent excess mortality above baseline conditions, 7 percent excess failed pregnancies, and 6 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America pygmy killer whale stock will take an estimated 29 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.19 Risso's Dolphin (*Grampus griseus*)

F.5.3.19.1 Status and Management

For management purposes, Risso's dolphins in the Gulf of America and the Atlantic Ocean are currently considered two separate stocks (Waring et al., 2010; Waring et al., 2016).

F.5.3.19.2 Habitat and Geographic Range

Risso's dolphins are distributed worldwide in tropical and temperate waters along the continental shelf break, over the continental slope, and the outer continental shelf (Baumgartner, 1997; Cañadas et al., 2002; Cetacean and Turtle Assessment Program, 1982; Davis et al., 1998; Green et al., 1992; Kruse et al., 1999; Mignucci-Giannoni, 1998). Risso's dolphins were also found in association with submarine canyons (Mussi et al., 2004). The range of the Risso's dolphin distribution in open-ocean waters of the North Atlantic is known to include the Gulf Stream and the southwestern portions of the North Atlantic Gyre.

In the northwest Atlantic, Risso's dolphins occur from Florida to eastern Newfoundland (Baird & Stacey, 1991; Leatherwood et al., 1976). Off the northeast U.S. coast, Risso's dolphins are distributed along the continental shelf edge from Cape Hatteras northward to Georges Bank during spring, summer, and autumn (Cetacean and Turtle Assessment Program, 1982). In winter, the range is in the mid-Atlantic Bight and extends outward into oceanic waters. In general, the population occupies the mid-Atlantic continental shelf edge year-round and is rarely seen in the Gulf of Maine. During 1990, 1991, and 1993, spring/summer surveys conducted along the continental shelf edge and in deeper oceanic waters sighted Risso's dolphins associated with strong bathymetric features, Gulf Stream warm core rings, and the Gulf Stream north wall, and along the shelf break (Hamazaki, 2002; Waring et al., 1992, 1993).

Monthly aerial survey efforts began in January 2015 in the offshore area near Norfolk Canyon and have resulted in 61 Risso's dolphin sightings through 2019, totaling 1,361 individuals (Cotter, 2019) (McAlarney et al., 2017, 2018).

Monthly aerial surveys offshore of Cape Hatteras since May 2011 have documented 24 Risso's dolphin sightings, primarily during the summer months. Risso's dolphins were sighted from inside the 100-m isobath out to 2,000-m water depth (McAlarney et al., 2014). Risso's dolphins were also one of the most commonly encountered pelagic dolphins found during surveys conducted in Onslow Bay, North Carolina and offshore of Jacksonville, Florida (McLellan et al., 2014). Risso's dolphins observed during aerial and vessel surveys conducted monthly between June 2007 and June 2010 offshore of Onslow Bay, North Carolina were exclusively found over the continental shelf break and in deeper waters of the survey area (Read et al., 2014; U.S. Department of the Navy, 2013a).

Vessel surveys conducted offshore of Jacksonville, Florida have resulted in a few Risso's dolphin sightings (Swaim et al., 2015). Aerial surveys documented higher numbers of Risso's dolphin encounters, with 16 sightings occurring within deeper waters of the survey area (U.S. Department of the Navy, 2013a).

Risso's dolphins in the northern Gulf of America occur throughout oceanic waters but are concentrated in continental slope waters (Baumgartner, 1997; Maze-Foley & Mullin, 2006).

F.5.3.19.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic stock of Risso's dolphins (Waring et al., 2015).

While abundance estimates for the Gulf of America exist, there were no significant differences between survey years (Garrison et al., 2020), and the statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys.

F.5.3.19.4 Predator and Prey Interactions

Cephalopods and crustaceans are the primary prey for Risso's dolphins (Clarke, 1996), with feeding occurring predominantly at night (Jefferson et al., 2015).

This species of dolphin may be preyed on by both killer whales and sharks, although there is no documented report of predation by either species (Weller, 2009).

F.5.3.19.5 Species-Specific Threats

Risso's dolphins were included in the Atlantic Pelagic Longline Take Reduction Plan to reduce bycatch associated with the Atlantic pelagic longline fishery to a level approaching a zero mortality and serious injury rate within 5 years of implementation (74 *Federal Register* 23349). However, in 2021, NMFS proposed removing this species from the scope of the plan. In 2023, a finalized amendment removed the western North Atlantic stock of Risso's dolphins from the scope of the plan, as the rate of mortality and serious injury has remained below the insignificance threshold since the plan was initially implemented (88 *Federal Register* 36965*).*

The northern Gulf of America stock of Risso's dolphin was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 8 percent of Risso's dolphins in the Gulf of America were exposed to oil, resulting in 3 percent excess mortality above baseline conditions, 3 percent excess failed pregnancies, and 3 percent higher likelihood for other adverse health effects. The maximum reduction of the Risso's dolphin northern Gulf of America population was only 3 percent; therefore, the trustees were not able to calculate the number of years it would take this stock to recover (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.20 Rough-Toothed Dolphin (*Steno bredanensis*)

F.5.3.20.1 Status and Management

Rough-toothed dolphins are among the most widely distributed species of tropical dolphins, but little information is available on population status (Jefferson, 2009b; Jefferson et al., 2008; Jefferson et al., 2015). The Western North Atlantic and Gulf of America populations of the rough-toothed dolphin are considered two separate stocks for management purposes, but there is insufficient genetic information to differentiate these stocks (Waring et al., 2013; Wimmer & Whitehead, 2004).

F.5.3.20.2 Habitat and Geographic Range

The distribution of the rough-toothed dolphin is poorly understood worldwide. These dolphins are thought to be a tropical to warm-temperate species and have been historically reported in deep oceanic waters in the Atlantic, Pacific, and Indian Oceans as well as the Mediterranean and Caribbean Seas (Gannier & West, 2005; Leatherwood & Reeves, 1983; Perrin & Walker, 1975; Reeves et al., 2003). Rough-toothed dolphins occur in the Gulf Stream and North Atlantic Gyre open-ocean areas.

Rough-toothed dolphins were observed in both shelf and oceanic waters in the northern Gulf of America (Fulling et al., 2003; Mullin & Fulling, 2003) and off the U.S. east coast from North Carolina to Delaware (Waring et al., 2014). In the western North Atlantic, tracking of five rough-toothed dolphins that were rehabilitated and released following a mass stranding on the east coast of Florida in 2005 demonstrated a variety of ranging patterns (Wells et al., 2008). All tagged rough-toothed dolphins moved through a

large range of water depths averaging greater than 100 ft. (30 m), though each of the five tagged dolphins transited through very shallow waters at some point, with most of the collective movements recorded over a gently sloping seafloor. Monthly aerial surveys conducted offshore of Cape Hatteras, North Carolina from 2011 through 2017 only resulted in one sighting of four individual rough-toothed dolphins just beyond the 100-m isobaths (U.S. Department of the Navy, 2013a).

Aerial surveys conducted between 2009 and 2017 offshore of Jacksonville, Florida resulted in nine sightings of rough-toothed dolphins, primarily in the summer and fall months. Sightings from aerial surveys have been documented inside the 100-m isobaths in continental shelf waters (Cummings et al., 2016; U.S. Department of the Navy, 2013a).

Rough-toothed dolphins have been observed in all seasons in the Gulf of America (Hansen et al., 1996; Mullin & Hoggard, 2000) but have not been sighted every survey year, attesting to their low density in this region.

F.5.3.20.3 Population Trends

A trend analysis has not been conducted for the Western North Atlantic stock of rough-toothed dolphins (Waring et al., 2014).

Further analysis of Gulf of America rough-toothed dolphin survey data from 2003–2004 and 2009 is required to determine whether changes in abundance have occurred (Waring et al., 2013). Additionally, a Gulf-wide assessment of rough-toothed dolphin abundance has not been made (Waring et al., 2013).

F.5.3.20.4 Predator and Prey Interactions

Prey of rough-toothed dolphins includes fish and cephalopods. They are known to feed on large fishes such as mahi mahi (Miyazaki & Perrin, 1994; Pitman & Stinchcomb, 2002). They also prey on reef fish, and Perkins and Miller (1983) noted that parts of reef fish were found in the stomachs of stranded rough-toothed dolphins in Hawaii. Rough-toothed dolphins also feed during the day on near-surface fishes, including flying fishes (Gannier & West, 2005).

Predation on rough-toothed dolphins has not been documented, but they may be subject to predation by killer whales.

F.5.3.20.5 Species-Specific Threats

The northern Gulf of America stock of rough-toothed dolphins was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 41 percent of rough-toothed dolphins in the Gulf of America were exposed to oil, resulting in 14 percent excess mortality above baseline conditions, 19 percent excess failed pregnancies, and 15 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America rough-toothed dolphin stock will take an estimated 54 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.21 Short-Finned Pilot Whale (*Globicephala macrorhynchus*)

F.5.3.21.1 Status and Management

Studies are currently being conducted at the NMFS Southeast Fisheries Science Center to evaluate genetic population structure in short-finned pilot whales (Waring et al., 2016). The short-finned pilot whale population is managed as three stocks: Western North Atlantic stock, Puerto Rico and U.S. Virgin Islands stock, and the Gulf of America Oceanic stock.

F.5.3.21.2 Habitat and Geographic Range

Short-finned pilot whales range throughout warm, temperate to tropical waters of the world, generally in deep offshore areas (Waring et al., 2016). Thus, the species occupies waters over the continental shelf break, in slope waters, and in areas of high topographic relief (Olson, 2009). While pilot whales are typically distributed along the continental shelf break, movements over the continental shelf are commonly observed in the northeastern United States. Genetic analysis of stranded pilot whales, evaluated as a function of sea surface temperature and water depth, indicated that short-finned pilot whales were not likely to be found at water temperatures less than 22° C and highly likely to occur where water temperatures were greater than 25° C. Probability of a short-finned pilot whale occurrence also increased with increasing water depth. The area of overlap between short-finned and long-finned pilot whales occurs primarily along the shelf break off the coast of New Jersey between 38° North and 40° North latitude (Waring et al., 2014). Short-finned pilot whales are likely found in the Gulf Stream open-ocean area.

Sightings of pilot whales (*Globicephala* spp.) in the western North Atlantic occur primarily near the continental shelf break ranging from Florida to the Nova Scotian Shelf (Mullin & Fulling, 2003). Long-finned and short-finned pilot whales overlap spatially along the mid-Atlantic shelf break between Cape Hatteras, North Carolina, and New Jersey (Payne & Heinemann, 1993). Long-finned pilot whales have occasionally been observed stranded as far south as Florida, while short-finned pilot whales have occasionally been observed stranded as far north as Massachusetts (Pugliares et al., 2016).

Pilot whales are one of the most common cetacean species observed off Cape Hatteras during aerial surveys, specifically from the 100-m isobaths out to water depths greater than 2,000 m (U.S. Department of the Navy, 2013a). While photo-identification work suggests that short-finned pilot whales display a high degree of residence off Cape Hatteras, satellite tagging demonstrates that these animals cover a significant range up and down the continental slope, from Georges Bank in the north, down to Cape Lookout Shoals in the south, with movements at least occasionally into waters beyond the U.S. Exclusive Economic Zone (Baird et al., 2015, 2016). Thirty-nine satellite telemetry tags were deployed on short-finned pilot whales off the coast of Cape Hatteras during the summers of 2014 and 2015. This study provided the first information on long-term and long-distance movements of short-finned pilot whales in the area, other than information obtained from tags on previously stranded and rehabilitated individuals.

Deployment of high-frequency acoustic recording packages offshore of Cape Hatteras, Onslow Bay, Jacksonville, and the offshore areas near Norfolk Canyon from 2007 through 2022 has resulted in zero short-finned pilot whale detections. Passive acoustic data were collected from marine autonomous recording units deployed on the continental shelf, just beyond the shelf, and offshore from the shelf break off Jacksonville, Florida in late 2009 and early 2010. These deployments resulted in detections of the blackfish group of cetaceans, which includes short-finned pilot whales, along with melon-headed whales, pygmy killer whales, false killer whales, and killer whales. Blackfish were detected every day during deployments but there were no obvious or consistent differences in the occurrence of blackfish vocalizations relative to water depth or time of day (Oswald et al., 2016). The combination of five species into the blackfish category may have masked any patterns in vocal behaviors (Oswald et al., 2016).

Short-finned pilot whales are also documented along the continental shelf and continental slope in the northern Gulf of America (Hansen et al., 1996; Mullin & Fulling, 2003; Mullin & Hoggard, 2000), and in the Caribbean. Short-finned pilot whales were seen in all seasons during GulfCet aerial surveys of the northern Gulf of America between 1992 and 1998 (Hansen et al., 1996; Mullin & Hoggard, 2000).

F.5.3.21.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic stock of short-finned pilot whales (Waring et al., 2016).

While abundance estimates for the Gulf of America exist, there were no significant differences between survey years (Garrison et al., 2020), and the statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys.

F.5.3.21.4 Predator and Prey Interactions

Pilot whales feed primarily on squid, to which they are generally well adapted (Jefferson et al., 2008; Werth, 2006), but they also forage on fish (Bernard & Reilly, 1999). Pilot whales are not generally known to prey on other marine mammals, but records from the eastern tropical Pacific suggest that the short-finned pilot whale does occasionally chase, attack, and even predate dolphins during fishery operations (Olson, 2009; Perryman & Foster, 1980). They were also observed harassing sperm whales in the Gulf of America (Weller et al., 1996). This species is not known to have any predators (Weller, 2009), but it may be subject to predation by killer whales.

F.5.3.21.5 Species-Specific Threats

Short-finned pilot whales were included in the Atlantic Pelagic Longline Take Reduction Plan to reduce bycatch associated with the Atlantic pelagic longline fishery to a level approaching a zero mortality and serious injury rate within 5 years of implementation. Pursuit of this goal also takes into account the economic status of the fishery, technological availability, as well as current fishery management plans on both state and regional levels (88 *Federal Register* 36965).

The northern Gulf of America stock of short-finned pilot whales was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 6 percent of short-finned pilot whales in the Gulf of America were exposed to oil, resulting in 2 percent excess mortality above baseline conditions, 3 percent excess failed pregnancies, and 2 percent higher likelihood for other adverse health effects. The maximum reduction of the short-finned pilot whale Gulf of America population was only 3 percent; therefore, the trustees were not able to calculate the number of years it would take for this stock to recover (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.22 Spinner Dolphin (*Stenella longirostris*)

F.5.3.22.1 Status and Management

For management purposes, the western North Atlantic and Gulf of America populations of spinner dolphins are considered separate stocks, although there is currently insufficient data to differentiate them (Waring et al., 2014).

F.5.3.22.2 Habitat and Geographic Range

This is presumably an offshore, deep-water species (Perrin & Gilpatrick, 1994; Schmidly, 1981), although its distribution in the Atlantic is poorly known. Spinner dolphins likely occur in the Gulf Stream and North Atlantic Gyre open-ocean areas, based on their preference for waters greater than 2,000 m deep.

In the western North Atlantic, these dolphins occur in deep water along most of the U.S. coast south to the West Indies and Venezuela, including the Gulf of America (Waring et al., 2014). Spinner dolphin sightings have occurred exclusively in deeper (greater than 2,000 m) oceanic waters of the northeast U.S. coast (Cetacean and Turtle Assessment Program, 1982; Waring et al., 1992). Stranding records exist from North Carolina, South Carolina, Florida, and Puerto Rico in the Atlantic as well as in Texas and

Florida in the Gulf of America, while there was one recent sighting during summer 2011 in oceanic waters off North Carolina. Monthly aerial surveys offshore of Cape Hatteras conducted from 2011 to 2019 have only resulted in one sighting of spinner dolphins in a mixed group of Clymene dolphins within the northern offshore waters of the survey area (U.S. Department of the Navy, 2013a). Although spinner dolphins were sighted and stranded off the southeastern U.S. coast, they are not common in those waters, except perhaps off southern Florida (Waring et al., 2010). In the northern Gulf of America, spinner dolphins are found mostly in offshore waters beyond the edge of the continental shelf and primarily east of the Mississippi River (Waring et al., 2013). This species was seen during all seasons in the northern Gulf of America during aerial surveys between 1992 and 1998 (Waring et al., 2013).

F.5.3.22.3 Population Trends

Due to imprecise abundance estimates and long periods of time between surveys, a trend analysis has not been conducted for the western North Atlantic stock of spinner dolphins (Waring et al., 2014).

While abundance estimates for the Gulf of America exist, there were no significant differences between survey years (Garrison et al., 2020), and the statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys.

There are insufficient data to determine the population trends for the Puerto Rico and U.S. Virgin Islands stock of spinner dolphins (Waring et al., 2012).

F.5.3.22.4 Predator and Prey Interactions

Spinner dolphins feed primarily on small mid-water fishes, squids, and shrimp and dive to at least 1,300 ft. (400 m) (Perrin & Gilpatrick, 1994). Studies of spinner dolphins in the Pacific suggest they forage primarily at night, when the mid-water community migrates toward the surface and the shore (Benoit-Bird, 2004; Benoit-Bird et al., 2001). Spinner dolphins track the horizontal migrations of their prey (Benoit-Bird & Au, 2003), allowing foraging efficiencies (Benoit-Bird, 2004; Benoit-Bird & Au, 2004). Foraging behavior was also linked to lunar phases in scattering layers off the island of Hawaii (Benoit-Bird & Au, 2004). Similar foraging behavior is expected for spinner dolphins that occur in the Study Area.

Spinner dolphins may be preyed on by sharks, killer whales, pygmy killer whales, and short-finned pilot whales (Perrin, 2009d).

F.5.3.22.5 Species-Specific Threats

The northern Gulf of America stock of spinner dolphins was 1 of the 31 cetacean stocks impacted by the 2010 *Deepwater Horizon* oil spill in the Gulf of America. Injury quantification determined that 47 percent of spinner dolphins in the Gulf of America were exposed to oil, resulting in 16 percent excess mortality above baseline conditions, 21 percent excess failed pregnancies, and 17 percent higher likelihood for other adverse health effects. Spinner dolphins were determined to take the longest to recover compared to all cetacean stocks impacted by the oil spill, as this species resulted in the highest maximum reduction in population size. Without active restoration efforts, recovery of the northern Gulf of America spinner dolphin stock will take an estimated 105 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.23 Striped Dolphin (*Stenella coeruleoalba*)

F.5.3.23.1 Status and Management

For management purposes, the Gulf of America population of striped dolphin is provisionally considered as a separate stock, although there are not sufficient genetic data to differentiate the Gulf of America

stock from the western North Atlantic stock (Waring et al., 2010). There is very little information on stock structure in the western North Atlantic (Hayes et al., 2020).

F.5.3.23.2 Habitat and Geographic Range

The striped dolphin is one of the most common and abundant dolphin species, with a worldwide range that includes both tropical and temperate waters (Waring et al., 2014). Although primarily a warm-water species, the range of the striped dolphin extends higher into temperate regions than those of any other species in the genus *Stenella* (spotted, spinner, Clymene, and striped dolphins). Striped dolphins are found in the western North Atlantic from Nova Scotia south to at least Jamaica, as well as in the Gulf of America. In general, striped dolphins appear to prefer continental slope waters offshore to the Gulf Stream (Leatherwood et al., 1976; Perrin et al., 1994b; Schmidly, 1981).

Striped dolphins are relatively common in the cooler offshore waters of the U.S. east coast. Along the mid-Atlantic ridge in oceanic waters of the North Atlantic Ocean, striped dolphins are sighted in significant numbers south of 50° North (Waring et al., 2010). In waters off the northeastern U.S. coast, striped dolphins are distributed along the continental shelf edge from Cape Hatteras to the southern margin of Georges Bank and also occur offshore over the continental slope and rise in the mid-Atlantic region (Cetacean and Turtle Assessment Program, 1982; Mullin & Fulling, 2003). Continental shelf edge sightings in the Cetacean and Turtle Assessment Program (1982) were generally centered along the 1,000-m depth contour in all seasons. During 1990 and 1991 cetacean habitat-use surveys, striped dolphins were associated with the Gulf Stream north wall and warm-core ring features (Waring et al., 1992). Striped dolphins seen in a survey of the New England Sea Mounts (Palka, 1997) were in waters that were between 20 and 27°C and deeper than about 3,000 ft. (900 m).

Regular periodic aerial surveys in the offshore area near Norfolk Canyon from 2015 to 2019 resulted in six striped dolphin sightings (McAlarney et al., 2016). Aerial surveys offshore of Cape Hatteras from 2011 to 2017 have resulted in five striped dolphin sightings, primarily in late winter and early spring.

Striped dolphins are also found throughout the deep, offshore waters of the northern Gulf of America. Sightings of striped dolphins in the northern Gulf of America typically occur in oceanic waters and during all seasons (Waring et al., 2010).

F.5.3.23.3 Population Trends

A trend analysis has not been conducted for the western North Atlantic stock of striped dolphins (Waring et al., 2014).

While abundance estimates for the Gulf of America exist, there were no significant differences between survey years (Garrison et al., 2020), and the statistical power to detect a trend in abundance for this stock is poor due to the relatively imprecise abundance estimates and long intervals between surveys.

F.5.3.23.4 Predator and Prey Interactions

Striped dolphins often feed in open sea or sea bottom zones along the continental slope, or just beyond it, in oceanic waters. Most of their prey possess light-emitting organs, suggesting that striped dolphins may be feeding at great depths, possibly diving from 655 to 2,295 ft. (200 to 700 m) (Archer & Perrin, 1999). Striped dolphins may feed at night to take advantage of the deep scattering layer's diurnal vertical movements. Small mid-water fishes (in particular lanternfishes) and squids are the predominant prey (Perrin & Gilpatrick, 1994).

This species was documented to be preyed upon by sharks (Ross & Bass, 1971). They may also be subject to predation by killer whales.

F.5.3.23.5 Species-Specific Threats

The northern Gulf of America stock of striped dolphins was 1 of the 31 cetacean stocks impacted by the 2010 Deepwater Horizon oil spill in the Gulf of America. Injury quantification determined that 13 percent of striped dolphins in the Gulf of America were exposed to oil, resulting in 5 percent excess mortality above baseline conditions, 6 percent excess failed pregnancies, and 5 percent higher likelihood for other adverse health effects. Without active restoration efforts, recovery of the northern Gulf of America striped dolphin stock will take an estimated 14 years (Deepwater Horizon Natural Resource Damage Assessment Trustees, 2016).

F.5.3.24 White-Beaked Dolphin (*Lagenorhynchus albirostris*)

F.5.3.24.1 Status and Management

There are at least two separate stocks of the white-beaked dolphin in the North Atlantic: one in the eastern and another in the western North Atlantic, although the genus *Lagenorhynchus* is currently proposed to be revised (Vollmer et al., 2019).

F.5.3.24.2 Habitat and Geographic Range

White-beaked dolphins are found in cold-temperate and subarctic waters of the North Atlantic (Waring et al., 2007). In the western North Atlantic Ocean, the white-beaked dolphin occurs throughout northern waters of the Atlantic of the United States and eastern Canada, from eastern Greenland through the Davis Strait and south to Massachusetts (Lien et al., 2001). White-beaked dolphins would be expected to occur in the Labrador Current.

Within the Study Area, white-beaked dolphins are concentrated in the western Gulf of Maine and around Cape Cod (Cetacean and Turtle Assessment Program, 1982; Palka et al., 1997). Before the 1970s, these dolphins were found primarily in waters over the continental shelf of the Gulf of Maine and Georges Bank. Since then, they have been replaced by large numbers of Atlantic white-sided dolphins and now occur mainly in waters over the continental slope (Katona et al., 1993; Palka et al., 1997). This habitat shift may be a result of an increase in sand lance and a decline of herring in continental shelf waters (Payne et al., 1990). Sightings are common in nearshore waters of Newfoundland and Labrador (Lien et al., 2001). They also occur in the Gulf of St. Lawrence (Waring et al., 2010). During Cetacean and Turtle Assessment Program (1982) surveys, white-beaked dolphins were typically sighted in shallow coastal waters near Cape Cod and along Stellwagen Bank, with a bottom depth ranging from 43 to 2,454 ft. (Palka et al., 1997).

F.5.3.24.3 Population Trends

Abundance has declined in some areas, such as the Gulf of Maine, but this may be more closely related to habitat shifts than to direct changes in population size. However, there are insufficient data to determine population trends for this species (Waring et al., 2007).

F.5.3.24.4 Predator and Prey Interactions

This species preys on small mid-water and schooling fish, such as herring and haddock, as well as squid and crustaceans, with observations of cooperative feeding behavior (Jefferson et al., 2008).

Killer whales and sharks are considered possible predators to the white-beaked dolphin. Although no attacks were documented, groups of white-beaked dolphin were observed fleeing from killer whales (Kinze, 2009).

F.5.3.24.5 Species-Specific Threats

There are no significant species-specific threats to white-beaked dolphins in the northwest Atlantic.

F.5.3.25 Harbor Porpoise (*Phocoena phocoena*)

F.5.3.25.1 Status and Management

The Gulf of Maine–Bay of Fundy stock is the only stock of harbor porpoise under NMFS management within the Study Area. There are three additional harbor porpoise populations that also occur within the Study Area: Gulf of St. Lawrence, Newfoundland, and Greenland (Gaskin, 1992).

F.5.3.25.2 Habitat and Geographic Range

Harbor porpoises inhabit cool temperate-to-subpolar waters, often where prey aggregations are concentrated (Watts & Gaskin, 1985). Thus, they are frequently found in shallow waters, most often near shore, but they sometimes move into deeper offshore waters. Harbor porpoises are rarely found in waters warmer than 63°F (17°C) (Read, 1999) and closely follow the movements of their primary prey, Atlantic herring (Gaskin, 1992).

Harbor porpoises would likely be found only in the Labrador Current open-ocean area. In the western North Atlantic, harbor porpoises range from Cumberland Sound on the east coast of Baffin Island, southeast along the eastern coast of Labrador to Newfoundland and the Gulf of St. Lawrence, and southwest to about 34° North on the coast of North Carolina (Waring et al., 2016). Harbor porpoises are also found in waters off southwest Greenland. During summer (July to September), harbor porpoises are concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150 ft. deep (Gaskin, 1977; Kraus et al., 1983; Palka, 1995a; Palka, 1995b), with a few sightings in the upper Bay of Fundy and on the northern edge of Georges Bank (Palka, 2000).

During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina, while lower densities are found in waters off New York to New Brunswick, Canada (Waring et al., 2016). Harbor porpoises sighted off the mid-Atlantic states during winter include porpoises from other western North Atlantic populations (Rosel et al., 1999). There does not appear to be a temporally coordinated migration or a specific migratory route to and from the Bay of Fundy region (Waring et al., 2016).

LaBrecque et al. (2015a) identified a small and resident population area for harbor porpoise in the Gulf of Maine (Figure F.5-12) based on sightings documented by the National Oceanic and Atmospheric Administration Fisheries ship and aerial surveys, strandings, and animals taken incidental to fishing reported by National Oceanic and Atmospheric Administration Fisheries observers. From July to September, harbor porpoises are concentrated in waters less than 150 m deep in the northern Gulf of Maine and southern Bay of Fundy. During fall (October to December) and spring (April to June), harbor porpoises are widely dispersed from New Jersey to Maine, with lower densities farther north and south (LaBrecque et al., 2015a).

F.5.3.25.3 Population Trends

A trend analysis has not been conducted for the Gulf of Maine–Bay of Fundy stock of harbor porpoises (Palka, 2012). Since there are no population estimates available for the Gulf of St. Lawrence, Newfoundland, or Greenland stocks, trend analyses have not been conducted for these populations either (Waring et al., 2016).

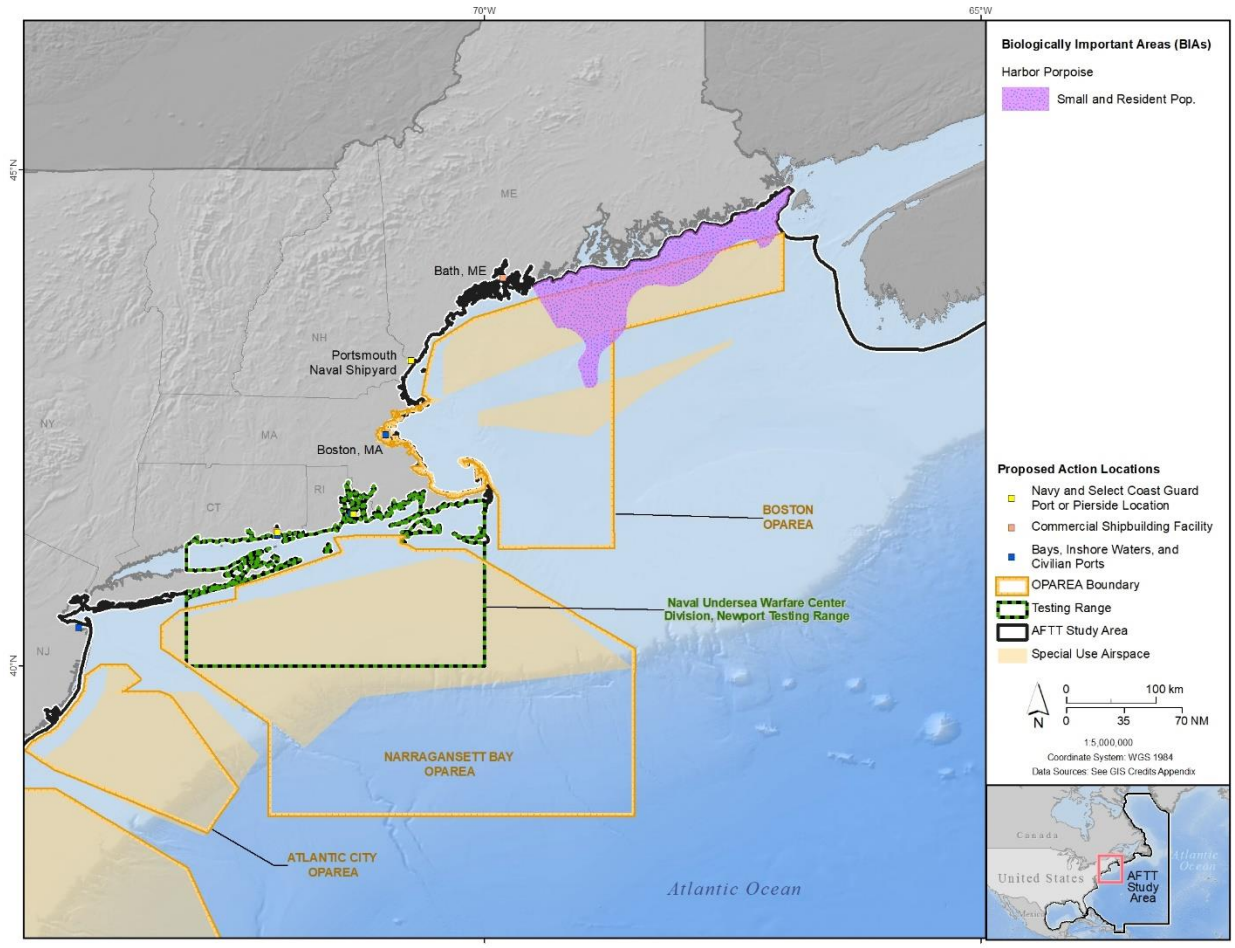


Figure F.5-12: Biologically Important Areas for Harbor Porpoises in the Study Area

F.5.3.25.4 Predator and Prey Interactions

This species preys on a variety of fish, especially high-fat pelagic species such as herring, sprat, anchovy, and cephalopods (Berrow & Rogan, 1996; Bjorge & Tolley, 2009; Santos & Pierce, 2003). The harbor porpoise is known to be attacked and killed by killer whales and common bottlenose dolphins (Jefferson et al., 2015).

F.5.3.25.5 Species-Specific Threats

Harbor porpoises have been documented as bycatch in a variety of fisheries, including sink and drift gillnets, herring weirs, and pelagic longlines (Hayes et al., 2018; Zollett, 2009). The total annual estimated human-caused mortality and serious injury is 307 harbor porpoises per year (CV = 0.16) from U.S. fisheries (Hayes et al., 2018).

F.5.3.26 Gray Seal (*Halichoerus grypus*)

F.5.3.26.1 Status and Management

There are three main populations of gray seal in the North Atlantic, including the Northeast Atlantic, Northwest Atlantic, and the Baltic Sea (Katona et al., 1993; Waring et al., 2010; Waring et al., 2016). These stocks are separated by geography, different breeding seasons, and genetic variation (Waring et al., 2010). Genetic research indicates that gray seals found in U.S. waters along the coasts of Maine and

Massachusetts are descended from the Canadian population and are members of the Northeast Atlantic stock (Hayes et al., 2021). The percentage of time that individuals are resident in U.S. waters is unknown (Hayes et al., 2021).

F.5.3.26.2 Habitat and Geographic Range

The Western North Atlantic management stock corresponds to the eastern Canada population, primarily ranging from Labrador to New Jersey (Hammill et al., 1998; Waring et al., 2004). This gray seal population is centered in the Canadian Maritimes, including the Gulf of St. Lawrence and the Atlantic coasts of Nova Scotia, Newfoundland, and Labrador. In the Study Area, the primary range of this species includes the northwestern waters of the Newfoundland-Labrador Shelf, the Scotian Shelf, and the Northeast U.S. Continental Shelf (Davies, 1957; Hall & Thompson, 2009).

The gray seal is considered a coastal species and may forage far from shore but does not appear to leave the continental shelf regions (Lesage & Hammill, 2001). Gray seals haul-out on land-fast ice, exposed reefs, or beaches of undisturbed islands (Hall & Thompson, 2009; Lesage & Hammill, 2001). Remote uninhabited islands tend to have the largest gray seal haul-outs (Reeves et al., 1992).

The Canadian population is divided into three groups for management purposes: Sable Island, Gulf of St. Lawrence, and Coastal Nova Scotia (Hammill et al., 2014a). The largest pupping site of gray seals in the world is located at Sable Island (Bowen et al., 2007). In the Gulf of St. Lawrence, gray seals pup on the pack ice (Davies, 1957; Hammill & Gosselin, 1995; Hammill et al., 1998), which is second-largest breeding colony in eastern Canada (Hammill et al., 2014a). Smaller numbers of seals pup on islands along the coast of Nova Scotia (Hammill et al., 2014a).

Gray seals range south into the northeastern U.S., with strandings and sightings as far south as North Carolina (Hammill et al., 1998; Waring et al., 2004). Gray seal distribution along the U.S. Atlantic coast has shifted in recent years, with an increased number of seals reported in southern New England (Kenney, 2014; Waring et al., 2016). Surveys in coastal Virginia since 2014 indicate that gray seals are occasional visitors to this area with multiple observations at the surveyed haul-out sites since 2014 (Guins et al., 2023; Jones & Rees, 2023).

Along the coast of the United States, gray seals are known to pup at three or more colonies, including Muskeget Island, Massachusetts, which is the southernmost breeding site (Rough, 1995; Waring et al., 2004), and Green and Seal Islands, Maine (Waring et al., 2016). Pupping has also been reported at Matinicus Rock and Mount Desert Rock in Maine (Waring et al., 2016). Gray seals are observed in New England outside of the pupping season on Muskeget Island and Monomoy as well as locations along the shoreline between southern Maine and Woods Hole, Massachusetts.

F.5.3.26.3 Population Trends

Gray seal abundance is likely increasing in U.S. waters, but the rate of increase is unknown (Waring et al., 2016). Single-day pup counts at three U.S. established colonies detected an increase from the 2001 to 2002 through the 2007 to 2008 pupping season (Wood LaFond, 2009). However, no recent surveys or modeling of gray seal abundance in U.S. Atlantic waters are available (Waring et al., 2016).

F.5.3.26.4 Predator and Prey Interactions

Gray seals prey on a variety of demersal and bottom-dwelling organisms, as well as schooling fish, cephalopods, other mollusks, and occasionally sea birds (Jefferson et al., 2015). Atlantic cod, Atlantic herring, sand lance, mackerel, flatfish, and white hake were the most prominent types of fish in the diet of gray seals off Nova Scotia, Canada (Hammill et al., 2014b). They also likely prey on harbor porpoises (Haelters et al., 2012; Leopold et al., 2015) and harbor seals (van Neer et al., 2015). Feeding

during the breeding season is minimal (Hauksson & Bogason, 1997). This species is preyed upon by sharks (Jefferson et al., 2015), and are likely to be preyed upon by killer whales (Weller, 2009).

F.5.3.26.5 Species-Specific Threats

A review of 405 cases of marine mammal mortalities on Cape Cod and southeastern Massachusetts from 2000 to 2006 concluded that gray seals are highly susceptible to human interaction; 45 percent of gray seal deaths were due to interactions with humans (Bogomolni et al., 2010). Stranding and bycatch data from Cape Cod, Connecticut, Rhode Island, and New York coasts between 1990 through 2012 were collected and analyzed to identify changes in stranding and bycatch trends. The analysis suggests that gray seal strandings and bycatch are increasing at rates between 18 and 22 percent since the early 1990s in the southern New England region (Johnston et al., 2015). However, the researchers note that beach counts of gray seals are also increasing in this area, and it is possible the increase in stranding and bycatch rates is attributable to the growth in population.

An unusual mortality event for both gray seals and harbor seals along the Northeast Coast was declared from 2018 to 2020 due to elevated mortalities in both species. The likely cause of this unusual mortality event was infectious disease, with the main pathogen being phocine distemper virus (National Marine Fisheries Service, 2022a). Seals of both species were showing clinical signs of the virus; stranding as far south as Virginia, although not in elevated numbers. This unusual mortality event was non-active as of 2021 and closure is pending. A second unusual mortality event was declared in June 2022 for both species in the northeast due to the pathogen avian influenza (HPAI) H5N1 was closed in July 2022 (National Marine Fisheries Service, 2024e).

F.5.3.27 Harbor Seal (*Phoca vitulina*)

F.5.3.27.1 Status and Management

Western Atlantic harbor seals that occur along the coast of the eastern United States and Canada represent a single population (Temte et al., 1991; Waring et al., 2010; Waring et al., 2016), though there is some uncertainty in the stock structure in the Atlantic Ocean.

F.5.3.27.2 Habitat and Geographic Range

The harbor seal is one of the most widely distributed seals, found in temperate to polar coastal waters of the northern hemisphere (Jefferson et al., 2008; Jefferson et al., 2015). Harbor seals occur in nearshore waters and are rarely found more than 20 km from shore; frequently occupying bays, estuaries, and inlets (Baird, 2001). Individual seals have been observed several kilometers upstream in coastal rivers (Baird, 2001). Haul-out sites vary but include intertidal and subtidal rock outcrops, sandbars, sandy beaches, and even peat banks in salt marshes (Burns, 2009; Gilbert & Guldager, 1998; Prescott, 1982; Schneider & Payne, 1983; Wilson, 1978). Harbor seals occur in the cold and temperate nearshore waters of the northwest Atlantic, typically north of 35° North (Waring et al., 2016). In the Study Area, their approximate range includes the Gulf of St. Lawrence, Scotian Shelf, Gulf of Maine, Bay of Fundy, and northeast U.S. continental shelf down to the Virginia/North Carolina border.

Harbor seals are found year-round in the coastal waters of eastern Canada and Maine; from September to May they also occur from southern New England to North Carolina although there have been rare sightings and strandings recorded as far south as Florida (Katona et al., 1993; Waring et al., 2010). A general southward movement from the Bay of Fundy to southern New England waters occurs in autumn and early winter (Barlas, 1999; Jacobs & Terhune, 2000; Rosenfeld et al., 1988; Whitman & Payne, 1990). A northward movement from southern New England to Maine and eastern Canada occurs before the pupping season, which takes place from mid-May through June along the Maine coast (DeHart, 2002; Kenney, 1994; Richardson et al., 1995; Whitman & Payne, 1990; Wilson, 1978). In the

northeastern United States, breeding and pupping normally occur north of the New Hampshire and Maine borders, although breeding has been recorded historically as far south as Cape Cod (Katona et al., 1993; Waring et al., 2010). Several thousand seals overwinter between New Hampshire and Massachusetts (Waring et al., 2010).

Harbor seal distribution along the U.S. Atlantic coast has shifted in recent years, with an increased number of seals reported in southern New England to the mid-Atlantic region. Harbor seals have been consistently detected in the mid-Atlantic region from November through March, with as many as 45 individuals observed during a single day at haul-out sites in Virginia (Jones & Rees, 2022).

F.5.3.27.3 Population Trends

The number of harbor seals in U.S. Atlantic waters increased from the 1980s to 2010 (Waring et al., 2010). There is some evidence that the population may be declining and a trend analysis for the North Atlantic stock is currently underway, however it is not possible at this time to discriminate between population decline and geographic redistribution (Hayes et al., 2021).

F.5.3.27.4 Predator and Prey Interactions

The main prey species of the harbor seal are cod, hake, mackerel, herring, salmon, sardines, smelt, shad, capelin, sand eels, sculpins, and flatfish (Burns, 2009). Sand eels are the main prey for individuals foraging in the southern portion of their range, while cod is the main prey in other geographic areas. Harbor seals are also known to feed on cephalopods and crustaceans (Burns, 2009). Shrimp appears to be important in the diet of newly weaned pups (Burns, 2009). Off Massachusetts, harbor seals are known to depredate monkfish, skate, and flounder from gillnets (Rafferty et al., 2012). There is no seasonal variation in prey species, but capelin and herring are more numerous in the fall and winter (Hauksson & Bogason, 1997; Jefferson et al., 2015; Reeves et al., 1992). Killer whales and sharks are known to prey on adult harbor seals and pups may be preyed on by eagles, ravens, gulls, and coyotes (Burns, 2009; Weller, 2009).

F.5.3.27.5 Species-Specific Threats

Harbor seals in the western North Atlantic are common bycatch in commercial fisheries (Hammill et al., 2010).

An unusual mortality event for both gray seals and harbor seals along the Northeast Coast was declared from 2018 to 2020 due to elevated mortalities in both species. The likely cause of this unusual mortality event was infectious disease, with the main pathogen being phocine distemper virus (National Marine Fisheries Service, 2022a). Seals of both species were showing clinical signs of the virus; stranding as far south as Virginia, although not in elevated numbers. This unusual mortality event was non-active as of 2021 and closure is pending. A second unusual mortality event for both species in the northeast was declared in June 2022 and closed in July 2022 due to the pathogen avian influenza (HPAI) H5N1 (National Marine Fisheries Service, 2024e).

F.5.3.28 Harp Seal (*Pagophilus groenlandicus*)

F.5.3.28.1 Status and Management

Three distinct populations or stocks of harp seals are recognized, including one in the Barents Sea that breeds on the “East Ice” in the White Sea, a population off eastern Greenland that breeds on the “West Ice” near Jan Mayen, and a third population in the northwest Atlantic off eastern Canada (Lavigne, 2009). The Western North Atlantic stock is the largest and is divided into two breeding herds: the Front herd, which breeds off the coast of Newfoundland and Labrador, and the Gulf herd, which breeds near

the Magdalen Islands in the Gulf of St. Lawrence (Reeves et al., 2002b; Waring et al., 2014; Waring et al., 2004).

F.5.3.28.2 Habitat and Geographic Range

The primary range of harp seals spans throughout the Arctic, with a secondary range that includes the western waters of the Scotian Shelf and the Northeast U.S. Continental Shelf. Harp seals are closely associated with drifting pack ice, where they breed, molt, and forage in the surrounding waters (Lydersen & Kovacs, 1993; Ronald & Healey, 1981). Harp seals make extensive movements over much of the continental shelf within their winter range in the waters off Newfoundland (Bowen & Siniff, 1999).

Typically, harp seals are distributed in the pack ice of the North Atlantic segment of the Arctic Ocean and through Newfoundland and the Gulf of St. Lawrence (Reeves et al., 2002b). Most western North Atlantic harp seals congregate off the east coast of Newfoundland-Labrador (the Front herd) to pup and breed; the remainder (the Gulf herd) gathers to pup near the Magdalen Islands in the Gulf of St. Lawrence (Morissette et al., 2006; Ronald & Dougan, 1982).

The number of sightings and strandings of harp seals off the northeastern U.S. has been increasing since the 1990s, based on records from Maine to New Jersey, primarily during the months of January to May (Harris et al., 2002; McAlpine & Walker, 1999). A few sightings and strandings are also reported annually for Virginia and North Carolina (Lloyd, 2015; Soulen et al., 2013; Swingle et al., 2016). Most recently, two young harp seals stranded separately in Norfolk, Virginia in early 2022 (Epple et al., 2023). An increase in strandings along the U.S. east coast has been correlated with poor ice conditions in the Gulf of St. Lawrence whelping area (Soulen et al., 2013).

F.5.3.28.3 Population Trends

Currently available data are insufficient to determine a minimum population estimate for U.S. waters (Waring et al., 2013); thus, population trends are also unknown. Outside of U.S. waters in the Northwest Atlantic between Canada and Greenland, population models of harp seals indicate the population has been stable since the 1990's, and appears to be increasing due to an increase in reproductive rates and low removal. In 2017, the estimated population size in this area was 6.8 million individuals with a projected increase to 7.6 million harp seals by 2019 (Hammill et al., 2021).

F.5.3.28.4 Predator and Prey Interactions

Harp seals feed on a variety of prey, which vary with age class, season, location, and year (Lavigne, 2009). Prey preference studies have revealed that harp seals prefer small fish to crustaceans (Lindstrom et al., 1998). The main prey species of harp seals are capelin, Greenland halibut, and Arctic and polar cod (Hauksson & Bogason, 1997; Lavigne, 2009; Morissette et al., 2006). Harp seals rarely eat commercially important Atlantic cod (Lavigne, 2009). Most foraging occurs at depths of less than 90 m, although dives as deep as 568 m have been recorded (Folkow et al., 2004; Lydersen & Kovacs, 1993). Harp seals feed intensively during the winter and summer and less so during the spring and fall migrations, or during pupping and molting (Ronald & Healey, 1981). Some overlap and competition exist for prey between hooded and harp seals. This species is preyed upon by polar bears, killer whales, and sharks (Lavigne, 2009).

F.5.3.28.5 Species-Specific Threats

Although harp seals are documented to be taken incidentally in commercial fishing gear, the level of take is small compared to the size of the population. Harp seals are also hunted commercially in Canada and Greenland. Fluctuating oceanic conditions may also threaten whelping areas (Bajzak et al., 2011).

Although the population in the Northwest Atlantic between Canada and Greenland has been increasing in recent years, climate-induced reductions in sea ice cover throughout their range will become an important factor of their population dynamics as the Gulf of St. Lawrence and Northeast Newfoundland area is projected to be ice free by the end of the century (Hammill et al., 2021; Han et al., 2015; Han et al., 2019).

F.5.3.29 Hooded Seal (*Cystophora cristata*)

F.5.3.29.1 Status and Management

The International Council for the Exploration of the Sea/Northwest Atlantic Fisheries Organization Working Group on Harp and Hooded Seals currently recognizes three separate stocks of hooded seals: the Northwest Atlantic, Greenland Sea, and White Sea stocks (International Council for the Exploration of the Sea, 2014). None of these stocks falls under U.S. jurisdiction, but individuals are found in U.S. waters. The western North Atlantic stock (synonymous with the Northwest Atlantic stock) pups off the coast of eastern Canada; the whelping area for the Greenland Sea stock is in the "West Ice" near Jan Mayen Island, east of Greenland (Kovacs, 2009a); the White Sea stock is in the "East Ice" near the Barents Sea/Russia. The Western North Atlantic stock is divided further into three whelping areas: Newfoundland-Labrador, Gulf of St. Lawrence, and David Strait.

F.5.3.29.2 Habitat and Geographic Range

Hooded seals are distributed in the Arctic and the cold temperate North Atlantic Ocean (Bellido et al., 2007). At sea, hooded seals stay primarily near continental coastlines but are known to wander widely. This species follows the seasonal movement of pack ice, on which it breeds. In the Study Area, its primary range is around the Newfoundland-Labrador, West Greenland, and Scotian Shelf.

Most hooded seals occur in the western Atlantic (Stenson et al., 1996). They migrate between winter/spring pupping areas along the Canadian coast to summer and molting areas off Greenland. The western North Atlantic stock breeds and pups at three main areas around Canada, including the Gulf of St. Lawrence, north of Newfoundland in an area that is known as the Front, and Davis Strait (Hammill et al., 1997; Jefferson et al., 2008; Kovacs, 2009b). Based on satellite relay data loggers deployed on hooded seals during 2004 to 2008, males appeared to prefer areas with complex seabed relief such as Davis Strait and the Flemish cap, whereas females preferred the Labrador Shelf (Andersen et al., 2013).

Hooded seals are highly migratory and may wander as far south as Puerto Rico (Mignucci-Giannoni & Odell, 2001), with more frequent occurrences from Maine to Florida in winter-spring and summer-fall, respectively (Harris et al., 2001; McAlpine et al., 1999; Mignucci-Giannoni & Odell, 2001).

F.5.3.29.3 Population Trends

The number of hooded seals in the western North Atlantic is relatively well known, and the total Northwest Atlantic population size is reported to have increased from 1965 to 2005 (Hammill & Stenson, 2006). However, uncertainty about the relationship among whelping areas and lack of reproductive and mortality data makes it difficult to reliably assess the current population trend.

F.5.3.29.4 Predator and Prey Interactions

The main prey species of hooded seals are redfish and cod, but they forage on squid and Greenland halibut as well (Hammill et al., 1997; Hauksson & Bogason, 1997). Some overlap and competition exist for prey between hooded and harp seals (Tucker et al., 2009). This species is preyed on by polar bears and killer whales (Kovacs, 2009b).

F.5.3.29.5 Species-Specific Threats

Although hooded seals are documented to be taken incidentally in commercial fishing gear, the level of take is very small compared to the size of the population. Hooded seals are also hunted commercially in Canada. The hooded seal is likely one of the most sensitive arctic marine mammal species to changing environmental conditions due to its dependence on pack ice and specialized feeding habits (Laidre et al., 2008).

F.6 Reptiles

The following information was updated since the 2018 Final EIS/OEIS (Section 3.8, Reptiles):

- In 2022, the Naval Undersea Warfare Center Division Newport, Rhode Island, provided updated density models for green, Kemp's ridley, loggerhead, and leatherback sea turtles in the Atlantic Ocean spanning from the northern Florida Keys to the Gulf of Maine and out to the U.S. Exclusive Economic Zone. The density distribution and abundance estimates provided by these models are incorporated into their respective sections and provide updates from the 2018 Final EIS/OEIS.
- In 2022, density models were produced by NOAA Southeast Fisheries Science Center for green, Kemp's ridley, leatherback, and loggerhead sea turtle populations in the Gulf of America.
- In 2023, NMFS and the USFWS performed a 5-year review on the conservation status of the loggerhead sea turtle in the Northwest Atlantic Ocean, and the updated findings through August 2021 are reflected in this appendix.
- In 2022, the USFWS released a 5-year review on the American crocodile.
- NMFS and USFWS initiated a status review of leatherback sea turtles in December of 2017 to gather and review best available scientific and commercial data on the species, apply the DPS Policy, and evaluate extinction risk of any potential DPSs, following NMFS' Listing Guidance. In 2020, NMFS and USFWS announced a petition to identify the Northwest Atlantic population as a DPS in addition to six other DPSs based on data collected. Although the best available data indicates the populations meet the criteria for significance and discreteness, they found that it would not further the purposes of the ESA to recognize and list seven DPSs separately as endangered under the ESA. The current global listing of the species remains in effect (85 *Federal Register* 48332).
- Updated nest counts for green, leatherback, and loggerhead sea turtles are provided by Florida Fish and Wildlife Commission.
- The USFWS published a proposed rule to designate new areas of critical habitat and modify existing critical habitat for five DPSs of green sea turtle (North Atlantic, South Atlantic, Central North Pacific DPSs, Central South Pacific, and Central West Pacific DPSs).

F.6.1 General Background

All reptiles are ectotherms, commonly referred to as "cold-blooded" animals, that have adopted different strategies to use external sources of heat to regulate body temperature. In the Study Area, sea turtles, crocodilians, and diamondback terrapins are analyzed for potential impacts.

The sea turtles considered in this analysis are found in coastal waters and on nesting beaches of the United States Atlantic Coast, Gulf of America, Caribbean Sea, and in open-ocean areas. The American crocodile inhabits coastal areas of south Florida where they are at the northern extreme of their range. American alligators are found throughout the southeastern United States, in estuaries and freshwater

habitats along rivers and lakes. The diamondback terrapin is also found in nearshore and inshore waters along the Atlantic and Gulf coasts. All sea turtles analyzed in this document are ESA listed, along with the American crocodile. The American alligator is listed under the ESA classification of "threatened due to similarity of appearance" to the American crocodile. The diamondback terrapin is not ESA listed.

Sea turtles are highly migratory, long-lived reptiles that occur throughout the open-ocean and coastal regions of the Study Area. Generally, sea turtles are distributed throughout tropical to subtropical latitudes, with some species extending into temperate seasonal foraging grounds. In general, sea turtles spend most of their time at sea, with female sea turtles returning to land to nest. Habitat and distribution vary depending on species and life stages and is discussed further in the species profiles and summarized in the following sections.

Crocodilians are also long-lived reptiles whose life spans can be up to 70 years in the wild (Schubiger, 2023). Crocodilians control their body temperature by basking in the sun or moving to areas with warmer or cooler air and water temperatures. The American crocodile inhabits freshwater wetland habitats, including rivers, lakes, and reservoirs, and can also be found in brackish environments such as estuaries and swamps (Fishman et al., 2009). It occurs in the Study Area in coastal portions of the Caribbean and in Florida. The American alligator is found throughout the southeastern United States, from the Carolinas to Texas. Unlike American crocodiles, American alligators lack lingual salt glands and are therefore unable to remove excess salt from their bodies (Nifong & Silliman, 2017). Gardner et al. (2016) predictively modeled alligator occurrence in North Carolina and found a strong negative relationship between water salinity and alligator occurrence and abundance. Throughout their range, American alligators are usually found in freshwater wetland habitats, in slow-moving rivers, or in the brackish waters of swamps, marshes, and lakes. Neither species occurs in offshore oceanic waters.

Diamondback terrapins are a species of turtle that can be found along the eastern and gulf coasts of the United States, from Cape Cod (Massachusetts) to Texas. They are most common in salt marshes and shallow bays. They are usually found in brackish water and occasionally travel out into the open ocean, though access to fresh water needs to be somewhat regularly available. They cannot tolerate high-salinity water for long periods of time, as they may dehydrate. Diamondback terrapins can secrete excess salt from their bloodstream through salt glands around their eyes. Terrapins have a diet consisting of mussels, crabs, snails, and sometimes insects, worms, and algae. They begin mating in early spring, and females will come ashore to sandy beaches or dunes to lay their eggs about 4 to 8 in. under the sand, where her eggs will continue to develop until around August or September. This species is listed as vulnerable to extinction by the International Union for Conservation of Nature; anthropogenic threats such as coastal development, commercial fisheries, and sea level rise all contribute to making terrapins an "at-risk" species (National Geographic, 2024).

Additional species profiles and information on the biology, life history, species distribution, and conservation of reptile species can also be found on the following organizations' websites:

- NMFS Office of Protected Resources (includes sea turtle species distribution maps)
- USFWS Ecological Services Field Office and Region Offices (for sea turtle nesting habitat and general locations of nesting beaches)
- OBIS-SEAMAP species profiles
- International Union for Conservation of Nature, Marine Turtle Specialist Group
- State resource agencies (for sea turtle nesting information, status and management for American alligators, American crocodiles, and diamondback terrapins)

F.6.1.1 Group Size

A sea turtle's group size varies from being a solitary animal to being among groups for foraging, mating, and nesting/hatching. Research finds unique patterns in group size and structure throughout the course of a sea turtle's life (Clabough et al., 2022). Nesting and hatching activity for each sea turtle species is described in their respective sections.

After nesting, sea turtles return, individually, to their preferred foraging grounds. An individual sea turtle will remain in an area of a few hundred square kilometers during these inter-nesting periods, where they will forage until it is time to nest again. Some sea turtles spend their time in one foraging area during the summer and a different foraging area during the winter (Foley et al., 2014). However, sea turtles typically do not show territoriality, so individuals of the same species or differing species can have foraging areas that overlap during certain times of the year. For example, multispecies communities (green, Kemp's ridley, and loggerhead sea turtles) are commonly observed foraging in the northern Gulf of America, specifically near Florida (Hart et al., 2018; Wildermann et al., 2019).

Crocodiles and alligators are territorial, but will gather in groups as juveniles (as a defense against predators), and as adults when exhibiting courtship behavior and feeding (Hidalgo-Ruz et al., 2012; National Park Service, 2012). For both American crocodiles and American alligators, courtship and mating take place during the spring warming period (typically April and May), and nesting and egg-laying is initiated during the early summer (Briggs-Gonzalez et al., 2017; Vliet, 2001).

Limited information is known about hibernation in diamondback terrapins, but they have been observed hibernating during the colder months of the year. During this time, they submerge themselves in the mud of creeks and marshes, where they remain completely inactive until warmer seasonal temperatures return (National Aquarium, 2024). Diamondback terrapins may hibernate individually or together in large groups (Sheridan et al., 2010). Pfau and Roosenburg (2010) used harvesting records in the Chesapeake Bay to estimate that large hibernating groups may number as many as 200 individual diamondback terrapins.

F.6.1.2 Habitat Use

Sea turtles are dependent on sandy beaches for nesting habitats, specifically in locations that have sand deposits that are, ideally, not inundated with tides or storm events prior to hatching. In water, sea turtle habitat use is dependent on species and life stage. Life stages greatly influence behavior which range from diving, foraging, mating, and migration strategies (Hart et al., 2016; Wildermann et al., 2019). Sea turtles spend 1 to 15 years (depending on species) in the open ocean with sparse observations during their oceanic dispersal. These years are termed "lost years" (Putman et al., 2019). Once they reach sexual maturity, some individuals return to natal beaches to reproduce, while others go to nearshore foraging grounds (Mansfield et al., 2017; Mansfield et al., 2021; Putman et al., 2019).

Alligators depend on brackish and fresh water estuarine wetland types, typically inhabiting swamps, lakes, and slow-moving rivers. Crocodiles also inhabit both freshwater and brackish water environments, and sometimes even marine environments, as they have a higher tolerance to salt water than alligators. Both depend on habitats with sufficient water to use as concealment for hunting and stalking of prey. Nesting habitats are on dry land along the edges of wetlands, with eggs being deposited in nests that they construct from soft mud and vegetation in both wetland and upland habitats (Britton, 2009).

Although the diamondback terrapin is an aquatic turtle and they spend the majority of their life in water, they do leave the water to bask and lay eggs. One biological advantage these turtles have acquired over time is the ability to survive in salt waters of variable salinities. The typical habitat of the

diamondback terrapin includes coastal swamps, estuaries, lagoons, tidal creeks, mangroves, and salt marshes with salinities ranging from 0 to 35 ppt (Pfau & Roosenburg, 2010).

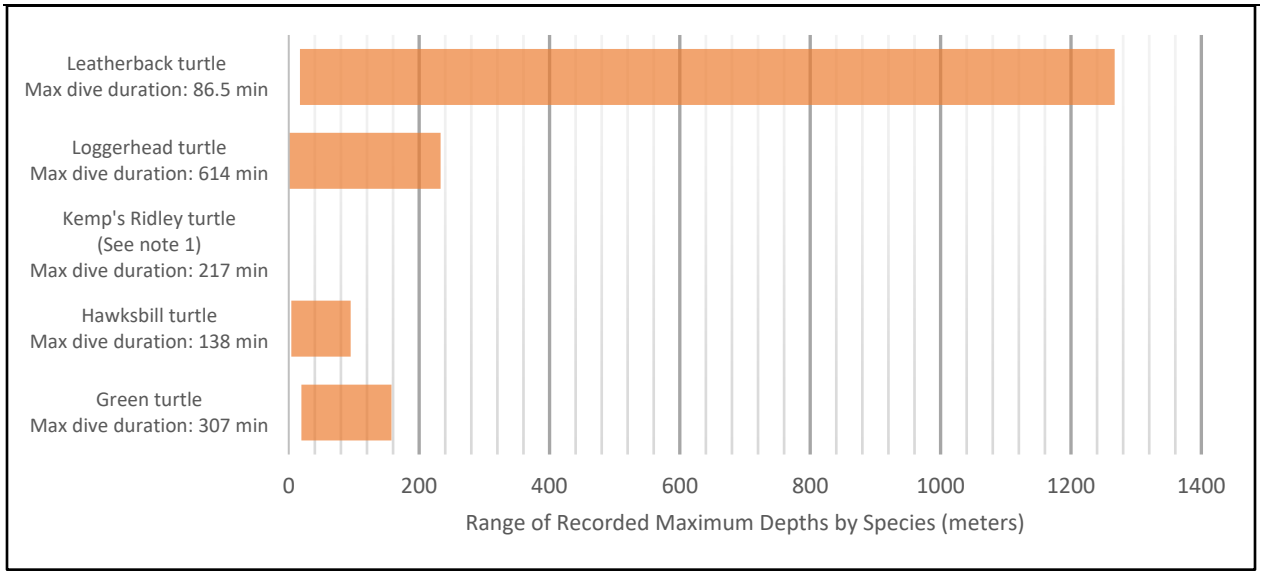
F.6.1.3 Dive Behavior

While the American crocodile, American alligator, and diamondback terrapin do submerge themselves fully in water, they do not dive to depth or for extended periods of time in the way that sea turtles do; thus, these species are not discussed in this section.

Sea turtle dive depth and duration varies by species, the age of the animal, the location of the animal, and the activity (e.g., foraging, resting, and migrating). Roberts et al. (2022) analyzed dive and surface behavior of green, Kemp's ridley, and loggerhead sea turtles that were satellite tagged and tracked in the Gulf of America from 2010 to 2019. Results showed that loggerheads spent a higher proportion of time at the surface while in warmer waters (between 25 and 30˚C) and at shallow to intermediate depth ranges. Kemp's ridley sea turtles occupied a wide temperature range at the surface (between 20 and 35˚C) with close proximity to the continental shelf and in very shallow waters (i.e., below 30 m). Green sea turtles spent more time at the surface during spring months and within shallow waters. A study by Rogers et al. (2024) tracked leatherback sea turtles to understand their surface behavior, and results showed that the species typically spends about 40 to 60 percent of the day at the surface of the water column, making them especially vulnerable to vessel strikes.

Dive durations are often a function of sea turtle size, with larger sea turtles being capable of diving to greater depths and for longer periods. The diving behavior of a particular species or individual has implications for mitigation, monitoring, and developing sound conservation strategies (Wildermann et al., 2019). In addition, their relative distribution throughout the water column is an important consideration when conducting acoustic exposure analyses. Methods of collecting dive behavior data over the years has varied in study design, configuration of electronic tags, parameters collected in the field, and data analyses. Hochscheid (2014) collected published data from 57 independent studies between 1986 and 2013, summarizing datasets that included depth and duration of dives from an overall total of 538 sea turtles. From this work, maximum dive depths (and duration in minutes) for each sea turtle species found in the Study Area is shown in Figure F.6-1 below.

Hochscheid (2014) also collected information on generalized dive profiles, with correlations to specific activities, such as bottom resting, bottom feeding, orientation and exploration, pelagic foraging and feeding, mid-water resting, and traveling during migrations. Generalized dive profiles compiled from 11 different studies by Hochscheid (2014) show eight distinct profiles tied to specific activities. These profiles and activities are shown in Figure F.6-2. Iverson et al. (2019) studied loggerhead dive behavior in the Gulf of America, testing for associations between dive behavior (total daily dive frequency, frequency of dives to the bottom, frequency of long dives and time at depth), oceanographic conditions (sea surface temperature, net primary productivity), and behavioral mode (inter-nesting, migration, or foraging). This study found that loggerhead sea turtles dove to the bottom 95 percent of the days during inter-nesting and foraging. Other findings included that the majority of dives were less than or equal to 25 m, that longer dives occurred more frequently during migration, and most dives reached the sea floor when sea surface temperatures and net primary productivity were higher. Temperature was a key variable in this study, and results found that it has a strong influence on dive behavior. Migrating to deeper waters will keep the sea turtles cooler, allow exposure to high primary productivity with increased food availability and thus more foraging behavior, which occurs at depth during dives (Iverson et al., 2019).



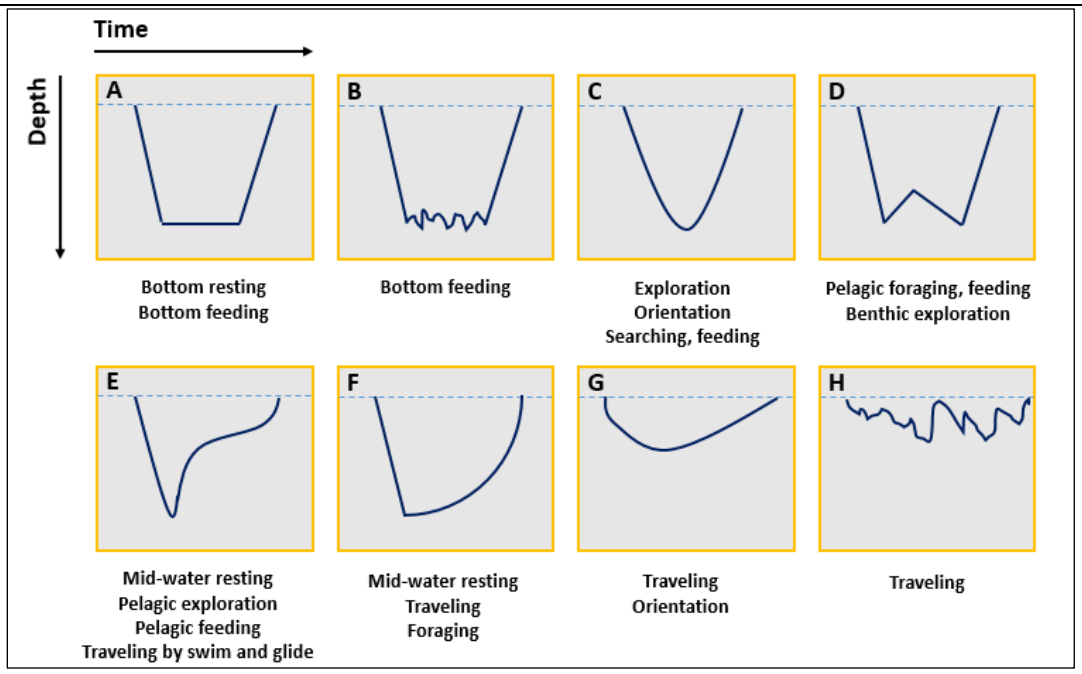
Sources: Hochscheid (2014); Sakamoto et al. (1993); Rice and Balazs (2008); Gitschlag (1996); Salmon et al. (2004).
Note 1: This figure shows the ranges of maximum dive depths and durations reported in the literature for the sea turtle species included in this analysis. Only one study was reviewed for Kemp's ridley sea turtle, which recorded depths of one juvenile Kemp's ridley sea turtle, and was not comparable to other data collected on other species.

Figure F.6-1: Dive Depth and Duration Summaries for Sea Turtle Species

A similar study conducted by Wildermann et al. (2019) near Crystal River, Florida, observed similar dive activity patterns; maximum dive depth for each species were on average similar during the daytime and nighttime. Maximum dive durations for green and loggerhead sea turtles were longer during the daytime compared to nighttime but Kemp's ridley sea turtle remained similar throughout the day and night. Okuyama et al. (2021) analyzed almost 50,000 dive profiles of tracked leatherback sea turtles and found that leatherbacks migrating across the North Pacific changed their dive behavior regionally, likely in response to local environmental conditions, (e.g., sea surface temperature and prey abundance). They generally conducted deeper dives when sea surface temperature was warmer. The dive patterns are assumed to assist with thermoregulation, saving energy, and finding prey. Dive type classification exhibited a V-shape (see Figure F.6-2 for generalized dive behavior) presumably diving into deep cold waters to avoid overheating. The deepest dive recorded during this study was just over 1,000 m (Okuyama et al., 2021). The study concluded that leatherbacks are able to spend more time foraging in cool-temperature areas (i.e., high latitude areas) due to mesothermy (i.e., use of metabolic heat to raise one's body temperature), but there is a trade-off between energy gain by foraging activity and migration cost, which in turn appears to reduce their reproductive output (Okuyama et al., 2021).

F.6.1.4 Hearing and Vocalization

Information on hearing and vocalization in reptiles is provided in Appendix D (Acoustic and Explosive Impacts Supporting Information), Section D.7-1 (Hearing and Vocalization).



Sources : Hochscheid (2014); Rice and Balazs (2008) ; Sakamoto et al. (1993) ; Houghton et al. (2003) ; Fossette et al. (2007) ; Salmon et al. (2004) ; Hays et al. (2004); Southwood et al. (1999)

Note : Profiles A-H, as reported in the literature and compiled by Hochscheid (2014). The depth and time arrows indicate the axis variables, but the figure does not represent true proportions of depths and durations for the various profiles. In other words, the depths can vary greatly, but behavioral activity seems to dictate the shape of the profile. Profiles G and H have only been described for shallow dives (less than 5 m).

Figure F.6-2: Generalized Dive Profiles and Activities Described for Sea Turtles

F.6.1.5 General Threats

F.6.1.5.1 Water Quality

Sea Turtles

Water quality in sea turtle habitats can be affected by a wide range of anthropogenic activities. The potential for energy exploration and extraction activities to degrade nearshore and offshore habitats are discussed in Section F.6.1.5.2 (Commercial and Recreational Industries). Marine debris in sea turtle habitats is discussed in Section F.6.1.5.6 (Marine Debris). Chemical pollution and impacts on water quality are also of great concern, although its effects are just starting to be explored and understood on marine reptiles (Law et al., 2014; Ortmann et al., 2012). Specific ocean contaminations such as oil and chemical spills have been documented to have damaging effects in most marine reptile species through direct exposure to oil or chemicals as well as impacts on prey availability (McDonald et al., 2017). Ingested plastics, discussed in more detail in Section F.6.1.5.6 (Marine Debris), can also release toxins, such as bisphenol-A (commonly known as “BPA”) and phthalates, and organisms may absorb heavy metals from the ocean and release those into tissues (Fukuoka et al., 2016; Teuten et al., 2007). Plastic size, polymer type, shape, and chemical composition of the debris ingested by sea turtles or their prey all influence impacts to these species (Tuuri & Leterme, 2023). Life stage, geographic location relative to concentrations of pollutants, and feeding preference affect the severity of impacts on sea turtles associated with chemical pollution in the marine environment.

Crocodilians

For the American crocodile, the increase in salinity levels from freshwater input reductions may influence community or population distributions in southern Florida (Mazzotti et al., 2016; Mazzotti et al., 2019). One of the goals of the Comprehensive Everglades Restoration Plan is to restore historic freshwater flows through portions of the Everglades. Green et al. (2014) modeled potential effects of restoring freshwater flows to the Everglades, predicting crocodile populations across south Florida would decrease approximately 3 percent after the restoration of historical flows compared to future conditions without restoration. The model also predicted that the freshwater influx would result in local decreases of up to 30 percent in the vicinity of Buttonwood Canal; however, expected local increases of up to 30 percent would result in the Joe Bay area by Taylor Slough (Green et al., 2014).

American alligators are often cited as indicators for water quality, particularly for heavy metal pollution. Alligators avoid polluted, low-quality waters; therefore, a lack of alligators in one area can be an indicator that the waters there are polluted. Alligators are considered a keystone species within ecosystems. Keystone species are ones that strongly interact with other species, and thus their removal may significantly affect community composition (Brandt et al., 2016; Hodge, 2011; Nilsen et al., 2019). Fluctuations in water levels are a primary driver for alligator presence in inland freshwater systems (Brandt et al., 2016; Hidalgo-Ruz et al., 2012; National Park Service, 2012), along with lower salinities (Gardner et al., 2016; Nifong & Silliman, 2017). The population status and/or behaviors of the alligator can be used to represent the health of the ecosystem as a whole, which can largely assist in monitoring current restoration efforts and understanding of how to guide future environmental policies (Brandt et al., 2016).

Terrapins

Diamondback terrapins are also considered to be an indicator species for water quality (Pfau & Roosenburg, 2010). Terrapins, like alligators, are also commonly found in higher abundances in higher quality waters, even within the same bay system. Although it is unclear how pollutants impact individual terrapins, populations and their habitats, studies indicate that terrapins uptake pollutants into tissues. Basile et al. (2011) measured fat content in diamondback terrapins for a number of contaminants, including persistent organic pollutants (e.g., polychlorinated biphenyls, polybrominated diphenyl ethers, chlorinated pesticides, and methyl-triclosan). This study was conducted by collecting fat biopsies on terrapins in Barnegat Bay in New Jersey, covering industrial areas and outfalls, as well as less polluted areas of the bay (e.g., Forsythe National Wildlife Refuge). Basile et al. (2011) found that terrapins closer to the industrial area had higher persistent organic pollutants in fat stores than terrapins further from sources of industrial pollution. Male terrapins had higher concentrations of pollutants in fat stores than females, while females had higher concentrations of persistent organic pollutants in plasma than males. Monitoring of chronic, genetic, and reproductive effects of contaminant exposure also will be important in assessing the health of this species in the future, as well as estimating the expected impacts of other potential threats to terrapins and their habitats (Basile et al., 2011).

With respect to other water quality parameters such as dissolved oxygen, a study conducted by Farrell (2021) observed that terrapins in Chesapeake Bay do not prefer either higher or lower dissolved oxygen levels and were observed throughout the middle dissolved oxygen ranges. Low dissolved oxygen levels are an indicator of poor water quality that suggests a lack of primary production occurring in the area, and therefore a lack of organisms and overall productivity in a certain region. In this case, it was concluded that terrapins do not prefer higher water quality over lower water quality, as a function of dissolved oxygen composition (Farrell, 2021).

F.6.1.5.2 Commercial and Recreational Industries

Sea Turtles

In offshore regions of the Study Area, bycatch from commercial fisheries is a primary threat to sea turtles. Population declines of loggerhead and leatherback sea turtles in the Atlantic have been associated with longline fisheries (Swimmer et al., 2017). In U.S. fisheries, Finkbeiner et al. (2011) estimated that bycatch resulted in 71,000 sea turtle deaths per year prior to effective regulations that protect sea turtles (e.g., regulations adopted since the mid-1990s in different U.S. fisheries for sea turtle exclusion devices). Mortality estimates are currently 94 percent lower (4,600 deaths) than pre-regulation estimates (Finkbeiner et al., 2011). One comprehensive study estimates that worldwide, 447,000 sea turtles are killed each year from bycatch in commercial fisheries (Wallace et al., 2010a; Wallace et al., 2010b). Lewison et al. (2014) compared bycatch using three different gear types (longline, gillnet, and trawling nets) for sea turtles, marine mammals, and seabirds. Sea turtles were most susceptible to bycatch, with the Mediterranean and waters off the South American Atlantic coast as the two highest fisheries reporting sea turtle mortalities (primarily through trawling) (Lewison et al., 2014). Offshore energy development, including oil, natural gas extraction, and renewable energy projects in coastal and deep waters on the continental shelf can also effect sea turtles through degradation of habitats during pre-construction, construction, and operational phases (Bergström et al., 2014; Finkbeiner et al., 2011; Wright & Kyhn, 2015).

In nearshore areas, recreational fishing has surpassed commercial fisheries in terms of bycatch of Kemp's ridley and green sea turtles according to a modeling study on juvenile sea turtle bycatch risk between 1996 and 2017 (Putman et al., 2023). In addition, this study found that bycatch rates of Kemp's ridley sea turtles were two orders of magnitude higher than for green sea turtles and is likely attributed to their nearshore distribution where shore-based recreational fishing is concentrated. Kemp's ridley sea turtles are the most abundant sea turtle species in the western Gulf of America, which is also where the shrimping effort is the highest. Although green sea turtles are also abundant in the Gulf of America, they likely do not spend much time within shrimp fishing areas as their diet consists of seagrass and algae (Putman et al., 2023). Aside from risks of bycatch, sea turtles have been observed changing their behavior, avoiding areas or reducing their home range where recreational fisheries occur (Wildermann et al., 2018).

Large-scale commercial exploitation within the nearshore areas also contributes to global decline in marine sea turtle populations. There are approximately 42 countries and territories that allow direct take of sea turtles and collectively take in excess of 42,000 sea turtles per year, the majority of which (greater than 80 percent) are green sea turtles (Humber et al., 2014). Illegal fishing for sea turtles and nest harvesting also continues to be a major cause of sea turtle mortality, both in countries that allow sea turtle take and in countries that outlaw the practice (Lam et al., 2011; Maison et al., 2010). For example, Humber et al. (2014) estimated that in Mexico, 65,000 sea turtles have been illegally harvested since 2000. The authors, however, noted a downward trend of legal and illegal direct takes of sea turtles over the past three decades—citing a greater than 40 percent decline in green sea turtle take since the 1980s, a greater than 60 percent decline in hawksbill and leatherback take, and a greater than 30 percent decline in loggerhead take (Humber et al., 2014).

Increasing offshore energy development activities globally (U.S. Department of Energy, 2022) have likely led to negative consequences for sea turtle populations in the Study Area. The *Deepwater Horizon* spill in 2010, releasing 200 million gallons of crude oil into the Gulf of America (Putman et al., 2015a), is anticipated to have long-term effects that persist for decades (National Marine Fisheries Service, 2011c, 2014). Vulnerability from such an oil spill can impact nesting beaches through toxicity of embryos from

oil deposited along the shorelines by wind and currents, thereby increasing potential of developmental deformities and/or successful hatch rate. In the marine environment, oil spills can cause fouling of hatchlings and oceanic juveniles, as well as degradation and contamination of habitat and prey (Wallace et al., 2020). Surveys in 2013 and 2014 showed continued reductions in the number of Kemp's ridley nests since the 2010 spill (Gallaway et al., 2016). High levels of Kemp's ridley sea turtle strandings on the northern Gulf of America beaches are a likely result of the spill and is presumably tied to cold winter/spring temperatures at the time of the spill. These cold temperatures had caused a delay to the nesting season, and resulted in exposure to the spill (Gallaway et al., 2016). It is further suspected that a decline in prey (blue crab and shrimp) requires sea turtles (e.g., Kemp's ridleys) to expend more energy foraging, which may have an adverse impact on their migrations and reproductive output (Gallaway et al., 2016).

Prior to drilling operations, vessel traffic and seismic disturbances through exploration activities can degrade sea turtle coastal and open-ocean foraging habitats. The United States has a federal goal of installing 30 gigawatt of offshore wind power capacity by 2030 with U.S. East Coast states currently having approximately 25 gigawatt of offshore wind projects under various stages of development. As of 2023, wind power growth is planned along the east coast between 2027 and 2040, with most development occurring off the coasts of Massachusetts, New Jersey, Virginia, and North Carolina (S&P Global Commodity Insights, 2023; Smith et al., 2015). In February 2023, the Interior Department announced offshore wind lease sale for three proposed lease areas in the Gulf of America off the coasts of Galveston, Texas, and Lake Charles, Louisiana (S&P Global Commodity Insights, 2023). Construction of offshore wind energy facilities in the mid-Atlantic is likely to occur in warmer months, and sea turtles will be present during these periods (Williams et al., 2015). Onshore development can also lead to nesting habitat loss or habitat degradation. Construction activities can facilitate erosion or inhibit natural sediment deposition to form beaches. Once facilities are operational, artificial lighting, noise, and other stressors can further degrade nesting habitats (CSA Ocean Sciences Inc., 2023; Seminoff et al., 2015).

Vessel strikes have been identified as an important mortality factor in nearshore sea turtle habitats worldwide. Increased recreational fishing effort in Florida has shown that mean annual estimates of mortality to sea turtles from vessel strikes are similar to those reported throughout the entire southeastern United States between 2007 and 2016 (Putman et al., 2023). Foley et al. (2019) studied stranded sea turtles in Florida between 1986 and 2014. A third of stranded loggerhead, green, and leatherback sea turtles had a vessel strike injury. Vessel strike injuries were also observed in Kemp's ridley and hawksbill sea turtles, but to a lower extent compared to the other sea turtle species. Scientists in Hawaii reported that 2.5 percent of green sea turtles found dead on the beaches between 1982 and 2003 had been killed by vessel strikes (Chaloupka et al., 2008), and in the Canary Islands, 23 percent of stranded sea turtles showed lesions from vessel strikes or fishing gear (Oros et al., 2005). Denkinger et al. (2013) reports that vessel strikes in the Galapagos Islands were most frequent at foraging sites close to a commercial and tourism port. Barco et al. (2016) found that loggerheads were healthy at the time of vessel strikes, suggesting healthy individuals are not any more likely to be injured or killed than unhealthy sea turtles.

Crocodilians

American crocodiles and American alligators were widely hunted for their skins from 1920 to 1970, which led to substantial population declines across all parts of the species ranges. Country-specific (e.g., the listing of the American crocodile as endangered in 1979 [44 *Federal Register* 17710] under the ESA) and international trade restrictions, along with the availability of legally obtained skins from other crocodilians, have significantly reduced commercial hunting in recent decades (Brandt et al., 2016;

National Park Service, 2012; Thorbjarnarson et al., 2006). Regulated commercial use of captive reared crocodilians has relieved commercial exploitation for wild crocodilians. The American alligator population has expanded greatly throughout its historic range in wetlands of the southeastern United States. The Florida population of the American crocodile has increased, and its distribution has expanded, since it was listed as endangered (Brandt et al., 2016; National Park Service, 2012).

Oil spills that impact freshwater and estuarine habitats will alter important wetland ecological functions, such as removing sediments, nutrients, pesticides, metals, and other pollutants; and provide essential foundations for food chains for wildlife (Corn & Copeland, 2010), including crocodilians. Oil spills that occur in or wash into these wetlands could reduce prey availability for both the American alligator and the American crocodile. For the American alligator, coastal oil pollution likely has only limited impacts because the highest abundance of alligators are found in inland freshwater systems (Corn & Copeland, 2010). For American crocodiles, oil spills would have to occur within, or wash into, crocodile habitats in southern Florida for impacts to occur, and would likely be a substantial and persistent inhibiting factor in American crocodile recovery.

Terrapins

Commercial activities that threaten diamondback terrapins include commercial harvesting, bycatch mortality in crab pots, and pollution. Up until the beginning of the 20th century, diamondback terrapins were in great demand by gourmet restaurants and the pet trade in major metropolitan areas of the United States (Pfau & Roosenburg, 2010). Dredging of shallow water habitats and scraping of hibernacula where terrapins congregate during the winter were the most effective forms of commercial harvesting. Commercial harvesting, as determined by test dredging, tended to capture more females than males, which likely severely reduced the reproductive potential for populations in terrapin fisheries. The commercial demand for terrapins generally subsided through the 20th century. However, there was an increase in terrapin exports to China from the United States in the late 1980s, but by 2007, all of the states within the diamondback terrapin range had prohibited commercial harvest of terrapins (Pfau & Roosenburg, 2010).

Roosenburg et al. (1997) studied crab pot use in the Chesapeake Bay and estimated that 15 to 78 percent of the local terrapin population can be captured in crab pots in a single year. Crab pots are designed with small entrances, which tend to capture smaller males rather than larger females. Because of the selective mortality of males in crab pots, Pfau and Roosenburg (2010) estimated that the terrapin sex ratio in the Chesapeake Bay at one male to two, possibly three females. New crab traps with terrapin exclusions have greatly reduced terrapin bycatch (Lester, 2012; Pfau & Roosenburg, 2010; University of Georgia, 2023).

Oil spills in coastal areas directly impact diamondback terrapins by oiling and drowning the animals and indirectly by contaminating their nesting beaches (Pfau & Roosenburg, 2010). The short-term impacts of the oil spill from a leak in an underground oil pipeline near Chalk Point, Maryland, showed direct impacts on adult terrapins and decline in hatchling survivability where the oil leak polluted sand in a nesting location (Michel et al., 2001).

Residential and urban development restricts freshwater flow into swamps and estuaries, which may limit diamondback terrapin growth, survival, and abundance, and potentially impact diamondback terrapin habitats if spills reach estuaries and riverine areas (Basile et al., 2011).

F.6.1.5.3 Disease and Parasites

Fibropapillomatosis is a disease of sea turtles that typically results in the production of tumors, both external and internal, that are considered benign, but may obstruct crucial functions, such as swimming, feeding, sight, and buoyancy, and can lead to death (Balazs, 1986; Patrício et al., 2016). The disease was first noticed in 1936 (Smith & Coates, 1938), but did not gain international attention until the early 1980s, when it was most commonly reported in green sea turtles. Though more frequent among green sea turtles, Fibropapillomatosis has been reported in all species of sea turtles (Patrício et al., 2016). Throughout the 1980's, rapid spreading of fibropapillomatosis was recorded, quickly becoming an endemic in Florida and Hawaii green sea turtle populations (Day et al., 2016; Work & Balazs, 2013). By 1995 the concentration of disease in the population reached its climax and has showed a decline in prevalence since (Patrício et al., 2016). A study conducted by Kelley et al. (2022) at a coastal foraging site in Florida found that 49 percent of recaptured resident juvenile green sea turtle in the Indian River Lagoon had developed fibropapillomatosis, but also that they were capable of full recoveries. It is important to note, however, that this study was limited to only visible tumors, and had a small (about 10 percent) recapture rate.

Edmonds et al. (2016) lists 16 parasites known to occur in sea turtles, with the most common and significant (in terms of impacts on health) being blood flukes and flatworms (Watson et al., 2017). Some of the common external parasites found on sea turtles include leeches and a number of different species that reside on the shell called epibiota (Glandon & Miller, 2016). Leeches and parasitic isopods (sea lice) are usually found on the soft skin tissues around the base of flippers, neck, tail, eyes, and the mouth (Foster & Gilmour, 2016). More recently, sea turtle egg fusariosis is a fungal disease that has become an emerging problem for sea turtle eggs and neonates. Linked to the fungi *Fusarium solani* species complex, this fungal disease causes decreased egg hatch success rate in all 7 extant sea turtle species, while also causing cutaneous and subcutaneous infections, and skin lesions (Kuschke et al., 2023).

The type and severity of disease in crocodilians and terrapins is poorly understood and is not considered as a significant threat to species recovery (Florida Fish and Wildlife Conservation Commission, 2009; Hackney, 2010; National Park Service, 2012; Savannah River Ecology Laboratory & Herpetology Program, 2012).

F.6.1.5.4 Invasive Species

Invasive species have been shown to have both harmful and beneficial impacts on sea turtles. Impacts on sea turtles associated with invasive species primarily concern nest predation and prey base. For example, feral hogs (*Sus scrofa*) have been known to destroy several sea turtle nests during a season on certain nesting beaches in Florida (Engeman et al., 2016) and South Carolina (Engeman et al., 2019). Engeman et al. (2016) noted nesting success after a successful implementation of a feral hog control program in Florida. In foraging grounds, sea turtles have been shown to adapt their foraging preferences for invasive seagrass and algae. Becking et al. (2014) showed green sea turtle foraging behavior shift to consumption of *Halophila stipulacea*, a rapidly spreading seagrass in the Caribbean. In Hawaii, green sea turtles in Kaneohe Bay have modified their diets over several decades to include seven non-native species (Spiny Seaweed, *Acanthophora spicifera; Hypnea musciformis, Gracilaria salicornia, Eucheuma denticulatum,* Graceful Red Weed*, Gracilaria tikvahiae;* Agar-agar*, Kappaphycus striatum;* and Elkhorn Sea Moss, *Kappaphycus alvarezii*), with non-native algae accounting for over 60 percent of sea turtle diet (Russell & Balazs, 2015).

Non-native Burmese pythons (*Python bivitattus*) are large generalist predators that have established an expanding breeding population in Florida (Walters et al., 2016). Introduced pythons present a direct

threat to the American alligator and American crocodile through predation, where predation of alligators up to 2 m in length have been reported (Dorcas et al., 2012). Originally thought to be restricted to freshwater habitats in Florida, Hart et al. (2012) has demonstrated salt water tolerance of python neonates, which could increase predation rates to American crocodiles, American alligators, and terrapins. Dorcas et al. (2012) noted that increased python predation on mammalian populations also reduced prey availability for alligators and crocodiles.

Terrapin nests and hatchlings are vulnerable to predation from non-native rats and ants, along with other native terrestrial and avian predators (Draud et al., 2004; Pfau & Roosenburg, 2010). In addition, invasive vegetation can severely impact wetlands when made vulnerable by high amounts of disturbance. *Phragmites australis*, an invasive emergent marsh reed, is rapidly expanding in coastal wetlands of the United States, particularly brackish wetlands, which likely degrades terrapin nesting areas. Cook (2016) found that *Phragmites australis* can alter vegetation structure, soil temperature, and moisture in nesting locations, which may limit preferred nesting habitats (replacing sparsely vegetated sandy locations with thick stands of *Phragmites australis*), potentially skew sex ratios towards males, and reduce nesting success through the encroachment of root systems into nests.

F.6.1.5.5 Environmental Variability

Sea turtles, crocodilians, and terrapins are particularly susceptible to the effects of environmental variability because their life history, physiology, and behavior are extremely sensitive to environmental temperatures (Donaton et al., 2019; Fuentes et al., 2013; Green et al., 2014; Hart & Lee, 2006; Lockley & Eizaguirre, 2021; Patrício et al., 2021; University of Georgia, 2023; Wheatley et al., 2012). Climate models predict sea level rise and increased intensity of storms and hurricanes in tropical sea turtle nesting areas (Patino-Martinez et al., 2008), as well as coastal areas of the United States where crocodilians and terrapins may nest (Frost et al., 2017). These factors could significantly increase beach inundation and erosion, thus affecting overall quality of sea turtle, crocodilian, and terrapin nesting beaches. Inundation of nests can have detrimental effects to the eggs as vital gas exchange occurs between an egg and its environment through the egg shell, so being impeded by water can cause the egg to drown (Pike et al., 2015).

Environmental variability may negatively impact reptiles in multiple ways and at all life stages. These impacts may include the potential loss of nesting beaches due to sea level rise and increasingly intense storm surge (Patino-Martinez et al., 2008), shifts in benthic prey community due to warming temperatures (Donaton et al., 2019), feminization of populations from elevated nest temperatures(Jensen et al., 2018; Laloë & Hays, 2023; Patrício et al., 2021; Pfau & Roosenburg, 2010; Reneker & Kamel, 2016), decreased reproductive success (Hawkes et al., 2006; Laloë et al., 2016; Pike, 2014), shifts in reproductive periodicity and latitudinal ranges (Pike, 2014), disruption of hatchling production, dispersal and migration (Montero et al., 2019), and indirect effects to food availability (Donaton et al., 2019; Witt et al., 2010). Short-term effects on aquatic reptiles and their habitat also include the potential impacts caused by increased hurricane occurrence and intensity (Elsey et al., 2006; Elsey & Woodward, 2010). American alligators are less likely to be affected by coastal impacts associated with environmental variability because they occur in freshwater systems further inland (Eversole et al., 2015).

Adaptation strategies to protect coastal infrastructure are an anticipated response to rising sea levels. These activities may include shoreline stabilization projects and infrastructure hardening, which could contribute to the loss of nesting habitat. Shoreline stabilization may hold beach sediments in place; however, the disruption of onshore currents can reduce the beach replenishment of sediments further away (Boyer et al., 1999; Fish et al., 2008).

F.6.1.5.6 Marine Debris

Marine debris is defined as "any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or Great Lakes" (33 U.S.C 1956). There are three main types of marine debris that impact wildlife: (1) plastics, (2) derelict fishing gear, and (3) abandoned and derelict vessels (Guertin, 2019). Debris in offshore and inshore waters present ingestion and entanglement risks for sea turtles, crocodilians, and terrapins. Ingestion of marine debris can cause mortality or injury to sea turtles (Wilcox et al., 2018). Plastic is the primary type of debris found in marine and coastal environments. NOAA estimates there are between 20 million and 1.8 billion pieces of plastic along the coastline of the United States and at least 8 million tons of plastic end up in our oceans every year from surface waters to deep-sea sediments (Guertin, 2019).

Plastics are the most common type of marine debris ingested by sea turtles (Schuyler et al., 2014). Life stage and feeding preference affects the likelihood of ingestion. Sea turtles living in oceanic or coastal environments and feeding in the open ocean or on the seafloor may encounter different types and densities of debris and may therefore have different probabilities of ingesting debris. In 2014, Schuyler et al. (2014) reviewed 37 studies of debris ingestion by sea turtles, showing that young oceanic sea turtles are more likely to ingest debris (particularly plastic), and that green and loggerhead sea turtles were significantly more likely to ingest debris than other sea turtle species. Sea turtle prey can ingest microplastics (commonly associated with cosmetic products) as they have been found in various invertebrate species. Since some of these species are sea turtle prey, sea turtles are in turn ingesting microplastics (Duncan et al., 2018). Marine debris also poses a risk to nesting sea turtles and hatchlings that are moving to/from the water and beaches. Debris can cause obstructions, increase exposure to toxins, and can affect hatchling survival and movement to the ocean (Aguilera et al., 2018). Sea turtles can mistake debris for prey; one study found 37 percent of dead leatherback sea turtles to have ingested various types of plastic (Mrosovsky et al., 2009), and Narazaki et al. (2013) noted an observation of a juvenile or sub-adult loggerhead exhibiting hunting behavior on approach to a plastic bag, possibly mistaking the bag for a jellyfish. Even small amounts of plastic ingestion at all life stages can cause an obstruction in a sea turtle's digestive tract and lead to mortality (Balazs et al., 1994; Bjorndal, 1997). Ingested plastics can release toxins, such as BPA and phthalates, and cause heavy metals from the ocean to absorb into the individual's tissues (Fukuoka et al., 2016; Teuten et al., 2007).

Ribic et al. (2010) documented regional differences in amounts and long-term trends of marine debris (land-based and ocean-based) along the U.S. Atlantic coast, while indexing debris amounts with population growth and fisheries activity. Based on their analysis, Ribic et al. (2010) concluded that the vast majority of marine debris was either land-based (38 percent), general-source debris (42 percent), or ocean-based (20 percent) recreational and commercial sources (Ribic et al., 2010); no items of military origin were differentiated. The inland portions along the southeast Atlantic coast contributed the lowest amounts of debris despite a 19 percent increase in coastal population from 1997 through 2007. The Northeast Atlantic coast also contributed low amounts of marine debris, although the coastal population increased by 8 percent. Most of the marine debris inputs along the U.S. Atlantic coast were sourced from inland portions of the mid-Atlantic. With a 10 percent population increase in the mid-Atlantic, the types of debris included heavy land-based and general-source debris loads. Where fisheries were stable, ocean-based debris either stayed steady or declined.

Because of the limited overlap of crocodilian habitats and marine debris, marine debris as an entanglement or ingestion hazard for the American crocodile and American alligator is not likely as pressing of a concern for crocodilian conservation as it is for many other species populations. There is

only one reported mortality of an estuarine crocodile (*Crocodylus porosus*) in Australia entangled by plastic marine debris (Ceccarelli, 2009); however, Platt and Thorbjarnarson et al. (2006) suggested that accidental drowning in monofilament fishing nets was likely a significant source of mortality for American crocodiles in Belize in conservation areas where poaching is not likely to occur. Outside of conservation areas in Belize, the authors found that poaching was a major cause of crocodile deaths, in addition to drownings in derelict and active fishing nets. Terrapin drowning events are most often associated with bycatch in crab pots (Roosenburg et al., 1997) as well as derelict crab traps (Bilkovic et al., 2014); however, marine debris in estuarine environments likely pose an entanglement hazard for diamondback terrapins.

F.6.2 Endangered Species Act-Listed Species

F.6.2.1 Green Sea Turtle (*Chelonia mydas*)

F.6.2.1.1 Status and Management

The green sea turtle was first listed under the ESA in 1978. In 2016, NMFS and USFWS reclassified the species into 11 DPSs, which maintains federal protections while providing a more tailored approach for managers to address specific threats facing different populations (see 81 *Federal Register* 20058). The geographic areas that include these DPSs are (1) North Atlantic Ocean, (2) Mediterranean Sea, (3) South Atlantic Ocean, (4) Southwest Indian Ocean, (5) North Indian Ocean, (6) East Indian Ocean – West Pacific Ocean, (7) Central West Pacific Ocean, (8) Southwest Pacific Ocean, (9) Central South Pacific Ocean, (10) Central North Pacific Ocean, and (11) East Pacific Ocean.

Only the North Atlantic DPS (which is listed as threatened) is in the Study Area and is discussed further in the document. It should be noted, however, that North Atlantic green sea turtle populations have minimal mixing (gene flow) with the South Atlantic regions and no mixing with the Mediterranean region, and juvenile sea turtles from the North Atlantic may occasionally use South Atlantic or Mediterranean foraging grounds (Seminoff et al., 2015).

Critical habitat is currently designated in the Study Area (63 *Federal Register* 46693) and proposed for designation in three other portions of the Study Area (88 *Federal Register* 46572) (see Section 3.8, Reptiles, Figure 3.8-1 through Figure 3.8-4). In 1998, critical habitat was designated for green sea turtles in coastal waters around Culebra Island, Puerto Rico, from the mean high-water line seaward to 3 NM to include Culebra's outlying Keys (63 *Federal Register* 46693). The essential physical and biological features of this critical habitat include (1) seagrass beds, which provide valuable foraging habitat; (2) coastal waters of Culebra, which serve as a developmental habitat and support juvenile, subadult, and adult green sea turtle populations; and (3) coral reefs and other topographic features that provide shelter (63 *Federal Register* 46693). Puerto Rico's Culebra Island, where the NMFS and USFWS designated critical habitat for green sea turtles, supports important habitat for juveniles, subadults, and a small population of adults. Green sea turtles are most abundant at Culebrita, Mosquito Bay, Puerto Manglar, and Tamarindo Grande, probably due to the presence of dense seagrass beds in those areas (Collazo et al., 1992; Patrício et al., 2016; Patrício et al., 2014).

Higher concentrations and abundance in other locations throughout the green sea turtle range also support dense marine vegetation used as foraging grounds (Patrício et al., 2014; Seminoff et al., 2015). In 2023, NMFS proposed to designate occupied critical habitat, encompassing 1,047,564 km^2 of *Sargassum* habitat and 96,349 km^2 of nearshore waters (from the mean high water line to 20 m depth) in Florida, Texas (from the Mexico border to and including Galveston Bay), North Carolina (from the South Carolina border to but not including Albemarle Sound), and Puerto Rico (Culebra Island, Maunabo, Guayama, and northern Puerto Rico Island, southern Mona Island, eastern and southern Vieques Island)

(*88 Federal Register 46572*) (see Section 3.8, Reptiles). The essential features of this proposed critical habitat include (1) *Sargassum* habitat for surface-pelagic foraging and resting; (2) Florida's nearshore waters that contain migratory, and benthic foraging/resting habitat; (3) Texas (from the Mexico border to and including Galveston Bay) and North Carolina's (from the South Carolina border to but not including Albemarle Sound) nearshore waters that contain benthic foraging/resting habitat; and (4) nearshore waters off Maunabo, Guayama, southern Mona Island, and eastern and southern Vieques Island that also contain reproductive essential features.

F.6.2.1.2 Habitat and Geographic Range

The green sea turtle is distributed worldwide across tropical and subtropical coastal waters generally between 45° North and 40° South. After emerging from the nest, green sea turtle hatchlings swim to offshore areas where they float passively in major current systems; however, laboratory and modeling studies suggest that dispersal trajectories might also be shaped by active swimming (Christiansen et al., 2016; Putman & Mansfield, 2015). Post-hatchling green sea turtles forage and develop in floating *Sargassum* habitats of the open-ocean. At the juvenile stage (estimated at 5 to 6 years), they leave the open-ocean habitat and retreat to protected lagoons and open coastal areas that are rich in seagrass or marine algae (Bresette et al., 2006), where they will spend most of their lives (Bjorndal & Bolten, 1988). The optimal developmental habitats for late juveniles and foraging habitats for adults are warm shallow waters (3 to 5 m), with abundant submerged aquatic vegetation and close to nearshore reefs or rocky areas (Holloway-Adkins, 2006; Seminoff et al., 2015; Seminoff et al., 2002). Ocean warming trends may impact the habitat and range of this species over time (Fuentes et al., 2013; Lockley & Eizaguirre, 2021).

Four regions within the North Atlantic DPS range support nesting concentrations: Costa Rica (Tortuguero), Mexico (Campeche, Yucatán, and Quintana Roo), the United States (Florida), and Cuba. The highest concentration of nesting is in Tortuguero, and in Mexico, where nesting occurs primarily along the Yucatán Peninsula. Most green sea turtle nesting occurs along the Atlantic coast of eastern central Florida, with smaller concentrations along the Gulf Coast and Florida Keys (Naval Undersea Warfare Center Division Newport, 2023). In Cuba, nesting primarily occurs on the extreme western tip of the country and on islands off the southern shore of Cuba. Nesting also occurs in the Bahamas, Belize, Cayman Islands, Dominican Republic, Haiti, Honduras, Jamaica, Nicaragua, Panama, Puerto Rico, Turks and Caicos Islands, and United States (North Carolina, South Carolina, Georgia, Texas, and Virginia).

Green sea turtles are known to live in the open-ocean waters of the Gulf Stream and North Atlantic Gyre during the first 5 to 6 years of life. Habitat use, movement patterns, and general distribution during this life phase was previously not well known. A tracking study conducted by Mansfield et al. (2021) recorded oceanic-stage juvenile green sea turtles (less than 1 year old). The tagged green sea turtles were observed within continental shelf waters for only 93 out of 1,379 days, the remainder of the time, the sea turtles spent in deeper, offshore waters. Only 1 of 21 tagged sea turtles remained in the continental shelf the entire time. Turtles were typically tracked within and departing over time, from the Gulf Stream and Gyre currents and moving south of or near Cape Hatteras, North Carolina (Mansfield et al., 2021). Juvenile green sea turtles have the ability to migrate independently of ocean currents (directional and active swimming) to access productive foraging grounds (Christiansen et al., 2016; Putman & Mansfield, 2015; Ribic et al., 2010). Tracking studies by Sloan et al. (2022) and Lamont et al. (2023) studied movement of green sea turtles from nesting locations in the Gulf of America to record their inter-nesting and migration patterns. Movement of tracked sea turtles overlapped with 23 Marine Protected Areas (Lamont et al., 2023) with migration patterns recorded between U.S. nesting sites and foraging areas in Mexico.

Green sea turtles start to move into mid-Atlantic foraging grounds in late spring and early summer (Barco et al., 2018b). Green sea turtles have also been sighted (in low numbers) in the past within Chesapeake Bay and coastal Virginia waters during spring, summer, and fall but surveys have shown in increase in numbers over the past 20 years (Barco et al., 2018b). Per stranding and sighting data, green sea turtles typically do not occur north of Cape Cod as there was only one sighting in July of 2017 in Cape Cod Bay (Sea Turtle Sightings Hotline, 2023).

As ocean temperatures increase in the spring, juvenile and adult green sea turtles migrate from southeastern U.S. waters to the estuarine habitats of Long Island Sound, Peconic Bay, Chesapeake Bay, and possibly Nantucket Sound, where an abundance of algae and eelgrass occurs. Peak occurrence in the Northeast U.S. Continental Shelf Large Marine Ecosystem is likely in September (Berry et al., 2000). During nonbreeding periods, adult and juvenile distributions may overlap in coastal feeding areas (Hirth, 1997; Weishampel et al., 2006).

Juveniles use the estuarine and nearshore waters of the panhandle of Florida throughout the year, including Indian River Lagoon, Pensacola Bay, St. Joseph Bay, Charlotte Harbor, Cedar Keys, Homosassa Springs, Crystal River, Tampa Bay, and St. Andrews Bay (Lamont et al., 2015; Lamont & Iverson, 2018; Langhamer et al., 2016; Renaud et al., 1995; Seminoff et al., 2015). Wildermann et al. (2019) studied habitat use and behavior of multiple sea turtle species, including green sea turtles in the Gulf of America and identified foraging hotspots along the nearshore and coastal habitats of eastern and northern portion of the Gulf of America. In the northern Gulf of America, green sea turtles prefer the coastal habitats of southern Texas (e.g., lagoons, channels, inlets, bays) where seagrass beds and macroalgae are abundant, including Texas' Laguna Madre (Renaud et al., 1995; Wildermann et al., 2019).

As water temperatures rise from April to June, green sea turtle numbers increase in the continental shelf waters of the Gulf of Mexico Large Marine Ecosystem, off Galveston Bay, and in those waters associated with the continental shelf break northeast of Corpus Christi. Green sea turtles found in these deeper waters have been documented migrating from resident foraging grounds to distant nesting grounds (Lamont et al., 2023; Meylan, 1995; Sloan et al., 2022). The sparse sighting records in Louisiana and Texas waters, as well as nesting records on the southern Texas coast, indicate that green sea turtles are found in the northwestern Gulf of America during spring but in far fewer numbers than in the northeastern Gulf.

F.6.2.1.3 Population Trends

Green sea turtle nesting has shown an exponential increase over the past 29 years, with nests reported along the Florida panhandle, Florida Gulf Coast, Florida Atlantic coast, Georgia, Alabama, South Carolina, North Carolina, southeastern Virginia, and Texas, along with the wider Caribbean, Yucatán Coast of Mexico, Suriname, and Isla Trindade (Brazil) (Florida Fish and Wildlife Conservation Commission, 2018; Seminoff et al., 2015; Shaver et al., 2020b; Virginia Department of Wildlife Resources, 2024). A green sea turtle nested at Cape Henlopen State Park in Delaware in August 2011, which was the first green sea turtle nesting ever observed north of Virginia (Murray, 2011). Data on green sea turtle nesting along the northwestern Gulf of America had previously been limited but a study along the Texas coast from 1987 through 2019 documented 111 confirmed green sea turtle nests (Shaver et al., 2020b).

The Marine Turtle Specialist Group (under the International Union for Conservation of Nature's Species Survival Commission) conducted a worldwide analysis of the green sea turtle population based on 32 index nesting sites around the world (Seminoff & Marine Turtle Specialist Group Green Turtle Task Force, 2004). The analysis concluded there has been a 48 to 65 percent decline in the number of females

nesting annually over the past 100 to 150 years. About 80 percent of nesting in the Western Atlantic Ocean occurs at Tortuguero, Costa Rica (Seminoff et al., 2015).

Generally, nesting trends in the Western Atlantic Ocean are stable to increasing and are increasing in Florida, as shown by annual total nest counts for green sea turtles on Florida's index beaches (27 out of 229 nesting beaches selected to monitor long-term nesting trends). In 2023, green sea turtle nest counts recorded on the 27 core index beaches reached more than 61,000 nests. Nest count data shows a mostly biennial pattern of fluctuation with record highs set in 2011, 2013, 2015, 2017, 2019, and 2023. Since standardized nest counts began in 1989, green turtle nest counts have increased 120-fold. (Florida Fish and Wildlife Conservation Commission, 2024).

Although these data appear to present an encouraging global outlook, Casale and Ceriani (2020) found that current methods for estimating population abundance using nesting data may greatly overestimate the abundance of sea turtle populations, especially in situations with a low detection probability, including temporary emigration. They conducted a study using 15-year beach monitoring data to simulate a virtual population of adult females. Some recommendations that came out of the study include but are not limited to: using datasets with at least 20 remigration intervals (including multiple values from the same sea turtle); interpreting models used with caution as very large errors are possible; and having a consistent and complete spatio-temporal coverage of the nesting activity in a nesting area (Casale & Ceriani, 2020).

A recent Navy-funded study provided the first broad scale models of sea turtle in-water abundance, density, and distribution for the four most common sea turtle species in the U.S. East Coast region in over a decade. For green sea turtles, this is the first time that a density spatial model has been published for this region. The green sea turtle model predicted a mean annual abundance of 64,674 individuals with monthly predicted abundance ranging from a high of 96,935 in July to a low of 49,720 in January. Abundance was generally higher in warmer months (June–August) and lower in non-summer months due to the animal's predicted preference for warm, shallow, productive waters. Overall, predicted density was high off the coasts of Georgia and Florida year-round. Green sea turtles were predicted to occur in the mid-Atlantic from May to October when waters are warmer, generally from the Chesapeake Bay to Long Island. Green sea turtles were predicted to move south again, starting in October (DiMatteo et al., 2024).

NOAA Southeast Fisheries Science Center (Garrison et al., 2023) also developed density spatial models to estimate sea turtle in-water abundance, density, and distribution for the four most common sea turtle species in the Gulf of America. The model predictions were limited to the continental shelf waters and based on aerial surveys that were conducted in 2011-2012 and 2017-2018. Average monthly predictions were generated for the period 2015-2019. Monthly average abundance ranged from 1,909 green turtles in January to 10,159 green turtles in July. Overall, green turtle density was predicted to be highest in waters close to shore and in warmer waters in the eastern region of the Gulf (Garrison et al., 2023; Rappucci et al., 2023).

F.6.2.1.4 Predator and Prey Interactions

While primarily herbivorous, a green sea turtle's diet changes substantially throughout its life, varying by lifestage (hatching, post-hatching, juvenile, sub-adult, adult). Salmon et al. (2004) reported that post-hatchling green sea turtles were found to feed near the surface on seagrasses or at shallow depths on comb jellies and unidentified gelatinous eggs off the coast of southeastern Florida. Very young green sea turtles are omnivorous (Bjorndal, 1997). Long-term assessments of green sea turtle diets between 1987 and 2014 along the Texas coast found that small (16.2 cm straight carapace length), oceanic life stages

consume primarily macroalgae along the nearshore whereas larger (30 cm straight carapace length) green sea turtles present within the nearshore waters forage on seagrasses (Howell & Shaver, 2021). Nagaoka et al. (2012) analyzed 50 incidentally caught juvenile green sea turtles in Brazil and determined that juveniles consumed an omnivorous diet, including terrestrial plants (floating in the water), algae, invertebrates, and seagrass. Black mangrove leaves were of the greatest importance to diet at this location (adjacent to a black mangrove forest). Sampson and Giraldo (2014) observed opportunistic foraging of tunicates (a type of filter-feeding marine invertebrate) by green sea turtles in the eastern tropical Pacific. Pelagic juveniles smaller than 8 to 10 in. in length eat worms, young crustaceans, aquatic insects, grasses, and algae (Bjorndal, 1997). After settling in coastal juvenile developmental habitat at 8 to 10 in. in length, they eat mostly mangrove leaves, seagrass, and algae (Balazs et al., 1994; Nagaoka et al., 2012). Research indicates that green sea turtles in the open-ocean environment, and even in coastal waters, also consume jellyfish, sponges, and sea pens (Hatase et al., 2006; Seminoff et al., 2015). Fukuoka et al. (2016) also noted that juvenile green sea turtles were at higher risk to marine debris ingestion, likely due to the resemblance of small pieces of debris to omnivorous dietary items. The green sea turtle is the only species of sea turtle that, as an adult, primarily consumes plants and other types of vegetation (Mortimer, 1995; Nagaoka et al., 2012).

The loss of eggs to land-based predators such as mammals, snakes, crabs, and ants occurs on most nesting beaches. As with other sea turtles, hatchlings may be preyed on by birds and fish. Sharks are the primary nonhuman predators of juvenile and adult green sea turtles at sea (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1991; Seminoff et al., 2015). Within the Northwest Atlantic Ocean and Gulf of America, tiger sharks preyed predominantly on green sea turtles with evidence of bull, dusky, and great white shark attacks also recorded (Aoki et al., 2023).

F.6.2.1.5 Species-Specific Threats

In addition to the general threats described previously in Section F.6.1.5 (General Threats), damage to seagrass beds and declines in seagrass distribution can reduce foraging habitat for green sea turtles as well as noted decreases in mass and size of green sea turtles (Meylan et al., 2022; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1991; Seminoff et al., 2015). Green sea turtles are susceptible to the disease fibropapillomatosis, which causes tumor-like growths (fibropapillomas). These tumors result in reduced vision, disorientation, blindness, physical obstruction to swimming and feeding, increased susceptibility to parasites, and increased susceptibility to entanglement (Balazs, 1986; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1991; Patrício et al., 2016; Work & Balazs, 2013). Some populations (e.g., the Florida population) have begun to show resistance to the disease (Kelley et al., 2022), but it remains an issue for others, such as Pacific populations, and Hawaii's green sea turtles in particular (Chaloupka et al., 2009; Seminoff et al., 2015). Patrício et al. (2016) noted that fibropapillomatosis recovery was likely in a resident population in Puerto Rico, with tumor regression occurring within 3 years of formation. Other factors, such as increased stressors and selection of healthy sea turtles during illegal poaching activities may increase susceptibility of sea turtles (Patrício et al., 2016).

F.6.2.2 Hawksbill Sea Turtle (*Eretmochelys imbricata*)

F.6.2.2.1 Status and Management

The hawksbill sea turtle is listed as endangered under the ESA (35 *Federal Register* 8491). While the current listing as a single global population remains valid, data may support separating populations at least by ocean basin under the DPS policy (National Marine Fisheries Service & U.S. Fish and Wildlife

Service, 2007a). The most recent status review document was released in 2013 by NMFS and USFWS (National Marine Fisheries Service, 2013a).

Critical habitat for hawksbill terrestrial nesting areas was designated in Puerto Rico in 1982. This designation includes portions of Mona Island, Culebra Island, Cayo Norte, and Island Culebrita, from the mean high tide line to a point 150 meters (m) from shore. Critical marine habitat was also designated in 1998 for the coastal waters surrounding Mona and Monito Islands, Puerto Rico, from the mean high water line seaward to 3 NM (see Section 3.8, Reptiles, Figure 3.8-5) (National Marine Fisheries Service, 2013a). Key components in making this location a critical habitat include (1) coral reefs for food and shelter and (2) nesting beaches. The essential physical and biological features of coral reefs support a large, long-term juvenile hawksbill population, in addition to subadults and adults. The types of sponges that hawksbills prefer for food are found on the reefs around these islands. Reef ledges and caves also provide resting areas and protection from predators. Nesting beaches on Mona Island support the largest population of nesting hawksbill sea turtles in the U.S. Caribbean (National Marine Fisheries Service, 2013a).

F.6.2.2.2 Habitat and Geographic Range

The hawksbill is the most tropical of the world's sea turtles, with its range in western North Atlantic also extending into subtropical areas of the Gulf of America and Atlantic coasts (Avens et al., 2021). While hawksbills are known to occasionally migrate long distances in the open ocean, they are primarily found in coastal habitats and use nearshore areas more exclusively than other sea turtles. Adults can be associated with the same foraging sites for 10 years at a time, and migrate shorter distances to breeding locations than other species (Valverde & Holzwart, 2017). Hatchlings in the Study Area are believed to occupy open-ocean waters, associating themselves with surface algal mats in the Atlantic Ocean (Parker, 1995; Witherington & Hirama, 2006; Witzell, 1983). Juveniles leave the open-ocean habitat after 1 to 3 years and settle in coastal foraging areas, typically coral reefs but occasionally seagrass beds, algal beds, mangrove bays, and creeks (Avens et al., 2021; Mortimer & Donnelly, 2008). Hawksbill distribution in the mainland United States is primarily obtained through stranding records of individual hawksbills washing ashore. From these, hawksbills have regularly been observed along the coasts of Texas and Florida and to a lesser extent along other Gulf of America and Atlantic states (Avens et al., 2021; Gorham et al., 2014). In Florida, hawksbills regularly occur in the nearshore waters off the southeastern coast, in the Florida Keys (including the Marquesas and Dry Tortugas). Juvenile hawksbills have been observed along the jetties near Port Aransas, Texas and within the coral reefs at the Flower Garden Banks National Marine Sanctuary in the western Gulf of America (Avens et al., 2021).

Less is known about the hawksbill's oceanic stage, but it is thought that neonates live in the oceanic zone where water depths are greater than 200 m. Distribution in the oceanic zone may be influenced by surface gyres (Leon & Bjorndal, 2002; National Marine Fisheries Service, 2013a).

Foraging and reproductive aggregations of hawksbills are extensive in Puerto Rico, U.S. Virgin Islands, and the Caribbean Sea (Avens et al., 2021). Juveniles and adults share the same foraging areas, including tropical nearshore waters associated with coral reefs, hard bottoms, or estuaries with mangroves (Musick & Limpus, 1997). In nearshore habitats, resting areas for late juvenile and adult hawksbills are typically in deeper waters, such as sandy bottoms at the base of a reef flat (Houghton et al., 2003). As they mature into adults, hawksbills move to deeper habitats and may forage to depths greater than 90 m. During this stage, hawksbills are seldom found in waters beyond the continental or insular shelf unless they are in transit between distant foraging and nesting grounds (Renaud et al., 1996). Ledges and caves of coral reefs provide shelter for resting hawksbills during both day and night, where an individual often inhabits the same resting spot. Hawksbills are also found around rocky outcrops and

high-energy shoals, where sponges are abundant, and in mangrove-fringed bays and estuaries. Female hawksbills return to their natal beach every 2 to 3 years to nest at night, every 14 to 16 days during the nesting season (Renaud et al., 1996).

In the Caribbean Sea and Gulf of Mexico Large Marine Ecosystems, the principal nesting season is from June to November (Hillis, 1990), with only rare nesting activity in Florida, which is restricted to Volusia, Martin, Palm Beach, Broward, Miami-Dade, and Monroe Counties per genetic testing (Meylan et al., 2006; National Marine Fisheries Service, 2013a). Throughout their range, hawksbill sea turtles typically nest in low densities; aggregations of nesting activity that usually include approximately 20 nests, but can exceed a few hundred nests in some locations (National Marine Fisheries Service, 2013a). These locations with up to 100 nests include Mona Island, Puerto Rico, and Buck Island Reef off St. Croix.

The greatest hawksbill sea turtle numbers in the southeastern United States are found off the coast of southern Florida, but their typical patterns of habitat are not well understood (Wood et al., 2017a). There, hawksbills are documented from winter to summer from Palm Beach, Broward, and Dade Counties to the Florida Keys, and to coastal waters just northwest of Tampa Bay, where the northernmost stranding records typically occur. Foraging juveniles and adults settle on coral reef and hard-bottom habitats off southern Florida throughout the year (Musick & Limpus, 1997). Hawksbill sea turtle sightings in waters off the Florida panhandle, Alabama, Mississippi, Louisiana, and Texas (Rester & Condrey, 1996; Witzell, 1983), though rare, are likely of early juveniles born on nesting beaches in Mexico that have drifted north with the dominant currents (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1993).

F.6.2.2.3 Population Trends

Within the continental United States, nesting is rare in Florida with up to five nests recorded per year from 1979 to 2019 (Avens et al., 2021). An estimated 22,004 to 29,035 hawksbill sea turtles nest each year at sites among the Atlantic, Indian, and Pacific oceans; of these individuals, 3,626 to 6,108 nests occur among the Atlantic nesting sites alone. Historical population trends showed overall declines for the 20- to 100-year period of evaluation (National Marine Fisheries Service, 2013a). The last 5-year status review for hawksbill sea turtles states that among the 88 sites worldwide for which historic trends could be assessed, 63 (72 percent) showed a decline. Shorter-term population trends, however, show more increases at some nesting sites, particularly in the North Atlantic and Pacific Oceans with 10 (24 percent) increasing, 3 (7 percent) stable, and 28 (68 percent) decreasing (National Marine Fisheries Service, 2013a). Gulick et al. (2022) looked at annual counts of hawksbill females and nesting trends at Buck Island Reef National Monument, St. Croix, and U.S. Virgin Islands from 1998 to 2017. Overall, female abundance was found to have stabilized, but nest abundance declined. New females were recorded recruiting to the area between 1988 and 2017, with remigrants recorded from 2007 and 2017 and counts stabilizing. Temporal trends were not observed in annual mean hatch success, emergence success, and hatchling production during the survey period, but declines in clutch size and female body size were detected (Gulick et al., 2022).

F.6.2.2.4 Predator and Prey Interactions

Hawksbill sea turtles have a varying diet and feeding habitat preference throughout different life stages. Post-hatchling hawksbills feed on floating habitats (e.g., *Sargassum*) in the open ocean (Bresette et al., 1998; Plotkin & Amos, 1988; Van Houtan et al., 2016). During the later juvenile stage, hawksbills are considered omnivorous, feeding on sponges, sea squirts, algae, molluscs, crustaceans, jellyfish, and other aquatic invertebrates (Bjorndal, 1997). Older juveniles and adults are more specialized, feeding primarily on sponges, which compose as much as 95 percent of their diet in some locations (Meylan,

1988; Witzell, 1983). As adults, hawksbill sea turtles fill a unique ecological niche in marine and coastal ecosystems, supporting the natural functions of coral reefs by keeping sponge populations in check (Hill, 1998; Leon & Bjorndal, 2002; Wood et al., 2017b). Feeding on sponges helps to control populations of sponges that may otherwise compete for space with reef-building corals (Hill, 1998; Leon & Bjorndal, 2002).

The loss of hawksbill eggs to predators such as rats, snakes, crabs, and ants is a severe problem on some nesting beaches within the United States. Outside of the U.S., predators such as mongoose and feral pigs can pose as a threat to the eggs. As with other sea turtles, hatchlings may be preyed on by birds and fish. Sharks are the primary nonhuman predators of juvenile and adult hawksbills at sea (National Ocean Service, 2016; Southern California Marine Institute, 2016).

F.6.2.2.5 Species-Specific Threats

In addition to the general threats described in Section F.6.1.5 (General Threats), the greatest threat to hawksbills is harvest for commercial and subsistence use. Direct harvest of eggs and nesting adult females from beaches, as well as direct hunting of sea turtles in foraging areas, continues in many countries. They have been overexploited for centuries, mostly for their prized shell (often called tortoiseshell) (State of the World's Sea Turtles, 2022). International trade of tortoiseshell is thought to be the most important factor endangering the species worldwide. The second-most significant threat to hawksbill sea turtles is loss of nesting habitat caused by the expansion of human populations in coastal areas of the world, as well as the increased destruction or modification of coastal ecosystems to support tourism (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1998). Coastal pollution as a result of increased development degrades water quality, particularly coral reefs, which are primary foraging areas for hawksbills. Due to their preference for nearshore areas, hawksbills are particularly susceptible to nearshore fisheries gear such as drift nets, entanglement in gill nets, and capture on fish hooks of fishermen (National Marine Fisheries Service, 2013a; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1993).

F.6.2.3 Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)

F.6.2.3.1 Status and Management

The Kemp's ridley sea turtle is listed as a single population and is classified as endangered under the ESA (35 *Federal Register* 18319). The most recent status review was released in 2015 by the USFWS and NMFS (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2015). There is no critical habitat currently designated for this species. In 2010, the USFWS and NMFS received a petition to designate critical habitat on nesting beaches in Texas and along Gulf Coast states. The petition is still under consideration, and no proposed rule on the establishment of critical habitat has been released by either agency.

F.6.2.3.2 Habitat and Geographic Range

Kemp's ridley sea turtle nesting is essentially limited to the beaches of the western Gulf of America, primarily in Tamaulipas, Mexico. Nesting also occurs in Veracruz, and a few historical records exist for Campeche, Mexico. Since 1978, the U.S. National Park Service, in partnership with USFWS, NMFS, Texas Parks and Wildlife Department, and the Instituto Nacional de Pesca (a Mexican federal agency), has led an effort to increase Kemp's ridley sea turtle nesting at Padre Island National Seashore, south Texas, to form a secondary nesting colony to safeguard against extinction (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2011). Occasional nesting has been reported from Florida, Alabama, Georgia, South Carolina, North Carolina, and Virginia (in 2012 and 2014) (National Marine Fisheries

Service & U.S. Fish and Wildlife Service, 2015) with the furthest north nesting occurring in New York where 96 sea turtles were observed on Rockaway Peninsula in Queens, New York (Phorn, 2018).

Habitats frequently used by Kemp's ridley sea turtles in U.S. waters are warm-temperate to subtropical sounds, bays, estuaries, tidal passes, shipping channels, and beachfront waters, where their preferred food, the blue crab, is abundant (Lutcavage & Musick, 1985). The general migration pattern of females begins with travel through relatively shallow migratory corridors toward the nesting beach in the late winter in order to arrive at the nesting beach by early spring. Males and females can loop along the U.S. continental shelf large marine ecosystem in the spring, and back down the southeast U.S. continental shelf in the fall. From nesting beaches in the Gulf of America, the migratory corridor traverses neritic areas of the Mexico and U.S. Gulf coasts with a mean water depth of 26 m approximately 20 kilometers (km) from the coast, occurring in late May through August with a peak in June (Shaver et al., 2016). Kemp's ridley sea turtles that headed north and east traveled as far as the waters off southwest Florida; however, waters off the upper Texas coast through Mississippi, especially off Louisiana, appear to be a "hotspot" as turtles returned to the area to forage over multiple years (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2015).

Evidence suggests that post-hatchling and small juvenile Kemp's ridley sea turtles, similar to loggerhead and green sea turtles of the same region, forage and develop in floating *Sargassum* habitats of the North Atlantic Ocean. Juveniles migrate to habitats along the U.S. Atlantic continental shelf from Florida to New England (Morreale & Standora, 1998; Peña, 2006) at around 2 years of age. Migrating juvenile Kemp's ridleys travel along coastal corridors generally shallower than 50 m in bottom depth (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2011). A Navy-funded study conducted in the mid-Atlantic region indicated that juvenile Kemp's ridley sea turtles utilize the lower to middle Chesapeake Bay in the spring and summer, similar to loggerheads that were also tagged for this study. Kemp's ridley sea turtles preferred to spend more time and forage in shallower waters closer to shore, such as small inlets, embayments, and flats close to the shore in the main stem of the Chesapeake Bay (Barco et al., 2017; Barco et al., 2018b; DiMatteo et al., 2021; DiMatteo et al., 2022). Suitable developmental habitats are seagrass beds and mud bottoms in waters of less than 10 m bottom depth and with sea surface temperatures between 72 and 90°F (22 and 32°C) (Coyne et al., 2000).

In the Gulf of America, juveniles make seasonal east, west, and south migrations and move further offshore during the winter when water temperature drops (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2015). Important year-round developmental habitats in the northern Gulf of America include the western coast of Florida (particularly the Cedar Keys area), the eastern coast of Alabama, and the mouth of the Mississippi River (Lazell, 1980; Lutcavage & Musick, 1985; Weber, 1995). Coastal waters off western Louisiana and eastern Texas also provide adequate habitats for bottom feeding. A tagging study conducted between 1991 and 2013 within the northwestern Gulf of America found that small benthic juveniles (ages 2 to 4 years) made up approximately 70 percent of the nearshore Kemp's ridley assemblage, indicating important foraging habitat within nearshore waters (Metz & Landry, 2016). Verkaik et al. (2016) found strong site fidelity within and between years to the Mississippi Sound during spring, summer, and fall for juvenile Kemp's ridley sea turtles. During the winter, sea turtles migrated to the nearshore waters of Louisiana. Foraging areas were identified along the Atlantic coasts of Florida and Georgia that had not been previously identified (Gredzens & Shaver, 2020). Satellite tracking of sea turtles identified four primary hotspots used for migration, which include western Gulf of America, around the Yucatán Peninsula, a northern route following the Loop Current, and a southern hotspot towards Gorda Bank, Central America. Adult Kemp's ridley breeding females were found to stay inside the Gulf of America, moving from primary nesting beaches in Rancho Nuevo

and central Veracruz, Mexico to Louisiana, the southern Florida shelf and Yucatán Peninsula to forage and reside after their reproductive season (Cuevas et al., 2022). Lamont and Iverson (2018) observed seasonal movements triggered by colder winter temperatures where Kemp's ridleys were tracked leaving the bays in the Gulf of America. Tracking data collected between 1989 and 2013 for Kemp's ridley and loggerhead turtles occurring in the Gulf of America, found that co-occurrence of the two species was largely due to spatial overlap in foraging areas, with Kemp's ridley home ranges being up to 10 times larger than loggerheads (Hart et al., 2018).

Inter-nesting habitat occurs in a narrow band of nearshore western Gulf of America waters in the United States and Mexico, within mean water depths of 14 to 19 m within a mean distance to shore of 6 to 11 km (Shaver et al., 2017). Up to half of all adult female Kemp's ridleys occupy this habitat for weeks to months during each nesting season.

Studies conducted by the National Park Service previously indicated that adult male Kemp's ridley sea turtles remain close to nesting beaches year-round. A tracking study conducted since 2006 at Padre Island National Seashore in Texas found that five of seven adult male Kemp's ridley sea turtles remained near the nesting beaches of the Texas coast for the duration of their tracking period (National Park Service, 2023).

F.6.2.3.3 Population Trends

The earliest estimate of population size was derived from analyzing archival film footage of a large arribada (mass nesting) event in 1947 and other life history information of the Kemp's ridley sea turtle. From these data sources and the analysis of the raw footage, Gonzalez (2011) suggest that the Kemp's ridley population during and prior to the 1947 nesting season was relatively robust, with the estimated number of nests exceeding 121,000. Gallaway et al. (2013) created a stock assessment model that incorporated several factors such as mortality estimates and growth parameters for tagged and recaptured sea turtles. The model estimated the total population to be 248,307 in 2012 for Kemp's ridleys age 2 and older. The lowest point in the decline of Kemp's ridleys occurred in 1985 (approximately 700 nests), representing a 99 percent decline in the number of nests compared to the 1947 estimate. Although the Kemp's ridley population has shown increases since 1985, the rate of recovery has declined in recent years. In 2010, Kemp's ridley nesting showed a steep decline (35 percent) followed by some recovery to 2009 levels, with other declines in 2013 and 2014 (Caillouet et al., 2016; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2015; Shaver et al., 2016). As of 2023, there are an estimated 5,500 females nesting in Mexico annually and approximately 55 females nesting in Texas annually (Williams, 2023). The number of Kemp's ridley sea turtle nests counted along Texas beaches has increased from 2015 (159 nests) to 2016 (186 nests) and 2017 (353 nests) (Shaver, 2018). Per a count in June of 2023, 222 Kemp's ridley nests were found on North Padre Island and the Padre Island National Seashore (Williams, 2023). Habitat protection has led to an increase in sea turtle nesting on the Texas coast since 1980 (Shaver et al., 2020a).

Subadult and adult females were presumed to have suffered a high mortality rate in 2009, which has manifested in a 40 percent decline in nesting activity in Mexico and Texas. The cause of this mortality has been found to be due to cold stunning, which is fairly common for sea turtles to undergo on Texas and Mexico coastlines. Cold stunning occurs as a result of prolonged exposure to cold waters, and sea turtles can experience debilitating conditions which could possibly lead to death. At lower latitudes, a mild shift in temperature during winter can cause cold stunning; at higher latitudes, it is most often seen that sea turtles do not begin migrating south in time, before the onset of late autumn storms. In both areas, however, cold stunning is a result of a sea turtle being caught unexpectedly in lower than expected temperatures (Griffin et al., 2019). The *Deepwater Horizon* oil spill of 2010 coincided with large

numbers of Kemp's ridley sea turtles stranded on northern Gulf of America, especially in Alabama, Mississippi, and Louisiana beaches, which further impacted numbers of nests to increase from 2009 levels. Of note, was a tracked female Kemp's ridley that had nested in 2011 but was tracked to foraging grounds where it remained for 4 years and as of 2016 had not returned to the nesting grounds (Gallaway et al., 2016).

In-water abundance, density, and distribution patterns of Kemp's ridley sea turtles were estimated in a recent Navy-funded study conducted along the east coast (DiMatteo et al., 2024). The Kemp's ridley model predicted a monthly abundance ranging from a high of 13,220 in October to a low of 8,341 in August. Animals were predicted to be in the mid-Atlantic from May until November, generally from the Chesapeake Bay north to Delaware Bay, and as far north as Long Island Sound in summer months. There were no sightings of Kemp's ridley turtles north of Cape Cod, where strandings of that species are rare. A very low density, though not zero, was predicted off the continental shelf. There were no sightings off the shelf, though survey effort was limited and occurred in June–September only (DiMatteo et al., 2024).

NOAA Southeast Fisheries Science Center (Garrison et al., 2023; Rappucci et al., 2023) also developed density spatial models to estimate sea turtle in-water abundance, density and distribution for the four most common sea turtle species in the Gulf of America, which included the Kemp's ridley sea turtle. The model predictions were limited to the continental shelf waters and based on aerial surveys that were conducted in 2011-2012 and 2017-2018. Average monthly predictions were generated for the period 2015-2019 (Garrison et al., 2023). Kemp's ridley sea turtles were observed throughout the entire survey range in the Gulf of America and throughout all seasons. Results indicated that Kemp's ridley sea turtle density was highest at intermediate water depths, declining rapidly in waters greater than 15 m deep. The model predicted monthly average abundance of Kemp's ridley sea turtles within the Gulf of America as low as 48,398 in May and as high as 273,633 Kemp's ridley sea turtles in February (Garrison et al., 2023).

F.6.2.3.4 Predator and Prey Interactions

Kemp's ridley sea turtles feed primarily on crabs but are also known to prey on molluscs, shrimp, fish, jellyfish, and plant material (Frick et al., 1999; Marquez, 1994; Seney, 2016). Plant material, primarily macroalgae, is likely consumed incidentally with invertebrate prey items (Seney, 2016). Blue crabs and spider crabs are important prey species for the Kemp's ridley (Keinath et al., 1987; Lutcavage & Musick, 1985; Seney, 2016). They may also feed on shrimp fishery bycatch (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 1993), and Servis et al. (2015) noted instances of fish and horseshoe crab predation, indicating that Kemp's ridley sea turtles may opportunistically feed to supplement their diet. Kemp's ridley diets also varies by region within the Gulf of America and western North Atlantic. Diets for Kemp's ridley in the northern Gulf of America, North Carolina, and Virginia were dominated by invertebrates. Diets in the western Gulf of America and eastern Gulf of America were more evenly divided between invertebrates and fish or invertebrates and macroalgae/seagrass (Ramirez et al., 2020).

Major predators of Kemp's ridley sea turtle eggs and hatchlings on nesting beaches include raccoons, dogs, feral pigs, skunks, badgers, and fire ants. Predatory fishes such as jackfish and redfish may feed on hatchlings at sea. Sharks are the primary predator of juvenile and adult Kemp's ridley sea turtles (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2011). Aoki et al. (2023) documented tiger sharks, great white sharks, and sandbar sharks attacking Kemp's ridley sea turtles in the Gulf of America.

F.6.2.3.5 Species-Specific Threats

Because the Kemp's ridley sea turtle is very range limited, the general threats facing sea turtles described previously may increase impacts on this species. For example, energy extraction and development in the Gulf of America are a particular threat to Kemp's ridley sea turtles because most of the nesting activity occurs there (Shaver & Caillouet, 1998). Kemp's ridley sea turtles were found stranded on beaches with crude oil on them from the *Deepwater Horizon* oil spill, and most of the sea turtles found injured and dead following the spill were Kemp's ridley sea turtles (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2011; Wilkin et al., 2017). Just over 50 percent of surface-pelagic juvenile sea turtles captured following the spill were Kemp's ridleys (McDonald et al., 2017). It should be noted that the dramatic reversal of an increasing nesting trend in the Gulf of America followed the *Deepwater Horizon*, and the removal of a cohort of Kemp's ridleys that would be sexually mature now may be responsible for declines shown in 2013 and 2014 (Caillouet et al., 2016; Gallaway et al., 2016; Mitchelmore et al., 2017; Putman et al., 2015a; Wallace et al., 2020). In their study analyzing other impacts the heavy oil can have on sea turtles, Mitchelmore et al. (2017) estimated that mortality of the sea turtles in the surrounding area would be 85 percent, with 30 percent of that being a result of ingestion of the oil (Mitchelmore et al., 2017). However, increased efforts are needed to document sea turtles during oil spills as a review of over 2,000 oil spill incidents that have occurred worldwide and dating back to the late 1960s reported resulting effects to sea turtles in less than 2 percent of those incidents (Wallace et al., 2020). Gallaway et al. (2016) looked at impacts of the spill on Kemp's ridley sea turtles and their prey (shrimp and crab), and found that a reduction in prey caused a reduction in Kemp's ridleys reproductive output, leading to an increase in remigration interval as well as reduction in the number of nests per female.

Shrimp trawling in the southeastern U.S. Atlantic and Gulf of America was once a significant threat to Kemp's ridleys; however, the use of sea turtle excluder devices and the general decline of shrimp fishing in recent years have greatly reduced mortality levels (Caillouet et al., 2008; Nance et al., 2012). As described in Section F.6.1.5.2 (Commercial and Recreational Industries), recreational fishing has surpassed commercial fisheries in terms of bycatch of Kemp's ridley, particularly within the Gulf of America (Putman et al., 2023). Vehicle activity on sea turtle nesting beaches can also disrupt the nesting process, crush nests, and create ruts and ridges in the sand that pose obstacles to sea turtles (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2011). Beach vehicular driving is permitted on most beaches in Texas, where adult sea turtles and hatchlings have been crushed by passing vehicles, as well as on some beaches in Mexico (Shaver et al., 2020a). The artificial lighting from the vehicles can also be impactful to hatchlings; artificial light comes from a much smaller source and is provided from a smaller point, in comparison to celestial light, which brightens everything around us from its one source. This difference can be detrimental to hatchlings, who become disoriented by artificial light and as a result, may not make it to sea once they hatch (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2008).

F.6.2.4 Loggerhead Sea Turtle (*Caretta caretta*)

F.6.2.4.1 Status and Management

In 2009, a status review conducted for the loggerhead (the first sea turtle species subjected to a complete stock analysis) identified nine DPSs within the global population (Conant et al., 2009). In a September 2011 rulemaking, the NMFS and USFWS listed five of these DPSs as endangered and kept four as threatened under the ESA, effective as of October 24, 2011 (76 *Federal Register* 58868). The North Pacific Ocean, South Pacific Ocean, North Indian Ocean, Northeast Atlantic Ocean, and Mediterranean Sea DPSs of the loggerhead sea turtle are classified as endangered under the ESA, and

the Southeast Indo-Pacific Ocean, Southwest Indian Ocean, Northwest Atlantic Ocean, and South Atlantic Ocean DPSs are classified as threatened. The Northwest Atlantic Ocean DPS is the only one that occurs entirely in the Study Area; however, loggerheads from other DPSs may occur rarely in the Study Area. For example, mixing occurs, rarely, with South Atlantic loggerheads enabling a limited amount of gene flow between these two DPSs (National Marine Fisheries Service, 2010a; Tucker et al., 2014). Critical habitat has been designated in the Study Area (see Section 3.8, Reptiles, Figure 3.8-7 through Figure 3.8-10).

Specific areas designated as critical habitat include 38 occupied marine areas within the range of the Northwest Atlantic Ocean DPS of loggerhead sea turtles (79 *Federal Register* 39856). To characterize different use patterns and concentrations both seasonally and geographically, NMFS named five different habitat types that comprise the critical habitat designation, which include (1) nearshore reproductive habitat (portions of nearshore waters adjacent to nesting beaches used by females and hatchlings to egress to open-water environments), (2) winter habitats (warm waters south of Cape Hatteras where juveniles and adults tend to concentrate during winter months), (3) breeding habitats (areas with high concentrations of both male and female adults during the breeding season in proximity to Florida migratory corridor and nesting grounds), (4) constricted migratory habitat (migratory corridors restricted in width), and (5) *Sargassum* habitat (juvenile loggerhead developmental habitats where *Sargassum* supports adequate prey abundance and cover) (79 *Federal Register* 39856). Physical and biological features that support the five habitat types summarized above for loggerhead sea turtle conservation include oceanic conditions that would concentrate certain life stage loggerheads together at different locations and in different seasons. The USFWS designated approximately 685 mi. of nesting beaches (in North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi) in a separate rulemaking (79 *Federal Register* 51264).

None of these critical habitat areas include Department of Defense areas of Marine Corps Base Camp Lejeune (Onslow Beach), Cape Canaveral Air Force Station, Patrick Air Force Base, and Eglin Air Force Base, which are exempt from critical habitat designation because their Integrated Natural Resources Management Plans incorporate measures that provide a benefit for the conservation of the loggerhead sea turtle.

In 2019, NMFS and USFWS initiated a 5-year review for the Northwest Atlantic Ocean DPS (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). The following sections have been updated to reflect this recent 5-year review.

F.6.2.4.2 Habitat and Geographic Range

Loggerhead sea turtles occur in U.S. waters in habitats ranging from coastal estuaries to waters far beyond the continental shelf (Chapman & Seminoff, 2016; Dodd, 1988). Loggerheads typically nest on beaches close to reef formations and in close proximity to warm currents (Dodd, 1988), preferring beaches facing the ocean or along narrow bays (Reece et al., 2013) (79 *Federal Register* 39856). Nesting in the Study Area occurs from April through September, with a peak in June and July (Dodd, 1988; Weishampel et al., 2006; Williams-Walls et al., 1983). Florida holds the largest rookery in the Northwest Atlantic region, and the third largest globally, with more limited nesting along the Gulf Coast and north through Virginia (Ceriani et al., 2017). At emergence, hatchlings swim to offshore currents and remain in the open ocean, often associating with floating mats of *Sargassum* (Carr, 1986, 1987; Witherington & Hirama, 2006). Nesting activity within the Northwest Atlantic Ocean DPS include the eastern Bahamas, southwestern Cuba, the eastern Caribbean Islands, and numerous locations from the Yucatán Peninsula to Virginia (Conant et al., 2009; National Marine Fisheries Service, 2010a; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2007b).

Within the United States, the highest concentration of loggerhead nesting occurs in Florida, discussed in more detail in Section F.6.2.4.3 (Population Trends), with additional nesting reported in Texas, Alabama, Georgia, North Carolina, South Carolina, Mississippi, Louisiana, and Virginia (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). Genetic studies indicate that, although females routinely return to natal beaches, males may breed with females from multiple populations and facilitate gene flow (Bowen et al., 2004).

Migration between oceanic and nearshore habitats occurs during the juvenile stage as sea turtles move seasonally from open-ocean current systems to nearshore foraging areas (Bolten, 2003; Mansfield, 2006). After reaching a length of 40 centimeters (cm) (Carr, 1987), early juvenile loggerheads make a transoceanic crossing, swimming back to nearshore feeding grounds near their beach of origin in the Western Atlantic Ocean (Bowen et al., 2004; Musick & Limpus, 1997). Juveniles are frequently observed in developmental habitats, including coastal inlets, sounds, bays, estuaries, and lagoons with depths less than 100 m (Hopkins-Murphy et al., 2003). Based on growth rate estimates, the duration of the open-ocean juvenile stage for Northwest Atlantic loggerhead sea turtles is estimated to be 8.2 years (Bjorndal et al., 2000). Oscillations in climate affect sea turtle migrations in that loggerhead sea turtles were found to be less abundant during positive North Atlantic Oscillation (migration is directed toward the warmer weather locations) (Dellinger et al., 2022).

Juvenile loggerhead sea turtles inhabit offshore waters in the North Atlantic Ocean and Mediterranean Sea (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). They are initially carried offshore by the Gulf Stream with some leaving the currents (associated with the North Atlantic Subtropical Gyre) to forage in the Sargasso Sea while others continue along the Gulf Stream currents to oceanic waters of the North Atlantic, Mediterranean Sea, and coasts of Canary Islands, Azores, Madeira, France, United Kingdom, Ireland, and Canada (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). Juvenile loggerhead sea turtles typically return to the waters of the Northwest Atlantic Ocean after several years.

Within neritic habitats, juveniles commonly forage in nearshore coastal waters, coastal inlets, sounds, bays, estuaries, lagoons, and along the continental shelf during spring, summer, and fall months from Cape Cod, south to Florida, and into the Gulf of America; during winter, they are found off the coast from North Carolina to Florida (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). Navy-funded aerial surveys and stranding data as well as tagging studies funded by the Navy and Bureau of Ocean Energy Management suggest that this species is the most abundant sea turtle species using Chesapeake Bay and waters off of Cape Hatteras (Andrady, 2011; Barco & Lockhart, 2015; Bureau of Ocean Energy Management, 2021; Burt et al., 2014; National Oceanic and Atmospheric Administration, 2015; Swingle et al., 2016).

The Chesapeake Bay is an important foraging spot for juvenile and sub-adult loggerhead sea turtles, and they are the most common species of sea turtle in the bay (Barco et al., 2018a). Recent studies analyzing spatiotemporal patterns of loggerhead sea turtles in the Chesapeake Bay and nearby Atlantic were able to determine the foraging patterns in each location (Barco et al., 2017). Results showed that foraging within the bay was constrained due to physical barriers, causing the spatial patterns to be denser than what would be seen in the ocean. Higher foraging levels were actually seen around Cape Hatteras during winter and early spring, suggesting the area offers ideal habitat conditions to induce high foraging activity. It was also determined that in the winter months, 100 percent of foraging activity occurred south of 36° North, with 48 percent, 19 percent, and 71 percent in the spring, summer, and fall, respectively. Fifty-two percent of foraging activity was in the Chesapeake Bay and the Northwest Atlantic Ocean in spring, and 78 percent and 29 percent in the summer and fall respectively (Barco et al.,

2017). Research by Barco et al. (2018a) showed similar results, with high density around the bay in cooler months and less density in the summer and fall (Barco et al., 2018a).

Within the Mid-Atlantic Bight, some adults and large juveniles forage on benthic prey in the neritic habitats from New York to Virginia in the summer, and within the shelf waters from Florida to North Carolina in the winter (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). The Mid-Atlantic Bight is considered an important regional foraging area for the Northwest Atlantic loggerhead regional management unit. A tagging study conducted on nesting females from 5 different nesting sites in the U.S. determined that the Subtropical Northwest Atlantic foraging area (Bahamas, southeast Florida, Florida Keys, and Cuba) within the Mid-Atlantic Bight is the most important foraging area in terms of proportion of individuals tagged and genetic diversity harbored in the area (Ceriani et al., 2023). A recent tagging study in the Chesapeake Bay (DiMatteo et al., 2022) found that loggerheads spend the majority of their time in small, distinct areas, rarely leaving the bounds of those areas, and exhibiting "searching" behavior, which is swimming and browsing the area, and is, resemblant of foraging behavior (DiMatteo et al., 2022).

Core Sound and Pamlico Sound, North Carolina, on the border between the Northeast and Southeast U.S. Continental Shelf Large Marine Ecosystems, represent important developmental habitat for juvenile loggerheads (Epperly et al., 1995a). Although these habitats are also used by greens and Kemp's ridleys, loggerheads are the most abundant sea turtle species within the summer developmental habitats of North Carolina (Bureau of Ocean Energy Management, 2021; Epperly et al., 1995a; Epperly et al., 1995b; Epperly et al., 1995c). In a sampling study from 2004 to 2007, juveniles were the most abundant age group among loggerheads found in the Charleston, South Carolina, shipping channel between May and August (Arendt et al., 2012). Immature loggerhead sea turtles may occupy coastal feeding grounds for 20 years before their first reproductive migration (Bjorndal et al., 2001; Putman et al., 2015b).

Subadult and adult loggerhead sea turtles tend to inhabit deeper offshore feeding areas along the western Atlantic coast, from mid-Florida to New Jersey (Hopkins-Murphy et al., 2003; Roberts et al., 2005). As late juveniles and adults, loggerhead sea turtles most often occur on the continental shelf and along the shelf break of the U.S. Atlantic and Gulf coasts, as well as in coastal estuaries and bays (Putman et al., 2015b). Hawkes et al. (2006) found that adult females forage predominantly in shallow coastal waters along the U.S. Atlantic coast less than 100 m deep, likely exploiting bottom-dwelling prey.

As water temperatures drop from October to December, most loggerheads migrate from their summer developmental habitats and eventually return to warmer waters south of Cape Hatteras, where they spend the winter (Morreale & Standora, 1998). Post-nesting females and post-mating males reside in discrete foraging areas in the Gulf of America, east coast of Florida, and Bahamas Banks and use migratory corridors in the eastern Gulf of America, along the Florida Keys, or through the Florida Straits to the Bahamas (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). Iverson et al. (2020) documented the longest known post-nesting migration (over 4,300 km) for non-rehabilitated wild female loggerheads; this loggerhead was tagged in the Gulf of America and was tracked migrating south to Nicaragua. From a southwestern Florida nesting location, Tucker et al. (2014) tracked nine female loggerheads over multiple nesting seasons, showing five distinct winter migration destinations—islands in the Caribbean, Florida Keys, West Florida Shelf, northern Gulf of America, and Yucatán Peninsula. Bovery and Wyneken (2015) analyzed seasonal variation in sea turtle density and abundance off southeastern Florida and found that loggerheads were the most frequently sighted species, with increased sightings in spring. Loggerhead sea turtles were often found in coastal waters that were west of the Florida Current (approximately 20 km offshore).

Griffin et al. (2013) offered a conceptual model of foraging strategies, as shown by tagged loggerhead sea turtles from Georgia, South Carolina, and North Carolina nesting beaches. These strategies included seasonal and year-round strategies, with summer prevalence in waters north of Cape Hatteras along neritic habitats to Cape Canaveral, Florida, and winter foraging occurring further out on the mid to outer continental shelf. Large juvenile and adult loggerhead sea turtles are captured or observed along Florida's Atlantic coast year-round (Bovery & Wyneken, 2015; Pajuelo et al., 2016). As stated previously, loggerheads were the highest occurring sea turtle species in the Study Area, with higher occurrences in spring (Barco et al., 2018a; Barco et al., 2017; DiMatteo et al., 2022).

F.6.2.4.3 Population Trends

The 2008 Recovery Plan documented recovery objectives for the following five recovery units:

(1) Northern Recovery Unit: loggerheads originating from nesting beaches from Florida-Georgia border to southern Virginia (the northern extent of nesting range).

(2) Peninsular Florida Recovery Unit: loggerheads originating from nesting beaches from the Florida-Georgia border through Pinellas County on the west coast of Florida, excluding the islands west of Key West, Florida.

(3) Dry Tortugas Recovery Unit: loggerheads originating from nesting beaches throughout the islands located west of Key West, Florida, because these islands are geographically separated from other recovery units.

(4) Northern Gulf of America Recovery Unit: loggerheads originating from nesting beaches from Franklin County on the northwest Gulf Coast of Florida through Texas (the western extent of U.S. nesting range).

(5) Greater Caribbean Recovery Unit: loggerheads originating from all other nesting assemblages within the Greater Caribbean (Mexico through French Guiana, the Bahamas, and the Lesser and Greater Antilles) (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2008).

These recovery units were based on genetic data available in 2008 and geographic and geopolitical boundaries that influence their exposure to threats and recovery efforts. In 2019, the Northwest Atlantic Loggerhead Recovery team reviewed the progress toward the criteria and determined the recovery units only met 3 of 20 listing factors toward recovery (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023).

Annual total nest counts for loggerhead sea turtles on Florida's 27 core index beaches have fluctuated widely since the beginning of monitoring in 1989, with a minimum of 28,876 nests in 2007 and a maximum of 70,945 nests in 2023. Loggerhead nest counts recorded from the 27 core index beaches has been increasing in recent years. However, a detailed analysis of Florida's long-term loggerhead nesting data from 1989 to 2023 shows three distinct phases: increasing (1989-1998), decreasing (1998-2007), and increasing (2007-2023) (Florida Fish and Wildlife Conservation Commission, 2024), with an overall stable trend over the monitoring period (1989-2023). These fluctuations may be attributed to small changes in number of females or change in reproductive parameters (Florida Fish and Wildlife Conservation Commission, 2024). These fluctuations may be attributed to small changes in number of females or change in reproductive parameters (Florida Fish and Wildlife Conservation Commission, 2023c). Ceriani et al. (2019) looked at 30 years of reproductive data from the largest nesting loggerhead population worldwide (the Florida breeding population) to examine the population fluctuations. Reproductive parameters such as clutch frequency and remigration intervals are uncertain thus could not determine if there is a change in the population of females. Even with decades of conservation

actions to improve and/or protect sea turtles, there is no clear evidence that the population is recovering (Ceriani et al., 2019).

Available nest count data by state, recorded a total of 118,902 loggerhead nests in 2020. In addition to Florida, nests were recorded at beaches in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Texas, Virginia, and Quintana Roo (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). Nest counts conducted at the Florida index beaches in 2022 recorded 62,807 loggerhead nests. As previously stated, these numbers do not represent Florida's total annual nest counts, which are only conducted during a 109-day time window of May 15 through August 31 (Florida Fish and Wildlife Conservation Commission, 2023c).

Density spatial models developed by DiMatteo et al. (2024) for loggerhead sea turtles along the U.S. east coast predicted patterns of density and abundance that reasonably matched the sightings and satellite telemetry data. In contrast to the results of the other species of sea turtles modeled, mean monthly predicted abundance of loggerheads ranged from a high of 245,609 in February to a low of 135,066 in September. Abundance was generally higher in cooler months (December to May) off the east coast and lower in warmer months (June to November). Higher density was predicted off Florida year-round (DiMatteo et al., 2024). This was concluded to be likely due to lower productivity in warmer months. Thirty years of reproductive data analyzed in Ceriani et al. (2019) documents thousands of loggerheads off the Florida coast year-round. Cape Hatteras is an important overwintering area with moderate densities of loggerheads observed beginning in May and low monthly densities north of Long Island and into the Gulf of Maine (DiMatteo et al., 2024). Shelf waters (at depths greater than 3,000 m) surveyed from June to September did not record any loggerhead sightings, but hatchlings that may be present are difficult to detect from vessel and aerial surveys (DiMatteo et al., 2024; Putman et al., 2019).

NOAA Southeast Fisheries Science Center (Garrison et al., 2023) also developed density spatial models to estimate sea turtle in-water abundance, density and distribution for the four most common sea turtle species in the Gulf of America, which included the loggerhead sea turtle. The model predictions were limited to continental shelf waters and based on aerial surveys that were conducted in 2011-2012 and 2017-2018. Average monthly predictions were generated for the period 2015-2019 (Garrison et al., 2023). The model predicted monthly average abundance of loggerhead sea turtles within the Gulf of America at a low of 86,867 loggerhead sea turtles in October and a high of 290,745 loggerhead sea turtles in February. Higher loggerhead densities were predicted in the central, northern Gulf of America along the coast of Louisiana, especially during winter and summer months. Higher densities were also predicted in waters close to shore, with density declining rapidly in waters greater than 100 m depth (Garrison et al., 2023).

F.6.2.4.4 Predator and Prey Interactions

Loggerhead sea turtles are primarily carnivorous in both open-ocean and nearshore habitats, although they also consume some algae (Bjorndal, 1997). Diet varies by age class (Godley et al., 1998) and by specializing in specific prey groups dependent on location. For post-hatchlings that tend to be grouped in masses of *Sargassum* and other floating habitats, various diet analyses of gut contents show parts of *Sargassum*, zooplankton, jellyfish, larval shrimp and crabs, and gastropods (Burkholder et al., 2004; Carr & Meylan, 1980; Richardson & McGillvary, 1991). Both juveniles and adults forage in coastal habitats, where they feed primarily on the bottom, although they also capture prey throughout the water column (Bjorndal, 2003).

Donaton et al. (2019) investigated benthic communities and the diets of marine predators, and found that loggerhead sea turtle diets varied strongly due to oceanographic changes in the Northeast that

were linked with warming temperatures. Adult loggerheads feed on a variety of bottom-dwelling animals, such as crabs, shrimp, sea urchins, sponges, and fish. Their powerful jaws also enable them to feed on hard-shelled prey, such as whelks and conch. During migration through the open sea, they eat jellyfish, molluscs, flying fish, and squid. Donaton et al. (2019) evaluated the stomach contents of stranded loggerhead sea turtles in New York waters between 1995 and 2014. A shift in diet was observed from larger crab species (rock crab and spider crab) to smaller crab species (hermit crabs). Though there are noticeable trends visible in their diet, the research confirmed theories that loggerhead diet is highly variable on a decadal scale, with variability stemming from changes in fishing pressure on benthic communities, as well as the global temperature increase over the last few decades. Even though they consume a variety of prey, it is noticed that they specialize in a specific mixture of prey. The effects of oceanographic and atmospheric change can be associated with fluctuations in population dynamics of pelagic and demersal fishes, which have important impacts on the benthic community, thus impacting the loggerhead's diet (Donaton et al., 2019).

Common predators of eggs and hatchlings on nesting beaches are ghost crabs, raccoons, feral pigs, foxes, coyotes, armadillos, and fire ants (Campbell, 2016; Dodd, 1988; Engeman et al., 2016; Engeman et al., 2019). Eriksson and Burton (2003) has shown that management interventions for feral pigs and raccoons can significantly increase nest success in Florida, one of the main nesting concentrations of loggerheads. Arroyo-Arce et al. (2017) documented an apparently rare instance of a jaguar (*Panthera onca*) in 2014 preying on a loggerhead sea turtle at Tortuguero National Park, Costa Rica, while the turtle was on the beach. In the water, hatchlings are susceptible to predation by birds and fish. Tiger sharks are the primary predator of juvenile and adult loggerhead sea turtles in the Northwest Atlantic and off the Gulf of America (Aoki et al., 2023; Fergusson et al., 2000).

F.6.2.4.5 Species-Specific Threats

In addition to the general threats described previously, mortality associated with shrimp trawls has been a substantial threat to large juvenile and subadult loggerheads because these trawls operate in the nearshore habitats commonly used by this species. Although shrimping nets have been modified with sea turtle excluder devices to allow sea turtles to escape, the overall effectiveness of these devices has been difficult to assess (Bugoni et al., 2008). Shrimp trawl fisheries account for the highest number of loggerhead sea turtle fishery mortalities; however, loggerheads are also captured and killed in trawls, traps and pots, longlines, and dredges. NMFS estimated that almost 163,000 loggerhead sea turtles are captured in shrimp trawl fisheries each year in the Gulf of America, with 3,948 of those sea turtles dying as a result of their capture. Each year, several hundred loggerhead sea turtles are also captured in herring, mackerel, squid, butterfish, and monkfish fisheries; pound net fisheries, summer flounder, and scup fisheries; Atlantic pelagic longline fisheries; and gillnet fisheries in Pamlico Sound. Combined, these fisheries capture about 2,000 loggerhead sea turtles each year. Although most are released alive, about 700 sea turtles are killed annually. The scallop recreational fisheries have also shown to create behavioral impacts by way of influencing temporary distribution of marine turtles and drive changes in their movement (Wildermann et al., 2018).

Coastal development and beach renourishment projects have also had a substantial impact on loggerhead habitat, particularly nesting habitats, in Florida (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2023). Activities associated with coastal development can alter the properties of the sand at nesting beaches, as development activities lead to more sewage runoff and therefore pollution on the beach. Vehicle use on sea turtle nesting beaches is a primary example of an issue for loggerheads. Vehicles are allowed on some beaches in Florida, Georgia, North Carolina, Virginia, and Texas. Vehicles can run over and kill hatchlings or nesting adult sea turtles on the beach, disrupt the

nesting process, create ruts in the sand that impede sea turtle movement, and crush nests. The artificial lighting from the vehicles can also be impactful to hatchlings; artificial light comes from a much smaller source and is provided from a smaller point, in comparison to celestial light, which brightens everything around us from its one source. This difference can be detrimental to hatchlings, who become disoriented by artificial light and as a result, may not make it to sea once they hatch (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2008).

F.6.2.5 Leatherback Sea Turtle (*Dermochelys coriacea*)

F.6.2.5.1 Status and Management

The leatherback sea turtle is listed as a single population and is classified as endangered under the ESA (35 *Federal Register* 8491). In August 2020, NMFS and USFWS announced a petition to identify the Northwest Atlantic population as a DPS in addition to six other DPSs. However, the Services determined that replacing the existing global listing with separate listings for individual DPSs is not warranted. Although the best available data indicates the populations meet the criteria for significance and discreteness, they found that it would not further the purposes of the ESA to recognize and list seven DPSs separately as endangered under the ESA. The current global listing of the species remains in effect (85 *Federal Register* 48332). Recent information on population structure (through genetic studies) and distribution (through telemetry, tagging, and genetic studies) have led to an increased understanding and refinement of the global stock structure. Leatherback sea turtles from nesting stocks originating throughout the Atlantic have the potential to be within the offshore portions of the Study Area, but only two of these—the Florida genetic stock and the Northern Caribbean genetic stock—nest on beaches in the jurisdiction of the United States.

Critical habitat has been designated in the Study Area for this species (see Section 3.8, Reptiles, Figure 3.8-6). In 1978, critical habitat was designated for the leatherback's terrestrial environment on St. Croix Island at Sandy Point because of its importance as a nesting habitat (43 *Federal Register* 43688). In 1979, critical habitat was designated for the waters next to Sandy Point, St. Croix, up to and including the waters from the 100-fathom curve shoreward to the mean high tide line (44 *Federal Register* 17710). The essential physical and biological features of this critical habitat function as an important courtship and mating area adjacent to the nesting beach.

F.6.2.5.2 Habitat and Geographic Range

The leatherback sea turtle is distributed worldwide in tropical and temperate waters of the Atlantic, Pacific, and Indian Oceans (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b).

Important nesting areas in the Western Atlantic Ocean occur in Florida, St. Croix, Puerto Rico, Costa Rica, Panama, Colombia, Trinidad and Tobago, Guyana, Suriname, French Guiana, and southern Brazil (Brautigam & Eckert, 2006; Márquez, 1990; Spotila et al., 1996). They also occasionally nest in North and South Carolina (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b). Other minor nesting beaches are scattered throughout the Caribbean, Brazil, and Venezuela (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b). Leatherback nesting season begins and ends a few months earlier than that of the other sea turtle species that nest in the Study Area, beginning in February in the more northern nesting habitats (e.g., Florida) and continuing until around July in more southern nesting habitats (e.g., Puerto Rico).

Females remain in the general vicinity (within 100 km) of nesting beaches between nesting events, with total residence in the nesting and inter-nesting habitat lasting up to 4 months (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b). Horrocks et al. (2016) tagged over 3,100 female

leatherbacks in the Caribbean Sea and found that females traveled an average of 160 km between nesting events within the same season. Migrations between nesting seasons were typically to the north towards more temperate latitudes, which support high densities of jellyfish prey in the summer.

In the Atlantic Ocean, equatorial waters appear to be a barrier between breeding populations. In the northwestern Atlantic Ocean, post-nesting female migrations appear to be restricted to north of the equator, but the migration routes vary (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b). Leatherbacks made round-trip migrations from where they started through the North Atlantic Ocean heading northwest to fertile foraging areas off the Gulf of Maine, Canada, and Gulf of America; others crossed the ocean to areas off Western Europe and Africa, while others spent time between northern and equatorial waters. These data support earlier studies that found adults and subadults captured in waters off Nova Scotia stayed in waters north of the Equator (James et al., 2005a; James et al., 2005b; James et al., 2006). A recent study by Rider et al. (2024) tagged leatherbacks off the coasts of Massachusetts in the summer and North Carolina in the spring in order to assess dive and movement behavior and to identify migratory corridors and foraging areas along the U.S. east coast. Researchers found that leatherbacks consistently use the southern New England coast as a primary foraging area, with the waters along the Nantucket Shoals being the most consistently used foraging habitat, as it is a highly productive region where jellyfish occur. In leatherbacks that were tagged and found foraging in the mid-Atlantic Bight from Cape Hatteras, North Carolina to the mouth of the Delaware Bay, leatherback distribution was closely associated with the thermocline. The Gulf Stream was found to serve as a potential intermediate foraging area that leatherback sea turtles migrate to in the winter, as they stray away from higher latitudes along the east coast before returning in spring and summer (Rider et al., 2024).

Northwest Atlantic leatherbacks use the western Equatorial Atlantic and Gulf of America, as a foraging hotspot, even more so than off the Florida Panhandle (Sasso et al., 2021). Foraging was the predominant behavior observed during satellite tracking studies in the Gulf of America. The main sites where this behavior was observed included the northeast corner from Louisiana to Florida, the coastal shelf of southwest Florida, and eastern side of Campeche Bay (Aleksa et al., 2018). Leatherback movements in the Gulf of America are strongly influenced by variables such as abundance of jellyfish, convergence zones, salinity, temperature, and nutrients. Due to the extensive research that has been conducted on this, scientists are starting to feel as if they are now relatively familiar with the overall spatio-temporal patterns of movement of the sea turtles. However, it is still difficult to research post-hatchling and early juvenile sea turtles because these life stages are entirely oceanic (Sasso et al., 2021). Post-hatchling and early juvenile leatherback sea turtles are restricted to waters warmer than 79°F (26°C); consequently, much time is spent in the tropics (Eckert, 2002). They are not considered to associate with *Sargassum* or other flotsam, as is the case for all other sea turtle species (Horrocks, 1987; Johnson, 1989). Upwelling areas, such as equatorial convergence zones, serve as nursery grounds for post-hatchling and early juvenile leatherback sea turtles because these areas provide a high biomass of prey (Musick & Limpus, 1997).

Late juvenile and adult leatherback sea turtles are known to range from mid-ocean to the continental shelf and nearshore waters (Barco & Lockhart, 2015; Grant & Ferrell, 1993; Schroeder & Thompson, 1987; Shoop & Kenney, 1992). Although leatherbacks were observed annually in Chesapeake Bay, they were not common and unevenly distributed. Juvenile and adult foraging habitats include both coastal and offshore feeding areas in temperate waters and offshore feeding areas in tropical waters (Dodge et al., 2014). Dodge et al. (2014) tagged adults and subadult leatherback sea turtles off the coast of Massachusetts and found that the sea turtles showed a strong preference for the Northeast U.S.

Continental Shelf waters during the summer, with concentrated movements off Virginia and North Carolina. Additionally, leatherbacks were recorded occurring near the mouth of the Chesapeake Bay for multiple days during the summer, ranging from 5 to 15 days. Leatherback sea turtles may prefer a temperate neritic habitat during the summer, due to the availability of their gelatinous pretty sources (e.g., jellyfish) in the summer (Dodge et al., 2014). Leatherbacks have been shown to travel shorter distances at slower rates and increased diving rates in areas of high prey abundance, which is related to seasonal availability of prey (Wallace et al., 2015).

Eckert and Hart (2021) observed patterns on leatherback distribution throughout the Atlantic Ocean, finding that habitat ranged from nesting areas in the wider Caribbean Region to foraging areas that extend through the Caribbean and into the Gulf of America. Major nesting sites were determined to be concentrated in the Guianas and Trinidad & Tobago. Other important nesting sites were found in Costa Rica, Panama, Columbia, the Virgin Islands, Puerto Rico, and Florida (Eckert & Hart, 2021). Leatherback sea turtles mate in waters adjacent to nesting beaches and along migratory corridors (Cummings et al., 2016; Figgener et al., 2016).

Studies done on the importance of the Gulf Frontal System and the foraging behaviors of leatherback sea turtles show that their high densities strongly coincided with seasonal phytoplankton blooms. Phytoplankton blooms provide ample nutrients to the water column, attracting marine predators like the sea turtle. Leatherbacks showed preferences for waters with strong sea surface temperature gradients and a deep mixed layer, which aids in the mixing of all the newly acquired available nutrients. Leatherbacks interact with this strong frontal system in the gulf during their post-nesting migration across the north Atlantic, where they feed on primarily jellyfish (Chambault et al., 2017).

F.6.2.5.3 Population Trends

Recent monitoring efforts throughout the Northwest Atlantic Region have noted a decline in annual nest counts. Reasons for the presumed population decline in nesting females include fisheries interactions (bycatch in fishing gear, illegal fishing activity), pollution (plastic, discarded gear, and chemical), and nesting habitat loss due to erosion and accretion of beaches (Northwest Atlantic Leatherback Working Group, 2018). One of the most globally important stocks of leatherback sea turtles, the Southern Caribbean Stock, nests in French Guiana, Guyana, Suriname, and Trinidad, but migrates and forages throughout the North Atlantic. The Western Caribbean stock of the Central American coast also migrates through the Study Area en route to North Atlantic foraging grounds. In the Study Area, nesting populations are found in southern Florida, Culebra, Puerto Rico, and the U.S. Virgin Islands. (National Marine Fisheries Service, 2011c; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2013; Turtle Expert Working Group, 2007). Sporadic nesting also occurs in Georgia, South Carolina, (National Marine Fisheries Service and U.S. Fish and Wildlife Service, 1992; Rabon et al., 2003; Schwartz, 1989), and as far north as North Carolina as well as in the Gulf of America on the Florida panhandle. A decline in nesting numbers has been reported from representatives of these countries prompting a trends analysis from the Northwest Atlantic Leatherback Working Group (Northwest Atlantic Leatherback Working Group, 2018). Several sites in the analysis showed low abundance in early years followed by many years of increasing abundance, but recent declines are reverting back to low levels (e.g., St. Croix, Florida, Culebra [Puerto Rico], Cayenne [French Guiana]) (Northwest Atlantic Leatherback Working Group, 2018).

The Florida nesting stock comes ashore primarily along the east coast of Florida. In the 1980s, fewer than 100 nests per year were reported. Based on data extrapolated from the index nesting beach surveys, nesting activity has shown an annual growth rate of 1 percent between 1989 and 2005 (National Marine Fisheries Service, 2013b). Larger growth rates (10.2 percent increases per year) in nesting activity in this area have been shown from 68 Florida beaches since 1979 (Stewart et al., 2011; Stewart et al., 2014).

Florida statewide nesting reports show nesting numbers fluctuating between 896 nests and 1,712 nests during a 5-year period between 2011 and 2015. Surveyors counted 486 leatherback nests on the 27 core index beaches in 2023. However, these counts do not include leatherback nesting at the beginning of the season (prior to May 15), nor do they include all beaches in Florida where leatherbacks nest (Florida Fish and Wildlife Conservation Commission, 2024). Leatherback nest counts have exponentially increased over the monitoring period; however, there has been a fluctuation in counts from 2014 to 2023. Leatherback nest counts reached a peak in 2014 followed by a steep decline from 2015–2017, and then an increase from 2018–2023. Only a few hundred leatherbacks nest annually in Florida and females may lay as many as 11 clutches during a nesting season, therefore, the fluctuations in nest counts may be the result of a change in the number of nesting females (Florida Fish and Wildlife Conservation Commission, 2024).

Density spatial models developed by DiMatteo et al. (2024) predicted leatherback sea turtle abundance, density, and distribution patterns throughout the entire U.S. east coast, including offshore areas. Leatherback sea turtles had the largest change between high and low abundance predictions compared to the other three sea turtle species (green, Kemp's ridley, and loggerhead turtles) included in this study, with monthly predicted estimates spanning a full order of magnitude (DiMatteo et al., 2024). This pattern is supported by the sightings data, and may reflect the east coast's importance as a nesting and migratory habitat, rather than a foraging habitat, as sea turtles from the wider Caribbean region migrate to the north Atlantic Ocean basin seasonally to forage. The model predicted higher abundance of leatherback sea turtles in warmer months than cooler months, with a mean abundance of 54,329 for September to a low of 4,655 leatherbacks for February. Sightings data supported predicted occurrence of leatherbacks off the coast of Georgia and Florida year-round in low numbers during the cool months and high numbers during the warm months. Shipboard surveys supported predictions of leatherback occurrence in the mid-Atlantic, from the Outer Banks north to Cape Cod and offshore in the Gulf Stream from June until November. Leatherbacks were found consistently in productive, offshore areas, due to their diet of pelagic, gelatinous prey. They remain foraging out at sea for several years, until they begin mating in nearshore waters (DiMatteo et al., 2024).

Leatherback sea turtles are also present year-round in the Gulf of America, with almost all sightings during winter and spring occurring east of the mouth of the Mississippi River (Garrison et al., 2023). Abundance is greater in autumn months, as post-nesting sea turtles enter the Gulf of America from their Caribbean nesting seasons in the summer. Like with other sea turtle species, leatherback movement patterns are strongly correlated with oceanic parameters like sea surface temperature, nutrients, distance from shore, and mixed layer depth, as these conditions affect the abundance of their prey, jellyfish. They remain scattered about the Gulf of America until the winter when they return to the Caribbean to breed. The Gulf of America is likely a preferred location due to its high nutrient availability, allowing them to sufficiently sustain their diets (Sasso et al., 2021).

NOAA Southeast Fisheries Science Center (Garrison et al., 2023) developed density spatial models to estimate sea turtle in-water abundance, density, and distribution for the four most common sea turtle species in the Gulf of America, including the leatherback sea turtle. The model predictions were limited to the continental shelf waters and based on aerial surveys that were conducted in 2011–2012 and 2017–2018. Average monthly predictions were generated for the period 2015–2019. The model predicted monthly average animal abundance within the Gulf of America at a low of 518 leatherbacks in November and a high of 6,922 leatherbacks in July, which is consistent with predictions that density would be higher during the months that have warmer water temperatures. Higher densities were also predicted in offshore waters deeper than 50 m. However, lower density was predicted in the central northern Gulf of America, especially during the winter (Garrison et al., 2023).

F.6.2.5.4 Predator and Prey Interactions

Leatherbacks lack the crushing chewing plates characteristic of hard-shelled sea turtles that feed on hard-bodied prey. Instead, they have pointed tooth-like cusps and sharp-edged jaws that are adapted for a diet of soft-bodied open-ocean prey. Leatherback sea turtles feed throughout the water column, predominantly on jellyfish (Davenport, 1988; Eckert et al., 1989; Eisenberg & Frazier, 1983; Grant & Ferrell, 1993; James et al., 2005b; James et al., 2005c; Salmon et al., 2004) (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2013; Wallace et al., 2015). In Atlantic Canada, leatherbacks feed on jellyfish of *Cyanea* spp. and *Aurelia* spp. (James & Herman, 2001; Votier et al., 2011); In North Carolina and Georgia, leatherback sea turtles feed on cannonball jellies (*Stomolophus meleagris*) (Frick et al., 1999; Grant & Ferrell, 1993). Patterns in feeding behavior off St. Croix, U.S. Virgin Islands, over a 24-hour period suggest an interaction between leatherback diving and vertical movements of the deep scattering layer (a horizontal zone of planktonic organisms), with more frequent and shallower dives at night compared with fewer and deeper day dives (Eckert et al., 1989). Studies by Nordstrom et al. (2020) and Wallace et al. (2015) confirmed that leatherbacks actually have a highly specified diet of gelatinous zooplankton, including jellyfish and salps, in their summer foraging grounds off Atlantic Canada.

Predators of leatherback nests are common to other sea turtle species (e.g., terrestrial mammals and invertebrates). Burns et al. (2016) found that nesting female leatherbacks expend a significant amount of time and energy, despite increased risk of direct predation while on land, to obscure nests. After laying nests and covering with sand, the female's return to the ocean is not linear, and is likely an attempt at decoy behavior as a further measure to protect the clutch. In the water, hatchlings are susceptible to predation by birds and fish. Sharks are the primary predator of juvenile and adult leatherback sea turtles (Aoki et al., 2023; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2013, 2020b).

F.6.2.5.5 Species-Specific Threats

In addition to the general threats to sea turtles described previously, bycatch in commercial fisheries is a particular threat to leatherback sea turtles. Net fisheries and entanglement are dominant threats to leatherbacks at sea (Eckert & Hart, 2021). Incidental capture in longline and coastal gillnet fisheries has caused a substantial number of leatherback sea turtle deaths, likely because leatherback sea turtles dive to depths targeted by longline fishermen and are less maneuverable than other sea turtle species (Archibald & James, 2018). Shrimp trawls in the Gulf of America have been estimated to capture about 3,000 leatherback sea turtles, with 80 of those sea turtles dying as a result (Finkbeiner et al., 2011; Wallace et al., 2010b). Along the Atlantic coast of the United States, NMFS estimated that about 800 leatherback sea turtles are captured in pelagic longline fisheries, bottom longline, and drift gillnet fisheries for sharks as well as lobster, deep-sea red crab, Jonah crab, dolphinfish and wahoo, and Pamlico Sound gillnet fisheries. Although most of these sea turtles are released alive, these fisheries kill about 300 leatherback sea turtles each year (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2013; Stewart et al., 2016).

Harvest of leatherback sea turtle eggs and adult sea turtles continues to be a threat in many parts of the world (Humber et al., 2014). A review of Pacific observer data from 34 swordfish-targeting shallow-set longline fleets found 331 leatherback sea turtle interactions observed between 1989 and 2015 and identified bycatch hotspots in the central North Pacific Ocean and eastern Australia (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b). These ocean-based threats have some countries identifying them as threatening 20 to 50 percent of the nation's adult leatherback sea turtle population, particularly in Trinidad and in the Guianas (Barragan et al., 2022).

All life stages of leatherback turtles are vulnerable to oil spills on land or at sea. Within the last 60 years, 2000, oil spill events have occurred in habitats that are used by sea turtles (Wallace et al., 2020). Plastics, a common type of marine debris, is a major threat to leatherback sea turtles. Plastic bags, often mistaken for jellyfish, have been found during necropsies of leatherbacks; and phthalates, a chemical derived from plastics, has been found in leatherback egg yolks (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b). Although unquantified, overall impact of marine debris on leatherback sea turtles is anticipated to be severe with an approximately increase from 5.2 to 19.3 million tons per year over the last 30 years of debris entering the marine environment (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b).

Lastly, increasing ocean temperatures may impact leatherbacks in ways different from other sea turtle species because their distribution is so closely associated with jellyfish aggregations (which are affected by changing ocean temperatures and dynamics) (Nordstrom et al., 2020; Pike, 2014). Robinson et al. (2013) suggest that environmental variability is contributing to the Pacific leatherback population declines through a shifting of nesting dates due to increased stressor exposure. The observed mean nesting date shifts in the Atlantic leatherback genetic stocks, in contrast to Pacific populations, may increase resiliency of Atlantic leatherbacks to environmental variability. Global ocean temperatures will continue to warm, and increases in seasonal and annual mean surface temperatures are expected to be larger in the tropics and Northern Hemisphere subtropics where leatherback sea turtles nest (National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2020b).

F.6.2.6 American Crocodile (*Crocodylus acutus*)

F.6.2.6.1 Status and Management

The American crocodile occurs within the jurisdictional boundaries of many different countries, with a primary distribution throughout coastal waters of the Caribbean Sea as well as the Pacific coast of Central and South America, ranging from Mexico to Ecuador (Thorbjarnarson et al., 2006). Population declines have been attributed to loss of habitat and, before they were listed as a protected species and throughout the listing process, extensive poaching (U.S. Fish and Wildlife Service, 2010d). The American crocodile was listed as endangered throughout its range under the ESA in 1979 (44 *Federal Register* 17710), where individuals found in Florida represent the northern extent of the species' range (U.S. Fish and Wildlife Service, 2010d). In 2007, the USFWS designated the American crocodile in Florida as a DPS due to their genetic isolation. This designation also downlisted the Florida DPS from endangered to threatened under the ESA, while the status of the population outside of Florida remains listed as endangered (72 *Federal Register* 13027) (U.S. Fish and Wildlife Service, 2010d). In 1976, Florida Bay and its associated brackish marshes, swamps, creeks, and canals was designated as critical habitat for the Florida population. In 1977, it was modified to include a more accurate map representation of the habitat (41 *Federal Register* 41914; 44 *Federal Register* 75074) (see Section 3.8, Reptiles, Figure 3.8-11). At the time of the original ESA listing, the state's population of crocodiles was concentrated throughout the inshore waters of Florida Bay. While no primary constituent elements of the critical habitat were indicated, this area represented key nesting habitat as all known breeding females inhabited and nested in this designated area (41 *Federal Register* 41914).

F.6.2.6.2 Habitat and Geographic Range

The American crocodile is typically found in fresh or brackish coastal habitats, including, but not limited to rivers, ponds, lagoons, and mangrove swamps (Mazzotti, 2014; Mazzotti et al., 2007; Wheatley et al., 2012). American crocodiles generally occur in water with salinities less than 20 parts per thousand; however, they possess salt lingual glands allowing them to excrete excess salt (Cherkiss et al., 2014;

Wheatley et al., 2012) and occasionally inhabit more saline environments (e.g., Florida Bay) (Wheatley et al., 2012). Most crocodile sightings in more saline water are females attending nest sites, hatchlings at nest sites, or juveniles presumably avoiding adults (Mazzotti et al., 2007). Females construct nests on elevated, well-drained sites near the water such as ditch banks and beaches. In the United States, artificial nesting sites within berms along canal banks provide nearly ideal nesting conditions because they are elevated, well drained, and near relatively deep, low-to-intermediate salinity water (Mazzotti et al., 2007). These artificial nesting habitats appear to be compensating for natural habitat elsewhere in Florida and account for much of the increase in nesting documented since 1975 (U.S. Fish and Wildlife Service, 2022a).

The American crocodile is known to inhabit inshore marine waters and is not predisposed to travel across the open ocean (Cherkiss et al., 2014). Instead, they prefer calm warm waters with minimal wave action, and most frequently occur in sheltered, mangrove-lined estuaries (Mazzotti, 1983). No available evidence suggests that crocodiles cross the Florida Straits; therefore, this species is not expected to occur in offshore areas in the Study Area. The American crocodile, however, can travel long distances in nearshore environments. For example, Cherkiss et al. (2014) tracked an individual American crocodile over a 14-year period. The crocodile was originally marked in Homestead, Florida, as a young-of-the-year in 1999. It was later recaptured multiple times, sometimes as far as 388 km away along the southwest coast of Florida. After several relocations and numerous sightings, this individual returned to the same canal system in which it was first captured. Studies have only suggested that the reason for the return is likely due to searching for familiar territory, however, not all crocodiles exhibit this behavior, and distance has a strong influence on whether they will return to capture sites (Brunell et al., 2023). Overall, sightings of American crocodiles occur with increasing frequency in many of the lower keys (U.S. Fish and Wildlife Service, 2022a).

Within the United States, the current known range of the American crocodile in Florida consists of coastal areas of central and Southern Broward, Miami-Dade, Monroe, Collier, and Lee Counties. Crocodile are regularly observed along the shorelines of Florida Bay, Biscayne Bay, and the upper Florida Keys, and within the Cooling Canal System and adjacent canals and wetlands (U.S. Fish and Wildlife Service, 2022a). Most nesting occurs on the mainland shore of Florida Bay within the Northeast Florida Bay and Flamingo/Cape Sable areas. Other nesting occurs primarily at Key Largo and the Cooling Canal System with frequent nesting at Biscayne Bay north to as far as Virginia Key; throughout the Florida Keys south of North Key Largo, and the southwest coast of Florida from north of Highlands Beach to Sanibel Island (U.S. Fish and Wildlife Service, 2022a).

F.6.2.6.3 Population Trends

In 1976, the American crocodile population in Florida was estimated to be between 200 and 300 individuals (40 *Federal Register* 58308), with only 10 to 20 breeding females estimated in 1975 (40 *Federal Register* 58308). An estimated 20 nests were laid in Florida in 1975. The Florida population of the American crocodile has increased, and its distribution has expanded, since it was listed as endangered. As a result of conservation measures, including habitat protection, the number of nests increased to 85 in 2004 (Mazzotti et al., 2007). The most recent population estimate, provided by the USFWS, estimates the current Florida population of crocodiles to range between 1,300 and 3,150 adults, with an estimated 149 to 189 nests recorded per year in Florida between 2013 and 2021 (U.S. Fish and Wildlife Service, 2022a). Based on systematic monitoring of four of the five nesting areas of the American crocodile in Florida, three are exhibiting stable or increasing trends in nesting and natural recruitment. The species is gradually recovering in the United States, but survey data from Central and South America are relatively poor.

Increased sightings of crocodiles on the airfield at the Naval Air Station Key West has initiated interest in having surveys for crocodiles performed on station. The Navy is currently monitoring occurrences of American crocodiles at Naval Air Station Key West. In 2014, 21 American crocodiles were identified at the air station. Nesting may also occur on the coastal portions of the air station (Mazzotti, 2014). During 2016 spotlight surveys (occurring in January, April, June, and August), a total of seven crocodiles were observed at Naval Air Station Key West. Nesting activity was confirmed at Naval Air Station Key West in 2022 (Wheatley-Techmer, 2023).

F.6.2.6.4 Predator and Prey Interactions

The American crocodile typically forages from shortly before sunset to shortly after sunrise (U.S. Fish and Wildlife Service, 2010d). During these times, crocodiles feed on any prey items that can be caught and overpowered (Mazzotti et al., 2007). Adults feed on fish, crabs, birds, turtles, snakes, and small mammals, while young feed on aquatic invertebrates and small fish.

Fire ants are predators of crocodile eggs. Crocodile hatchlings may be preyed on by large fish, birds, other large reptiles and amphibians, or even other crocodiles. Larger juvenile and adult crocodiles have no known natural predators (Mazzotti et al., 2007).

F.6.2.6.5 Species-Specific Threats

Habitat loss is a primary threat to the American crocodile (U.S. Fish and Wildlife Service, 2010d). Development in coastal areas of Florida diminishes American crocodile habitat and restricts the species' breeding range. Although they are expanding their overall distribution north, many of the areas on the east and west coast of Florida (north of their core range) are highly urbanized with very little habitat. American crocodiles are an adaptable species in terms of habitat use (altered and artificial habitats) and have adapted to increasing development and urbanization in Florida (U.S. Fish and Wildlife Service, 2022a).

Sea level rise is expected to result in the inundation and loss of existing American crocodile nesting habitat with sea level expected to rise 17 to 41 in. above the 1992 mean sea level by 2060 and 32 to 103 in. above 1992 mean sea level by 2100 (U.S. Fish and Wildlife Service, 2022a). In addition, high salinities in the wetlands of Florida Bay likely accelerated the reduction of the population as both growth and survival of American crocodiles decrease with increasing salinities (U.S. Fish and Wildlife Service, 2022a).

The introduction in Florida of Nile crocodiles (*Crocodylus niloticus*), confirmed recently through genetic analyses, presents threats to the American crocodile (Rochford et al., 2016). As a competitor for prey and habitat, the Nile crocodile can also likely predate smaller American crocodiles. In addition, many crocodilian species are already known to hybridize in captivity and where their native ranges overlap in the wild (e.g., Cuban crocodile [*Crocodylus rhombifer*]), which can degrade the genetic integrity of the American crocodile (Weaver et al., 2008). Because of similarity of appearance, Nile crocodile persecution by humans would likely include accidental poaching of American crocodiles (Rochford et al., 2016). Introduction of exotic species such as green iguana (*Iguana iguana*), Burmese pythons, and the Argentine black and white tegu (*Salvator marianae*) have the potential to be significant predators of American crocodiles and/or their eggs (U.S. Fish and Wildlife Service, 2022a).

F.6.2.7 American Alligator (*Alligator mississippiensis*)

F.6.2.7.1 Status and Management

American alligator populations began to decline in the late 1800s, when unregulated hunting for the hides became prevalent, with population numbers close to extinction in some areas (Savannah River Ecology Laboratory & Herpetology Program, 2012). A hunting ban in the 1950s and other recovery

efforts allowed the species to rebound (52 *Federal Register* 21059). American alligators were listed as an endangered species in 1967 under a law that preceded the ESA of 1973 (National Park Service, 2012). No critical habitat has been designated for this species. Federal legislation in the 1970s and 1980s, including the ESA and amendments to the Lacey Act in 1981, ensured the alligators' protection, and eventually their comeback. In 1987, the alligator was declared "no longer biologically threatened or endangered" (52 *Federal Register* 21059). However, to ensure protections to the American crocodile and other endangered crocodilians, the American alligator is listed under the ESA classification of "threatened due to similarity of appearance" to the American crocodile (52 *Federal Register* 21059). Accordingly, federal agencies are no longer required to consult with USFWS pursuant to section 7 of the ESA. Hunting and trade of the American alligator are now permitted and regulated by the USFWS (National Park Service, 2012; Savannah River Ecology Laboratory & Herpetology Program, 2012).

F.6.2.7.2 Habitat and Geographic Range

The American alligator occurs on the Atlantic Coast of North America from Florida through coastal North Carolina, and along the Gulf Coast into Texas (Savannah River Ecology Laboratory, 2023). The American alligator's primary habitats are freshwater swamps and marshes but may also include lakes, canals, ponds, reservoirs, and rivers. Females and juveniles occasionally use seasonal wetlands, such as Carolina Bays (Savannah River Ecology Laboratory, 2023). As alligators lack lingual salt glands, the species has a limited capacity to tolerate highly saline environments (Mazzotti & Dunson, 1989). In coastal areas, alligators move between freshwater and estuarine waters. Size and sex influence the habitat that alligators reside in; adult males generally prefer deep, open water within coastal water bodies during the spring breeding season. Adult females are also found in open water during breeding season, but they prefer to move to lake and marsh edges during nesting and hatching seasons.

Males have a minimal role in parenting; however, females will remain with juveniles and hatchlings for up to a year or more for protection during this vulnerable life stage (Savannah River Ecology Laboratory & Herpetology Program, 2012). After juveniles have hatched, they remain with the adult female for up to a year or more for protection during this vulnerable life stage (National Park Service, 2012; Savannah River Ecology Laboratory & Herpetology Program, 2012). Smaller alligators prefer wetlands with dense vegetation for protection and prey advantage (Savannah River Ecology Laboratory & Herpetology Program, 2012).

F.6.2.7.3 Population Trends

Alligators are active year-round with the highest activity occurring during the warmer months. Breeding season begins in May with nest building by females occurring in June. Nests are constructed within marsh reeds or other vegetation, with rotting vegetation keeping eggs warm during incubation. Females lay between 20 and 60 eggs in late June to mid-July with incubation lasting approximately 65 days before hatching begins (Savannah River Ecology Laboratory, 2023). Following state and federal management of this species, alligator populations have rebounded to an estimated total in the millions of individuals (Savannah River Ecology Laboratory & Herpetology Program, 2012). The Navy is currently monitoring occurrences of American alligators at Naval Air Station Key West. During 2016 spotlight surveys (occurring in January, April, June, and August), one alligator was observed at Naval Air Station Key West. No nesting activity was observed on the Naval Air Station Key West properties (Wheatley-Techmer, 2023). Nesting may occur on the coastal portions of the air station (Mazzotti et al., 2016).

F.6.2.7.4 Predator and Prey Interactions

American alligators are opportunistic carnivores. Adults eat a variety of animals, including large fish, turtles, snakes, birds, and small mammals. Hatchlings and smaller alligators eat insects, crayfish, snails

and other invertebrates, small fish, and amphibians (Savannah River Ecology Laboratory & Herpetology Program, 2012).

Alligator eggs are often preyed upon by raccoons, opossums, skunks, feral pigs, and other terrestrial nest predators. Similarly, young alligators are preyed upon by raccoons, crabs, large snakes, turtles, birds, and even fish (Savannah River Ecology Laboratory & Herpetology Program, 2012).

F.6.2.7.5 Species-Specific Threats

Main threats to the American alligator is destruction and degradation and loss of wetland habitat, often associated with human development. Alligator nests may be depredated by racoons and bears whereas juveniles are vulnerable to predation by wading birds, otters, and larger alligators (Florida Fish and Wildlife Conservation Commission, 2023a).

F.6.3 Species Not Listed under the Endangered Species Act

F.6.3.1 Diamondback Terrapin (*Malaclemys terrapin*)

F.6.3.1.1 Habitat and Geographic Range

The typical habitat of the diamondback terrapin includes coastal swamps, estuaries, lagoons, tidal creeks, mangroves, and salt marshes with salinities ranging from 0 to 35 ppt. Diamondback terrapins have salt glands around their eyes, allowing them to secrete excess salt from their blood, and survive in salty environments (University of Georgia, 2023). Although diamondback terrapins are found in brackish water, periodic access to freshwater is required for long-term health. Diamondback terrapins play an important role in coastal saltwater marsh ecosystems by aiding in seed dispersal, controlling insect and snail populations, and contributing to other ecological services (e.g., removing suspended sediments and contaminants in water) through perpetuating eelgrass spread (Pfau & Roosenburg, 2010).

Although diamondback terrapins are an aquatic turtle and spend the majority of their life in water, they do leave the water to bask and lay eggs (University of Georgia, 2023). During the cold winter months, diamondbacks hibernate in the mud at the bottom of tidal creeks. Nesting females wander considerable distances on land before nesting. Nests are usually laid in sand dunes or scrub vegetation near the water. Eggs are typically laid in late May through August and generally take 50 to 80 days to hatch (University of Georgia, 2023).

The distribution of diamondback terrapins is best described as discontinuous along the approximately 5,000 km of coastline between Cape Cod, Massachusetts, and Corpus Christi, Texas (Pfau & Roosenburg, 2010). Throughout this distribution, there are seven defined subspecies of the diamondback terrapin based primarily on differences in carapace morphology and skin coloring (Hart & Lee, 2006). The subspecies are listed below:

- Carolina diamondback terrapin (*Malaclemys terrapin centrata*)
- Texas diamondback terrapin (*Malaclemys terrapin littoralis*)
- Ornate diamondback terrapin (*Malaclemys terrapin macrospilota*)
- Mississippi diamondback terrapin (*Malaclemys terrapin pileata*)
- Mangrove diamondback terrapin (*Malaclemys terrapin rhizophorarum*)
- Eastern Florida diamondback terrapin (*Malaclemys terrapin tequesta*)
- Northern diamondback terrapin (*Malaclemys terrapin terrapin*)

Despite this extensive distribution, its zone of occurrence is very linear and in places fragmented, resulting in a relatively small total area of occupancy (Hart & Lee, 2006).

F.6.3.1.2 Population Trends

Terrapins have a long history of exploitation by humans, who harvested them for food for decades (University of Georgia, 2017). The current population size of diamondback terrapins in the United States is unknown but estimated to be over 100,000 individuals. Most diamondback terrapin populations range from stable to declining (University of Georgia, 2017).

F.6.3.1.3 Predator Prey Interactions

Diamondback terrapins feed largely on invertebrates, crustaceans, mollusks, and a variety of plant materials and algae. Adult terrapins are predators of the Salt Marsh Periwinkle (*Littoraria irrorata*), a snail that grazes on epiphytes that grow on salt marsh cord grass (*Spartina alterniflora*). As a periwinkle predator, diamondback terrapins are frequently identified as a potential saltmarsh keystone species because periwinkles damage and kill cord grass, leaving a barren mudflat and increasing marsh erosion rates (International Union for Conservation of Nature, 2019). Nests, hatchlings, and sometimes adults are eaten by raccoons, skunks, coyotes, feral hogs, and non-native Norway rats (International Union for Conservation of Nature, 2019).

F.6.3.1.4 Species-Specific Threats

The species has declined significantly from historic levels, in part due to 19th and 20th century harvesting for fashion and food utilization. Harvesting of turtles and eggs is no longer a primary threat to this species. In states with a commercial blue crab (*Callinectes sapidus*) fishery, which includes almost the terrapin's entire range, incidental drowning in crab pots is considered to be the major threat. Additionally, adult female terrapins are frequently struck and killed by motor vehicles while attempting to cross roads in search of nesting sites (International Union for Conservation of Nature, 2019). Additional threats include habitat loss, predation from wild hogs, raccoons, and rats, and harvest for the pet trade (Florida Fish and Wildlife Conservation Commission, 2023b).

F.7 Birds and Bats

F.7.1 General Background

With exceptions noted below, the general background for birds and bats in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.9.2.1, General Background) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid. The following information was updated from the 2018 Final EIS/OEIS:

- use of offshore areas by bats for migration
- effects of sea level rise, more frequent and intense storm events, and marine heat waves on seabirds
- more current research on seabirds
- for endangered species, new species have been listed and new critical habitat has been proposed, population estimates have been updated, and new information on distribution and threats has been added

There are at least 160 species of birds that regularly occur in the Study Area (Sibley, 2014). These are primarily waterbirds of marine, estuarine, coastal, and inshore waters including seabirds, wading birds, shorebirds, and waterfowl. Many additional species are seasonal migrants that transit through the Study

Area between breeding and wintering areas. Seabirds that forage primarily on the open ocean are of particular interest because they have the broadest distribution within the Study Area and thus the greatest exposure to Action Proponent activities. Seabirds are a diverse group that are adapted to living in marine environments and use coastal (nearshore) waters, offshore waters (continental shelf), or open-ocean areas (Enticott & Tipling, 1997; Harrison, 1983).

Bats include resident and migratory species (National Park Service, 2017). Although all bats are terrestrial, many species occur above coastal (nearshore) waters, offshore waters (continental shelf), or open-ocean areas while migrating or foraging and will use islands, ships, and other offshore structures and vessels as stopover sites for resting or roosting (Constantine, 2003; Cryan & Brown, 2007; Pelletier et al., 2013; Thompson et al., 2015; U.S. Department of Energy, 2016).

F.7.1.1 Group Size

A variety of bird group sizes may be encountered throughout the Study Area, ranging from individual birds to thousands of birds in single-species and mixed-species flocks. Group size varies with species, location, time of day, time of year, and weather conditions. During spring and fall periods, diurnal and nocturnal migrants occur as pairs or as small or large groups migrating over open ocean and at stopover areas and wintering grounds (Elphick, 2007).

No communal roosts or other large concentrations of bats are known within the Study Area. Bats could occur in the Study Area as individuals or in a small group foraging or migrating and this presence would vary with season, location, time of day, weather, as well as among species (Constantine, 2003; Dowling, 2018; Pelletier et al., 2013; Solick & Newman, 2021; U.S. Department of Energy, 2016).

F.7.1.2 Habitat Use

In the Study Area, birds forage in and migrate through a variety of habitats including the open ocean and nearshore waters including estuaries, coastal wetlands, kelp beds, lagoons, and in the intertidal zone. When and where birds occur varies by species and is influenced by environmental factors, prey location, and time of year. Other species, like neotropical and other migrants, utilize the Study Area to transit between their wintering and breeding grounds (Elphick, 2007; Shackelford et al., 2005). Location and timing of this foraging and migration is highly dependent on species.

Bats are wide-ranging, occurring on every continent except for Antarctica. While all bats are terrestrial, numerous studies have shown that many species forage or migrate over marine environments, sometimes at considerable distances from shore. True et al. (2023) tagged and tracked Eastern red bats on the mid-Atlantic coast during fall mating and migration season. They found that although bats transited long distances over open water (across Chesapeake and Delaware Bays), long distance movements tended to be landward rather than along the coast and flights occurred in early evening hours in favorable conditions. Hatch et al. (2013) reported that bats observed were located between 16.9 and 41.9 km from shore (with an average distance of 30 km). Several North American bats have been found on Bermuda, located approximately 670 mi. (1,078 km) from the coast of the U.S. (Constantine, 2003; Pelletier et al., 2013). Thompson et al. (2015) reported a large flock of little brown bats (*Myotis lucifugus*) roosting on a ship and buoys approximately 68 mi. (110 km) off the coast of Maine during optimal summertime conditions, with warm air and no wind. While resident bats occur in marine environments, migratory bats – particularly long-distance migratory bats – are the most likely species to be observed in the Study Area (Bureau of Ocean Energy Management, 2013; Pelletier et al., 2013; U.S. Department of Energy, 2016). One study found that the Eastern red bat (*Lasiurus borealis*) (73 percent of all occurrences) and hoary bat (*Lasiurus cinereus*) (22 percent of all occurrences) were the most likely species to be detected at buoy monitoring sites (U.S. Department of Energy, 2016), perhaps

because they prefer open areas (Tetra Tech Inc, 2016d). Occurrence in a given area over the open ocean, however, is infrequent and seasonal, occurring most frequently during summer, particularly when the air is warm, the humidity is high, the wind speed is low, and when near forested land (Ahlén et al., 2009; Bureau of Ocean Energy Management, 2013; Johnson et al., 2011; U.S. Department of Energy, 2016).

Mexican free-tailed bats (*Tadarida brasiliensis mexicana*) have been detected flying over 3,000 m above the ground, presumably in pursuit of food (McCracken et al., 2021). Several studies have shown that bats typically fly close to the water's surface (e.g., lower than 10 m above sea level) when flying over water (Pelletier et al., 2013). However, many of these studies have had a limited ability to detect bats migrating at higher altitudes. Aerial surveys for bats, using high-definition video cameras mounted on a small aircraft at 610 m off the mid-Atlantic coast, revealed that, "of the six bats observed during aerial surveys for which flight height was estimable, all six were at altitudes over 100 m above sea level and five of the six were over 200 m above sea level," (Hatch et al., 2013).

Solick and Newman (2021) provided a synthesis of existing literature and data on the presence of bats offshore. They note the limits of existing data, as evidenced by the prevalence of observations occurring in daytime when bats are not generally active, as well as the spatial limits of acoustic monitoring. In the existing literature, long-distance migratory species, such as Eastern red bats, silver-haired bats, and hoary bats, are most commonly observed offshore but other species that do not migrate over long distances (e.g., tricolored [*Perimyotis subflavus*] and big brown bat [*Eptesicus fuscus*]) have also been detected (Bort et al., 2023; Smith et al., 2022a). Species are most frequently detected during autumn migration periods (August through October) and the lack of observations at other times of the year suggests that migratory species use coastal areas primarily during this time (Solick & Newman, 2021). Bats were detected primarily as individuals but some groups of dozens to hundreds have been observed. Dowling (2018) observed six species of bats on Martha's Vineyard and documented offshore movements by the little brown bat and Eastern red bat including migrating and foraging over Vineyard Sound. Dowling also tracked coastal movements of long-distance migrant species, Eastern red bat and hoary bat, and observed island to island movement and movement along the coast over the ocean, influenced by time of day, season, and weather. The U.S. Department of Energy (2016) monitored bats on islands, offshore structures and coastal sites in the New England Gulf of Maine, mid-Atlantic coast, and Great Lakes to better understand when and where bats occur offshore (greater than 3 NM from the coast). They observed that the highest bat activity levels occurred at coastal sites near forest edges and varied seasonally across all areas and across all species, with detections peaking in early fall, and with temperature and wind speed (activity occurring disproportionately during warmer temperatures and lower wind speeds). Finally, a single tricolored bat, not known to be a long-distance migrant, was observed in August 2018 more than 103 km off the coast of North Carolina when it landed on a boat that was conducting marine mammal observations (Bort et al., 2023).

An offshore bat acoustic survey performed by the Bureau of Ocean Energy Management in support of an EIS prepared for Offshore Wind Development in Coastal Virginia (Bureau of Ocean Energy Management Office of Renewable Energy Programs, 2022) found that *Myotis* and other cave bat species activity in the mid-Atlantic decreases 6 mi. (20 km) from shore. The survey results indicated low levels of bat activity across seasons, with activity peaking in the fall migration period under specific conditions such as low wind, good visibility, and high temperatures. Bats were documented day and night roosting on the vessels in the offshore project area.

The U.S. Department of Energy (2016) conducted acoustic surveys of bat activity on islands, offshore structures, and coastal sites in the New England Gulf of Maine, mid-Atlantic coast, and Great Lakes

regions from 2012 to 2014. Bat activity patterns were highly seasonal in all regions and across species, with detection rates peaking in late summer and early fall and a high percentage of bat passes occurring within a limited number of nights. The *Myotis* genus was the most frequently detected species group, representing 43 percent of all identified bats. At most sites, bat activity increased rapidly during the first hour past sunset and then declined steadily for the rest of the night.

F.7.1.3 Dive Behavior

Many of the seabird species found in the Study Area forage in the water column. Some species dive, skim, or grasp prey at or just below the water's surface (Cook et al., 2011; Jiménez et al., 2012). Other seabirds, including diving ducks, cormorants, and alcids (murres, auks, auklets, and puffins) feed on the bottom or in the water column at depths greater than 100 feet (Cook et al., 2011; Ehrlich et al., 1988). Some seabirds forage by diving more shallowly into the water column (e.g., terns, gannets). Others are considered surface divers plunging directly from the surface underwater after prey (puffins, loons, ducks). Birds able to pursuit dive use their wings and feet for propulsion through the water, exhibited by shearwaters and some petrels. Using this strategy, pursuit divers usually float on the water and dive under to pursue fish and other prey (Burger et al., 2004). Most diving species tend to forage near the surface of the water column or on the bottom in shallow water (e.g., clams, mussels, and other invertebrates) (Cook et al., 2011). Dive durations are correlated with depth and range from a few seconds in shallow divers to several minutes in alcids (Ponganis, 2015). While no bats dive into the water column to feed, the Mexican bulldog bat (*Noctilio leporinus*) forages for fish near the water surface.

F.7.1.4 Hearing and Vocalization

Several studies of seabird hearing have been published since the 2018 Final EIS/OEIS. These newer studies of long-tailed duck, common eider, and surf scoter (McGrew et al., 2022), and Atlantic puffin and common murre (Mooney et al., 2019), support previous conclusions that birds generally have greatest hearing sensitivity between 1 and 4 kilohertz (kHz).

Although hearing range and sensitivity has been measured for many land birds, fewer studies have focused on seabird hearing and most published literature on bird hearing focuses on terrestrial birds and their ability to hear in air. A review of 32 terrestrial and marine species indicates that birds generally have greatest hearing sensitivity between 1 and 4 kHz (Beason, 2004; Dooling, 2002). Very few can hear below 20 hertz (Hz), most have an upper frequency hearing limit of 10 kHz, and none exhibit hearing at frequencies higher than 15 kHz (Dooling, 2002; Dooling & Popper, 2000). Hearing capabilities have been studied for only a few seabirds (Beason, 2004; Beuter et al., 1986; Crowell et al., 2015; Johansen et al., 2016; Thiessen, 1958; Wever et al., 1969); these studies show that seabird hearing ranges and sensitivity in air are consistent with what is known about bird hearing in general.

The hearing range of insect-eating bats in North America is 10–100 kHz. The most sensitive frequency band is 20–50 kHz, where bats can detect sounds at approximately 20 decibels re 20 micropascals (Bohn et al., 2006; Koay et al., 1997). Bats are generally unable to hear frequencies below 500 Hz. While hearing is the primary sense used by echolocating bats to forage and avoid obstacles, they use a combination of auditory and visual landmark recognition (Denzinger & Schnitzler, 2013; Gonzalez-Terrazas et al., 2016; Jensen et al., 2005; Schnitzler et al., 2003), magneto-reception (Holland et al., 2008; Holland et al., 2006; Wang et al., 2007), and spatial memory for long-distance navigation (Barchi et al., 2013; Ulanovsky & Moss, 2008, 2011; Williams & Williams, 1970; Williams et al., 1966). The variety of vocalizations produced by bats can be separated into two general categories: ultrasonic echolocation sounds and communication sounds. Echolocation is used while foraging and for spatial orientation (Jensen et al., 2005; Schnitzler et al., 2003). Sound detection levels are somewhat dependent

on ambient noise, and bats increase the loudness of their calls, called the Lombard effect, when they encounter noise (Hage et al., 2013; Hotchkin & Parks, 2013; Luo & Wiegrebe, 2016). Simmons and Simmons (2024) found that echolocating bats have decreased susceptibility to noise-induced temporary hearing loss as compared to other mammals. Liu et al. (2021) found that cochlear hair cells of echolocating bats provide protection against intense noise and prevent or ameliorate hearing loss.

F.7.1.5 General Threats

Approximately half of the 346 species of seabirds that depend on ocean habitats worldwide are declining (Crowell et al., 2015). Threats to bird populations in the Study Area include human-caused stressors including interactions with commercial and recreational fishing gear, predation and competition by introduced species, disturbance and degradation of nesting areas by humans and domesticated animals, noise pollution from construction and other human activities, nocturnal collisions with power lines and artificial lights, collisions with aircraft, pollution, such as that from oil spills and plastic debris, and the effects of environmental variability including sea level rise, more frequent and intense storm events, and marine heat waves (Anderson et al., 2007; Burkett et al., 2003; California Department of Fish and Game, 2010; Carter & Kuletz, 1995; Carter et al., 2005; Clavero et al., 2009; International Union for Conservation of Nature and Natural Resources, 2010b; Jones et al., 2023; North American Bird Conservation Initiative & U.S. Committee, 2010; Onley & Scofield, 2007; Piatt & Naslund, 1995; U.S. Fish and Wildlife Service, 2005; Waugh et al., 2012; Weimerskirch, 2004). Disease, volcanic eruptions, storms, and harmful algal blooms are also threats to birds (Anderson et al., 2007; Jessup et al., 2009; North American Bird Conservation Initiative U.S. Committee, 2009; U.S. Fish and Wildlife Service, 2005).

Beach-nesting birds are vulnerable to disturbance from people, pets, and off-road vehicles (North American Bird Conservation Initiative U.S. Committee, 2009). Feral species (primarily cats [*Felis catus*] and rats [*Rattus spp*.], occasionally pigs [*Sus scrofa*], and cattle [*Bos taurus*]) may destroy nests. Seabirds are especially vulnerable to feral species on islands where nests and populations have been devastated through predation or habitat destruction. Invasive plants can also eliminate nesting habitat on beaches (Clavero et al., 2009; North American Bird Conservation Initiative U.S. Committee, 2009).

Lighting on boats and on offshore oil and gas platforms has also contributed to bird fatalities in open ocean environments. Birds are attracted to these lights, usually in inclement weather conditions (Merkel & Johansen, 2011). Studies have examined the effects of various types of lights on migrating songbirds (Poot et al., 2008). Land-based lighting has been linked to episodes of “fallout” (grounding) involving seabirds, especially petrels, and ship-based lighting could have similar effects (Rodríguez et al., 2017).

Large-scale wind energy development in offshore areas has the potential to affect bird populations through displacement from foraging habitats and mortality to species that fly within the rotor swept zones of large wind turbines (approximately 20 m and 200 m from the surface) (Williams et al., 2015).

Natural causes of seabird and shorebird population declines include disease, storms, and harmful algal blooms (Jessup et al., 2009; North American Bird Conservation Initiative U.S. Committee, 2009; Onley & Scofield, 2007). In addition, seabird distribution, abundance, breeding, and other behaviors are influenced by cyclical environmental events, such as the El Niño Southern Oscillation and Pacific Decadal Oscillation in the Pacific Ocean (Congdon et al., 2007; Vandenbosch, 2000).

Within the last two decades, a fungal infection called white-nose syndrome emerged as a significant threat, causing declines in cave-hibernating bat species. Other threats at the hibernacula include modifications to caves, mines, and surrounding areas that change airflow and alter the microclimate within the hibernacula. Human disturbance and vandalism pose significant threats during hibernation

through direct mortality and by inducing arousal and consequent depletion of bat fat reserves. Natural catastrophes can also have a significant effect during winter because of the concentration of individuals in a relatively few sites. Habitat loss and degradation and temperature and precipitation changes related to environmental variability affects bats on breeding grounds, as well as along migratory pathways and wintering areas. Pesticides and other contaminants, especially those directly impact the food supply of bats (U.S. Fish and Wildlife Service, 2007). Collision with moving turbine blades at wind energy facilities are to also a threat at local and regional levels (U.S. Fish and Wildlife Service, 2007, 2022c). Increased temperature to hibernacula due to any changes in the microclimate (e.g., human disturbance, environmental variability) can further facilitate the spread of white-nose syndrome creating potentially cumulative impacts to this species (McCoshum et al., 2023).

F.7.2 Endangered Species Act-Listed Species

The following sections provide detailed species descriptions, including status and management, habitat and geographic range, population trends, predator and prey interactions, and species-specific threats for birds and bats listed under the ESA. Changes in the ESA listings and critical habitat designations since the 2018 Final EIS/OEIS include:

- listing of the black-capped petrel as endangered in 2024;
- listing of northern long-eared bat as endangered in 2023;
- proposed listing of tricolored bat as endangered in 2021; and
- proposed critical habitat for red knot in 2023.

F.7.2.1 Piping Plover (*Charadrius melodus melodus*)

The piping plover is divided into two subspecies. The piping plovers that breed on the Atlantic coast of the United States and Canada belong to the Atlantic subspecies *C. m. melodus* (U.S. Fish and Wildlife Service, 2020b) and occur within the Study Area.

F.7.2.1.1 Status and Management

The USFWS listed the Atlantic coast piping plover population as threatened under the ESA in 1985 (50 *Federal Register* 50726) and has instituted a recovery plan for this shorebird species (U.S. Fish and Wildlife Service, 1996). In 2001 and 2002, critical habitat was designated for the Great Lakes breeding population and Northern Great Plains breeding population (66 *Federal Register* 22938; 67 *Federal Register* 57638, respectively), and for all three breeding populations while on their wintering grounds (66 *Federal Register* 36038, July 10, 2001). Critical habitat for wintering plovers has been designated in coastal areas near or within the Study Area as shown in Figure 3.9-1 through Figure 3.9-4.

The USFWS designated 137 areas along the coasts of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas as critical habitat for wintering populations. This critical habitat includes 1,798.3 mi. (2,891.7 km) of mapped shoreline and 165,211 acres (66,881 hectares [ha]) of mapped area along the gulf and Atlantic coasts and along interior bays, inlets, and lagoons (66 *Federal Register* 36038, July 10, 2001). In 2008 and 2009, the USFWS updated designated critical habitat for wintering piping plover populations in North Carolina and Texas, adding 2,043 acres (827 ha) in North Carolina and 139,029 acres (56,263 ha) along the Gulf Coast of Texas (73 *Federal Register* 62816, October 21, 2008; and 74 *Federal Register* 23476, May 19, 2009, respectively). Any critical habitat located above the mean high tide line is outside the Study Area, as described in Section 3.0.2 (Ecological Characterization of the Study Area).

The 2004 National Defense Authorization Act allows military installations to be excluded from critical habitat designation for endangered species under the ESA provided that the installation's Integrated Natural Resource Management Plan (INRMP) affords (1) a benefit to the species; (2) certainty that the management plan will be implemented; and (3) certainty that the conservation effort will be effective. On Navy installations with an approved INRMP where piping plovers breed or overwinter, the Navy is exempt from critical habitat designations.

F.7.2.1.2 Habitat and Geographic Range

In the Study Area, the Atlantic breeding population of piping plovers nest and breed on coastal beaches from southern Maine to North Carolina and are primarily an inhabitant of sandy shorelines in the northeast and southeast U.S. Continental Shelf Large Marine Ecosystems (Haig & Elliott-Smith, 2004; O'Brien et al., 2006). Piping plovers nest above the mean high tide line (outside the Study Area) on coastal beaches, sand flats at the ends of sandpits and barrier islands, gently sloping foredunes (dunes parallel to the shoreline), blowout areas behind primary dunes, and washover areas cut into or between dunes (U.S. Fish and Wildlife Service, 1996). Individuals migrate through and winter in coastal areas of the United States from North Carolina to Texas and portions of Yucatan in Mexico and the Caribbean (U.S. Fish and Wildlife Service, 2009c). Different breeding populations tend to occur in different coastal wintering areas, although there is some overlap (Gratto-Trevor et al., 2012). In winter, the species is only found in coastal areas in habitats that include mudflats and dredge spoil areas and, most commonly, sandflats (Gratto-Trevor et al., 2012; O'Brien et al., 2006). Plovers appear to prefer sandflats adjacent to inlets or passes, sandy mudflats along spits (beaches formed by currents), and overwash areas as foraging habitats. Piping plover migration routes overlap with breeding and wintering habitats.

Recovery results from birds banded during the breeding season indicate that most Atlantic coast breeders winter along the southern Atlantic coast from North Carolina to Florida, although some birds have been reported to winter in Texas (Gratto-Trevor et al., 2012). Evidence suggests that most of the Great Lakes population winters south along the Atlantic coast. Both spring and fall migration routes are believed to follow the Atlantic coast (Gratto-Trevor et al., 2012). Evidence suggests that most of the threatened Northern Plains population winters on the Gulf Coast (Gratto-Trevor et al., 2012). Islands in the Caribbean, the Bahamas and West Indies, serve as important wintering habitat (U.S. Geological Survey, 2007).

F.7.2.1.3 Population Trends

A 1991 international census documented 5,482 piping plovers and a decade later in 2001 the population estimate was 5,945 piping plovers (Haig & Elliott-Smith, 2004). The current population has been estimated to be between 7,600 to 8,400 individuals (BirdLife International, 2023a). Coastal Atlantic United States populations have trended upward since listing, though some areas' breeding populations are remaining at depressed levels and showing little or no increase in size. Since its 1985 listing, the Atlantic coast population estimate has increased from 790 pairs to an estimated 1,900 pairs in 2016, and the United States portion of the population has almost tripled, from approximately 550 pairs to an estimated 1,700 pairs (U.S. Fish and Wildlife Service, 2020b). Between 1989 and 2008, the New England population increased while the other three populations experienced decreases. The New York – New Jersey population decreased by 35 percent between 2007 and 2014, the southern population decreased by 24 percent from 2016 to 2018, and the eastern Canada population decreased 35 percent from 2007 to 2017 (U.S. Fish and Wildlife Service, 2020b). Also, the Maine population declined 64 percent, from 66 pairs in the year 2002 to 24 pairs in 2008, mostly due to loss of habitat from spring storms and dune stabilization projects. More recently, numbers have declined, with 3,973 piping plovers observed during the winter census of the 2011 International Piping Plover Census, with Texas having by far the largest

number of any state (2,145), and more than 1,000 piping plovers discovered wintering in the Bahamas (Elliott-Smith et al., 2015). The 2011 breeding census resulted in an estimated breeding population of at least 5,723 birds, 75 percent of which were in the United States, with a breeding population of 1,476 pairs in the Atlantic coastal states (Elliott-Smith et al., 2015). Though the abundance of the Atlantic coast plovers has reduced near-term extinction threats, geographic variation in population growth and sensitivity to survival and productivity are cause for continuing conservation concern (U.S. Fish and Wildlife Service, 2009a).

F.7.2.1.4 Predator and Prey Interactions

Feeding habitats of breeding piping plovers include intertidal portions of ocean beaches, washover areas, mudflats, sandflats, wrack lines (line of deposited seaweed on the beach), shorelines of coastal ponds, lagoons, and salt marshes (Gratto-Trevor et al., 2012; U.S. Fish and Wildlife Service, 1996). They hunt visually using a start-and-stop running method, gleaning and probing the substrate for a variety of small invertebrates (marine worms, crustaceans, molluscs, insects, and the eggs and larvae of many marine invertebrates) (Maslo et al., 2012; U.S. Fish and Wildlife Service, 1996). Foraging occurs throughout the day and at night.

Piping plovers are preyed upon by a large array of terrestrial and aerial species and have been identified as a substantial source of mortality for piping plover eggs and chicks. These predators, such as crows, gulls, raptors, raccoons (*Procyon lotor*), ghost crabs (*Ocypode quadrata*), domestic cats (*Felis domesticus*), domestic dogs (*Canis lupus familiaris*), coyotes (*Canis latrans*), the Virginia opossum (*Didelphis virginiana*), the American mink (*Neovison vison*), and the red fox (*Vulpes vulpes*) (Stantial et al., 2021).

F.7.2.1.5 Species-Specific Threats

The localized declines of the Atlantic coast piping plover population is attributed to habitat loss and degradation and increased predator populations in coastal environments (U.S. Fish and Wildlife Service, 1996). Excessive disturbance may cause the parents to flee the nest, exposing eggs or chicks to the hot sun or predators. High disturbance levels around nest sites can also result in the abandonment of nests and, ultimately, decreased breeding success (Cohen & Gratto-Trevor, 2011). Causing parents or juveniles to flush while foraging may stress juveniles enough to negatively influence critical growth and development. The birds will flush in the presence of dogs, and often react to dogs at farther distances than they do with people (Mengak et al., 2019). In areas where dogs are off leash, the dogs will often chase the birds, eliciting a high stress response to the piping plover, which can negatively impact that individual's survival (Rutter, 2016). Few areas used by wintering piping plovers are free of human disturbance, and nearly 50 percent have leashed and unleashed dog presence (U.S. Fish and Wildlife Service, 2009c).

Along the Atlantic coast, commercial, residential, and recreational development have decreased the amount of coastal habitat available for piping plovers. Trends show continued loss and degradation of habitat in migration and wintering areas due to sand placement projects, inlet stabilization, sand mining, erosion prevention structures (groins, seawalls, and revetments, exotic and invasive vegetation, and wrack removal) (U.S. Fish and Wildlife Service, 2009c). Unusual events, such as hurricanes, can impact hundreds of young-of-the-year and adults. Storms can also, over time, positively impact local piping plover populations by leveling dunes and creating suitable nesting habitat (U.S. Fish and Wildlife Service, 1996). Beach development and stabilization activities, dredging, recreational activities, and pollution are factors that impact the plover population on wintering grounds (U.S. Fish and Wildlife Service, 1996). There are also unknown sources of mortality experienced during migration or on the wintering grounds

(Calvert et al., 2006; Root et al., 1992). Recent data suggest that lighting on vessels and on offshore oil and gas platforms may cause mortality and could help explain some of these unknown mortality events (Merkel & Johansen, 2011). New potential threats include wind turbine development projects that introduce the possibility of collision, disturbance, and displacement of plovers (Burger et al., 2011). Another threat is sea level rise that would directly impact Atlantic coast piping plovers breeding and wintering habitat (U.S. Fish and Wildlife Service, 2009c).

F.7.2.2 Red Knot (*Calidris canatus rufa*)

Red knots are found on the Atlantic coast of the United States and Canada. They belong to the subspecies *C. canutus rufa* (Cornell Lab of Ornithology, 2013). This subspecies of red knot, referred to as the rufa red knot, is listed as threatened under the ESA.

F.7.2.2.1 Status and Management

Four petitions to emergency list the red knot have been submitted since 2004, and in December of 2014, the USFWS listed the red knot as threatened under the ESA (79 *Federal Register* 73706). Critical habitat was proposed in 2021 (86 *Federal Register* 37410), and the comment period was reopened in 2023 to consider additional areas (88 *Federal Register* 22530). Proposed Critical Habitat includes coastal areas near or within the Study Area as shown in Figure 3.9-5 through Figure 3.9-8.

The physical and biological features for the rufa red knot proposed critical habitat include: (1) beaches and tidal flats used for foraging; (2) upper beach areas used for roosting, preening, resting, or sheltering; (3) ephemeral and/or dynamic coastal features used for foraging or roosting; (4) ocean vegetation deposits or surf-cast wrack used for foraging and roosting; (5) intertidal peat banks used for foraging and roosting; (6) features landward of the beach that support foraging or roosting; and (7) artificial habitat mimicking natural conditions or maintaining the physical or biological features (1) through (6) (88 *Federal Register* 22530).

The key elements of the species recovery plan include: (1) conserving populations of red knots among the four Recovery Units; (2) improve the resiliency of the Southern and Western Gulf of America /Central America/Pacific Recovery Units; (3) protect crucial nonbreeding habitats for adults and juveniles; and (4) monitoring breeding habitats while tracking reproductive success. Protection of the Southern Recovery Unit is important as this unit migrates the longest distance making them more vulnerable to threats. The Western Gulf of America /Central America/Pacific Recovery Unit is the smallest unit and use noncoastal habitats during their migration (U.S. Fish and Wildlife Service, 2023b). The Western Hemisphere Shorebird Reserve Network has established an international network of wetlands in an effort to protect important sites used by shorebirds, including the red knot (Tsipoura & Burger, 1999). Additionally, efforts to develop protection for Delaware Bay, an important migration staging area for red knots, are underway by the Western Hemisphere Shorebird Reserve Network (Cornell Lab of Ornithology, 2013).

F.7.2.2.2 Habitat and Geographic Range

The species breeds on the central Canadian arctic and migrates to four wintering regions: (1) the southeast United States and through the Caribbean; (2) the western Gulf of America from Mississippi through Central America; (3) northern Brazil and extending west along the northern coast of South America; and (4) Tierra del Fuego at the southern tip of South America (mainly in Chile) and extending north along the Patagonian coast of Argentina (U.S. Fish and Wildlife Service, 2020d). Red knots show very high fidelity to each of the four wintering regions. Red knots will briefly use important stopover areas such as the Delaware Bay to forage before returning to their breeding grounds each year. An

interior red knot population winters in Texas and Louisiana and migrates through the west and Midwest to central Canada.

Red knots migrate some of the longest distances known for birds, with many individuals annually flying more than 19,000 mi. (30,000 km) (U.S. Fish and Wildlife Service, 2020d), during which they may cross over each of the open-ocean areas in the Study Area. However, outside of migration they are typically found in nearshore habitats along coastlines. Fall migration peaks in August with birds flying south along the Atlantic coast to major wintering grounds on the coasts of Argentina and southern Chile (Cornell Lab of Ornithology, 2013). During migration stopovers, the red knot uses marine habitats and generally prefers coastal, sandy habitats near tidal bays, inlets, and estuaries for foraging (Cornell Lab of Ornithology, 2013). Red knots migrate in large flocks and stop over at the same coastal sites along the Atlantic coast during spring migration to feed on eggs of horseshoe crabs (*Limulus polyphemus*). In particular, Delaware Bay is one of the largest known spring (mid-May to early June) stopover sites for this species (71 *Federal Register* 53756, September 12, 2006) (Clark et al., 1993). Up to 80 percent of the entire estimated red knot population has been observed at once in the Delaware Bay during spring migration, leading to the area being designated as the first hemispheric site in the Western Hemisphere Shorebird Reserve Network (Clark et al., 1993; Niles et al., 2008; Tsipoura & Burger, 1999).

During fall and spring migration and winter months, red knots occur in nearshore coastal habitats, along the Atlantic and gulf coasts from southern New England to Florida and into the Gulf of America (Cornell Lab of Ornithology, 2013). The Virginia Atlantic barrier islands are a second major stopover location, with red knot peak counts between 5,500 and 9,100 birds since 1995 (Niles et al., 2008). They primarily occur in intertidal surf zone habitats, particularly near coastal inlets, estuaries, and bays.

F.7.2.2.3 Population Trends

The red knot population was previously estimated at 100,000 to 150,000 individuals in the 1980s (Niles et al., 2008). However, annual aerial and ground surveys of Delaware Bay show fluctuation but generally a downward trend. Population surveys during the stopover period in the spring of 1998 at Delaware Bay estimated 50,000 red knots. In 2004, the same survey was repeated, and the estimated population was substantially lower at 18,000 (Niles et al., 2008). Surveys of red knots at both migration stopover sites and wintering grounds continually show substantial population declines in recent decades (71 *Federal Register* 53756, September 12, 2006). For example, surveys during the mid-1980s of wintering red knot populations in South America (Argentina and Chile) provided an estimate of 67,500 individuals (Niles et al., 2008); but according to the USFWS, since 2005, numbers have been under 20,000 birds, and dipped below 10,000 in 2011. Recent wintering counts are similarly low with just over 13,000 individuals observed in 2019 and less than 12,000 in 2020 (U.S. Fish and Wildlife Service, 2020d). Studies from 1994 to 2002 also show decreased annual adult survival rates related to these population declines (Niles et al., 2008).

F.7.2.2.4 Predator and Prey Interactions

Red knots forage by surface pecking and probing for intertidal invertebrates and various species of mussels and other molluscs (Cornell Lab of Ornithology, 2013). During spring migration, a major food source for red knots are horseshoe crab eggs; millions of which can be found in the Delaware Bay during the second half of May (Botton et al., 1994). Red knot migration coincides with the horseshoe crabs laying their eggs, allowing birds to restore their fat reserves to continue their northward migration to their breeding grounds in the Arctic (Cornell Lab of Ornithology, 2013; Tsipoura & Burger, 1999).

Outside of the breeding grounds, red knot predators include the peregrine falcon (*Falco peregrinus*), merlin (*Falco columbarius*), northern harrier (*Circus cyaneus*), short-eared owl (*Asio flammeus*), great

black-backed gull (*Larus marinus*), and accipiters (*Accipiter* spp.) (Niles et al., 2008). Predators on breeding grounds include arctic fox (*Alopex lagopus*), long-tailed jaeger (*Stercorarius longicaudus*), and parasitic jaeger (*Stercorarius parasiticus*) (Piersma et al., 1993).

F.7.2.2.5 Species-Specific Threats

The red knot is threatened under the ESA mainly by habitat loss and degradation of foraging resources such as reduction of horseshoe crab populations (U.S. Fish and Wildlife Service, 2010c). Horseshoe crabs are harvested for their blood for biomedical research and their eggs for bait in the conch and eel fishing industries; consequently, the reduction in the amount of horseshoe crab eggs available for red knots, especially in Delaware Bay, is believed to be the cause of lower weight gain in red knots during migratory stopovers and contributing to lower adult survival (Niles et al., 2008). Beach erosion, shoreline protection and stabilization projects, human disturbance, limited food resources, oil spills, red tides, hunting, and severe weather all threaten the stability of the population (Niles et al., 2008; U.S. Fish and Wildlife Service, 2010c). Because large percentages of the entire population gather at single sites during migration (i.e., Delaware Bay) and winter, the species is especially vulnerable to loss of key resources at these sites (Clark et al., 1993; Cornell Lab of Ornithology, 2013; Niles et al., 2008).

F.7.2.3 Roseate Tern (*Sterna dougallii*)

Five subspecies of the roseate tern have been described, though some taxonomic designations are uncertain: *S. d. dougallii* in the North Atlantic, Europe, and the Caribbean; *S. d. korustes* in India, Sri Lanka, and Burma; *S. d. gracilis* in Australia and Indonesia; and *S. d.arideensis* on the Seychelles Islands (Cornell Lab of Ornithology, 2014). All subspecies are similar in appearance to *S. d. dougallii*, with slight differences in wing length and bill color. The North Atlantic and Caribbean population of *S. d. dougallii* is the subspecies that occurs within the Study Area (U.S. Fish and Wildlife Service, 2010a).

F.7.2.3.1 Status and Management

In 1987, the USFWS listed the roseate tern as endangered under the ESA along the Atlantic coast of the United States (Maine to North Carolina); in Canadian provinces of Newfoundland, Nova Scotia, and Quebec, as well as in Bermuda (52 *Federal Register* 42064). The species is listed as threatened under the ESA in the Western Hemisphere, including Florida, Puerto Rico, and the Virgin Islands (52 *Federal Register* 42064). No critical habitat has been designated for this species in the United States. In 2006, Canada designated critical habitat for the species (U.S. Fish and Wildlife Service, 2010a). Recovery and management plans have been implemented to protect breeding colonies, foraging areas, and wintering grounds(U.S. Fish and Wildlife Service, 1993, 1998). The plans intend to increase breeding population size, distribution, and productivity by maintaining, expanding, and enhancing nesting habitat (U.S. Fish and Wildlife Service, 1998). Recovery and management methods include posting nesting areas with signs and fencing, discouraging and controlling competing gull species, managing vegetation to enhance nesting habitat, and attempting to attract individuals to historically occupied sites (U.S. Fish and Wildlife Service, 1998).

F.7.2.3.2 Habitat and Geographic Range

Roseate terns arrive at their breeding grounds in late April and early May (early to mid-May in the Caribbean population) and spend approximately 2 weeks feeding before they occupy nesting grounds (U.S. Fish and Wildlife Service, 1998). Northeastern roseate terns migrate in late August and early September, traveling in groups through the eastern Caribbean and along the north coast of South America to wintering grounds along the northern and eastern South American coast (Cornell Lab of Ornithology, 2014; Kirkham & Nettleship, 1987; National Audubon Society, 2017; U.S. Fish and Wildlife Service, 1998, 2010a). The migratory pathway of Caribbean birds is not known, but the route is almost

certain to be 2,000 to 4,000 km (1,243 to 2,485 mi.) shorter than the route taken by the northeastern population (U.S. Fish and Wildlife Service, 2010a).

Roseate terns are colonial breeders. The Caribbean population of roseate tern breeds from the Florida Keys through the West Indies to islands off Central America and northern South America (U.S. Fish and Wildlife Service, 1993). In the Study Area, the Gulf of Mexico and Caribbean Sea Large Marine Ecosystems contain the population in the Florida Keys and Dry Tortugas, and Puerto Rico. The North Atlantic populations are known to nest on a limited number of small islands off New York and Massachusetts, while the Caribbean population similarly nests in Puerto Rico, the Dry Tortugas, and the Florida Keys, as well as other non-U.S. affiliated Caribbean islands (Cornell Lab of Ornithology, 2014). They nest on islands near or under cover, such as vegetation, rocks, driftwood, and even human-made objects. They have also been documented nesting on sand dunes found at the end of barrier beaches (U.S. Fish and Wildlife Service, 1998). North American roseate terns use moderately to heavily vegetated sites for nesting (Burger & Gochfeld, 1988). Unlike the northeastern population, Caribbean roseate tern nests are exposed, occurring on vegetation or rocks, open sandy beaches, narrow rock ledges close to the water line, or among coral rubble (U.S. Fish and Wildlife Service, 1993). The exposure of these nests leaves them vulnerable to flooding from large storms, which has been documented to occur on Pelican Shoal in the Florida Keys (U.S. Fish and Wildlife Service, 2022d).

Within the Study Area, North American roseate terns occur within open-ocean areas (Gulf Stream and North Atlantic Gyre) more often during migration and staging for migration than during winter or the breeding season. Between May and September, small numbers of common and roseate terns are widely distributed at sea, southeast of Cape Cod and throughout the Gulf of Maine, east to the southeast edge of Georges Bank. Flocks of terns, including roseate terns, have been observed resting on the sea. Such occurrences at sea are typically associated with the occurrence of predatory fish (e.g., tuna) that drive prey species to the surface (U.S. Fish and Wildlife Service, 2010a). Roseate terns have been observed to forage up to 50 km for nest sites off the northeast coast of the United States (Bureau of Ocean Energy Management, 2019).

Most breeding North American roseate terns occur in this large marine ecosystem from late April/early May to late August/early September (Table 3.9-1). Approximately 90 percent of the northeast population breeds at two large colonies on Great Gull Island, New York; and Bird and Ram Island, Massachusetts (U.S. Fish and Wildlife Service, 2020c). Sand flats and beaches of southeastern Massachusetts, particularly along outer Cape Cod and nearshore islands provide important roosting and loafing habitats during fall staging. The Nantucket Shoal between the Massachusetts mainland and the islands of Martha's Vineyard and Nantucket is a particularly important foraging area for the entire northeastern population (U.S. Fish and Wildlife Service, 2010a). Wintering North American roseate terns occur along the southeast Atlantic and gulf coasts (U.S. Fish and Wildlife Service, 2010e). The Caribbean population of roseate tern breeds from the Florida Keys through the West Indies to islands off Central America and northern South America (U.S. Fish and Wildlife Service, 1993). Within the Study Area, the Gulf of Mexico and Caribbean Sea Large Marine Ecosystems contain the population in the Florida Keys and Dry Tortugas, and Puerto Rico.

F.7.2.3.3 Population Trends

The estimated global population of roseate terns is approximately 200,000 to 220,000 (BirdLife International, 2023b). They are a widespread species that breed on every continent except Antarctica, with populations in the Indian Ocean, Caribbean, Australasian, European, African, and North American regions (Gochfeld, 1983). Approximately 4,374 pairs are estimated in the northeast U.S. population, with an additional 63 pairs in Canada (U.S. Fish and Wildlife Service, 2020c). Within the Caribbean population,

approximately 1,000 pairs occur in Puerto Rico, with an estimated 500 to 2,300 pairs in the U.S. Virgin Islands (Cornell Lab of Ornithology, 2014). The roseate tern experienced drastic declines in the late 19th century due to commercial hunting of feathers for the millinery (hat-making) industry (U.S. Fish and Wildlife Service, 1998), as well as humans seeking eggs for food (Kirkham & Nettleship, 1987). Populations again showed decline in the 1940s and 1970s as the geographic range and the number of breeding colonies decreased (U.S. Fish and Wildlife Service, 1998).

Groups of roseate terns can be small due to their limited population size and limited nesting habitat in North America. In the northeast, breeding colonies of roseate terns range from 2 to more than 1,000 pairs, depending on breeding colony location (U.S. Fish and Wildlife Service, 1998). After chicks fledge from their breeding colonies, terns tend to congregate in large numbers at post-breeding staging areas to build up energy reserves for their seasonal fall migration to South America (U.S. Fish and Wildlife Service, 2010a). Northeastern roseate terns are always mixed with gulls and other species of terns, while populations in the Caribbean and the Seychelles Islands are known to form single-species colonies (Cornell Lab of Ornithology, 2014). Duffy (1986) found that roseate terns foraging in smaller flocks experienced higher survival rates, while in larger groups they were often out-competed by common terns.

F.7.2.3.4 Predator and Prey Interactions

The roseate tern is a coastal species that forages for small schooling fishes over shallow waters around bays, channels, sandbars, shoals, and reefs (Cornell Lab of Ornithology, 2014; Nisbet & Spendelow, 1999). They are also known to forage out over deeper waters than other tern species (Olsen & Larsson, 1995). Local commutes of up to 16 mi. (25 km) from nesting grounds to dependable foraging sites have been documented (Nisbet & Spendelow, 1999). During chick provisioning flights, breeding roseate terns have been observed foraging over 30 mi (50 km) offshore (Loring et al., 2019). Roseate terns generally concentrate in areas where prey is available close to the surface, driven there either by water movements or larger predatory fish.

Roseate terns are specialized aerial plunge-divers that often completely submerge themselves when seizing fish (U.S. Fish and Wildlife Service, 2010e). Roseate terns tend to plunge from heights above the water's surface ranging from 3 to 20 ft., although plunges from greater than 39 ft. have been observed (Cornell Lab of Ornithology, 2014). Roseate terns do not plunge deep into the water column, usually less than 3 ft. Given the shallow depth of dives, submergence times of roughly 1-2 seconds can be anticipated. Roseate terns will often fly into the wind and hover (a behavior known as "kiting") with rapid wingbeats and then, with accelerated flapping, aerial plunge into the water (Kaufman, 1990; U.S. Fish and Wildlife Service, 1998). Prey species are herring, mackerel, anchovies, and sand eels (Cornell Lab of Ornithology, 2014).

Roseate tern eggs and young are preyed upon by hermit and land crabs, ants, snakes, other birds (e.g., hawks, owls, gulls, and some shorebirds), and mammals such as rats and feral cats (U.S. Fish and Wildlife Service, 1993).

F.7.2.3.5 Species-Specific Threats

Roseate tern population declines have been attributed to commercial hunting and egg collection, habitat loss and disturbance, organochlorine contamination, predation, and competition from gulls (U.S. Fish and Wildlife Service, 1998). These threats, combined with the small number of breeding sites used by the species, warranted the listing of the species (Nisbet & Spendelow, 1999). Roseate terns are sensitive to disturbance on their nesting grounds, and many suitable nesting sites have been lost or abandoned due to the expansion of recreational, residential, and commercial use (Gochfeld, 1983).

Beach erosion and the expansion of gull populations have also displaced roseate terns from suitable nesting habitat (Cornell Lab of Ornithology, 2014). Roseate terns are vulnerable to predation and flooding because they nest on the ground, often in low-lying areas (Gochfeld, 1983). Storms and prolonged periods of cold, wet weather also impact nest success (U.S. Fish and Wildlife Service, 1993). Sea level rise may exacerbate erosion of nesting grounds. More severe or more frequent storms may disturb these habitats and result in reduced survival of adults, eggs, chicks, and fledglings (U.S. Fish and Wildlife Service, 2010a). Starvation is likely a greater cause of death during the winter in areas such as the southern Caribbean where nutrients are relatively poor (Gochfeld, 1983). Although little is known about roseate tern ecology during migration and wintering periods, one major cause of death is believed to be humans hunting this species on its wintering grounds (outside the United States) (Cornell Lab of Ornithology, 2014). Emerging potential threats include wind turbine development projects that introduce the possibility of collision, disturbance, and displacement of this species during the breeding and migratory seasons (Burger et al., 2011).

F.7.2.4 Bermuda Petrel (*Pterodroma cahow*)

F.7.2.4.1 Status and Management

The USFWS listed the Bermuda petrel as endangered under the ESA in 1970 (35 *Federal Register* 8498). There is no designated critical habitat for this seabird species. This extremely rare seabird nests only in Bermuda in the Atlantic Ocean (White, 2004). The Bermuda petrel was thought to be extinct for about three decades until its existence was confirmed in the mid-1900s. In 1951, 18 pairs of the Bermuda petrel (commonly referred to as "cahow") were rediscovered breeding on a group of four rocky islets in Castle Harbor, Bermuda. An intensive recovery and management program followed, which included removing predators, such as rats (Murphy & Mowbray, 1951), and adapting nest burrow entrances with baffles and artificial burrows to prevent nest site competition with the white-tailed tropicbird (*Phaethon lepturus*) (Murphy & Mowbray, 1951). Efforts to establish a new breeding colony in the higher areas of Nonsuch Island Nature Reserve have been slow but promising (Dobson & Madeiros, 2009). The total population is estimated at approximately 250-275 individuals with 71 breeding pairs in 2005, 96 breeding pairs in 2009 (Dobson & Madeiros, 2009), and 101 breeding pairs in 2012 (U.S. Fish and Wildlife Service, 2013). Based on the USFWS 5-year review of the status of Bermuda petrel, the total population of the cahow is estimated as 250-275 individuals (U.S. Fish and Wildlife Service, 2019).

F.7.2.4.2 Habitat and Geographic Range

The Bermuda petrel is a pelagic species and spends most of its life at sea, except during the breeding season from January to June where it comes ashore to breed. Breeding occurs outside the Study Area, exclusively in Bermuda on five small islets off Nonsuch Island in the North Atlantic Gyre (National Audubon Society, 2005). Available islet nesting habitat is limited to 2.4 acres (0.97 ha), which is occupied by a varying number of breeding pairs each year (BirdLife International, 2008b). During the breeding season, the Bermuda petrel arrives and leaves the island only at night to avoid predation (Wurster & Wingate, 1968). During the breeding season, the Bermuda petrel nests in colonies, but is otherwise solitary (Onley & Scofield, 2007). Due to its solitary behavior the Bermuda petrel is unlikely to approach ships (Enticott & Tipling, 1997; Onley & Scofield, 2007). More specific nest density or colony size information was not found.

Raine et al. (2021) deployed GPS tags on 6 chick-rearing adults in April 2019. The maximum distance birds flew from Bermuda during foraging trips ranged from 61 to 2,513 km. Results indicated that foraging habitat exists beyond the core home range of the population, as far north as the highly productive Gulf Stream frontal system, and within the territorial waters of both the U.S. and Canada.

In the nonbreeding season (June–December) (Brooke, 2004), the species migrates from the breeding grounds in Bermuda to foraging routes over much of the Atlantic Ocean, including waters of the North Atlantic Gyre and the Gulf Stream (includes off-shelf portions of the Virginia Capes and Navy Cherry Point Range Complexes) (Lee & Mackin, 2008; National Audubon Society, 2005; Onley & Scofield, 2007). However, dispersal and at-sea distribution are generally poorly known (Brooke, 2004; Onley & Scofield, 2007). One additional migration route was recorded into the northeast Atlantic, off the coast of southwestern Ireland (Dobson & Madeiros, 2009). First reported off North Carolina's Outer Banks in April 1983 (Lee, 1987), today the species regularly occurs off the North Carolina coast (National Audubon Society, 2005; White, 2004). Recent data recorded during the nonbreeding season documented western routes to the Gulf Stream and northern movements to the Bay of Fundy, into the Gulf of St. Lawrence, and over the Grand Banks. An additional route was recorded off the coast of southwestern Ireland (Madeiros, 2009).

F.7.2.4.3 Population Trends

The Bermuda petrel is an extremely rare seabird that is slowly but steadily increasing: 18 pairs were recorded in the year 1951; 70 pairs raising 40 young were recorded in 2003; and 71 pairs raising 35 young were recorded in 2005 (International Union for Conservation of Nature and Natural Resources, 2010a). The reproductive output between 2000 to 2001 and 2007 to 2008 ranged from 29 to 40 fledglings per year (Madeiros et al., 2012). Conservation efforts continue and the species is recovering in number, with the population estimated at 250-275, with 101 breeding pairs as of 2012 (U.S. Fish and Wildlife Service, 2013). In 2021, 143 breeding pairs were recorded, producing a total of 71 fledged chicks (Bermuda Government Department of Environment and Natural Resources, 2021).

F.7.2.4.4 Predator and Prey Interactions

Bermuda petrels feed mostly on squid, but their diet also consists of shrimp and small fish (National Audubon Society, 2005). Specific information on the feeding behavior of Bermuda petrels is lacking, but petrels of the genus *Pterodroma* often land on the ocean surface where they scavenge or grab prey; they also feed on the wing (while flying), where they are able to catch flying fish (Onley & Scofield, 2007).

Maximum dive depths for several species of *Pterodroma* petrels in New Zealand were determined from depth gauges that were attached to individual birds and recovered after varying lengths of time during which the birds were foraging at sea (Taylor, 2008). Mean maximum dive depths ranged from 1.1 to 4.7 m, with a maximum depth recorded of 23 m. Maximum dive depths were similarly determined for the Providence petrel (*Pterodroma solandri*), an Australian species, and found to average 2.9 m (Bester et al., 2011). It is reasonable to conclude that in addition to feeding at the surface, petrels of the genus *Pterodroma,* (probably including the Bermuda petrel) frequently engage in surface plunging or pursuit diving to reach prey several meters below the surface. No data are available on submergence times, but to reach these depths presumably requires a petrel to be underwater for roughly 5 to 10 seconds.

Predator information for Bermuda petrels is also not well understood but based on live webcams that have been monitoring nests of the petrels since 2011, some potential predatory behavior can be observed on the eggs. Land crabs have been observed eating inviable eggs and individuals of competing petrel species have also been observed lurking in or around active Bermuda petrel nest sites (Kannan et al., 2021).

F.7.2.4.5 Species-Specific Threats

Current threats to this species include habitat loss; competition for nest sites with the white-tailed tropicbird (Dobson & Madeiros, 2009); egg failure from contaminants (Brooke, 2004; Wurster & Wingate,

1968); light pollution from a nearby Bermuda airport; sea level rise; and increasing frequency and magnitude of tropical storms and hurricanes, which destroy nests through erosion, wave damage, and flooding (BirdLife International, 2008a, 2008b; Dobson & Madeiros, 2009; Madeiros et al., 2012; U.S. Fish and Wildlife Service, 2013). The USFWS 5-year review of the status of Bermuda petrel lists the following threats: hurricane erosion of the breeding islands, sea level rise, physical constraints of the present nesting areas, natural and introduced predators, nest site competition from white-tailed tropic bird (*Phaethon lepturus*), and nest predation by rats and avian predators (U.S. Fish and Wildlife Service, 2019).

F.7.2.5 Black-Capped Petrel (*Pterodroma hasitata*)

F.7.2.5.1 Status and Management

The black-capped petrel was listed as endangered in January of 2024 (88 *Federal Register* 89611). Critical habitat for the black-capped petrel is now identified to be prudent but is not determinable currently. The USFWS anticipates publishing proposed critical habitat for the black-capped petrel in the future (U.S. Fish and Wildlife Service, 2023c). The black-capped petrel is a pelagic seabird that is endemic to the western North Atlantic whose breeding distribution is not well known. It was considered extinct in the mid-1900s but was rediscovered in 1963 when evidence was obtained which indicated that a fair-sized population was still breeding on the Massif de la Selle of southeastern Haiti (Wingate, 1964). Previous nesting area in Valle Nuevo in the Cordillera Central of the Dominican Republic was documented to support nesting only as recently as 2018 (Jodice et al., 2021). Confirmed breeding of the four known colonies is restricted to Hispaniola, in both Haiti and the Dominican Republic (U.S. Fish and Wildlife Service, 2018). It may also nest on other Caribbean islands, including Dominica, Guadeloupe, Cuba, or Jamaica (American Bird Conservancy, 2024). The actual population size of the black-capped petrel is unknown, but published estimates range from approximately 2,000 to 4,000 birds, among which are perhaps 500-1,000 breeding pairs across the species' range given data and observations over the past 10-15 years (Simons et al., 2013). Wingate's 1964 estimate compared to Simons' et al. 2013 estimate suggests a decline in abundance of approximately 50 to 75 percent over the last 50 years (U.S. Fish and Wildlife Service, 2018).

F.7.2.5.2 Habitat and Geographic Range

The black-capped petrel spends most of its life at sea, ranging over the Caribbean and into the Gulf of America and Atlantic Ocean, from eastern U.S. waters to northeastern Brazil (American Bird Conservancy, 2024). Black-capped petrels are highly pelagic and undertake long-distance foraging trips. Foraging by black-capped petrels occurs mainly in flocks with observed feeding flocks comprised also of other avian species (Simons et al., 2013). A collection of at-sea observations indicates that waters in or adjacent to the Florida Current and the Gulf Stream between northern Florida and southern Virginia provide a distinct and relatively confined foraging range of black-capped petrels, with concentrations observed there throughout the year (BirdLife International, 2024). The offshore region from southern Florida to Cape Hatteras, North Carolina is the only marine area where regular and sizable concentrations of the species occur (Simons et al., 2013). Most of the world's population of black-capped petrels forages off the coast of the southeastern United States, making this area important for the survival of the species (Simons et al., 2013). At sea, the primary habitat of the black-capped petrel is generally deep waters (e.g., 200 to 2,000 m depths) (U.S. Fish and Wildlife Service, 2018). In such areas, Haney (1987) reported that black-capped petrels were most common near seamounts, submarine ridges, and other benthic landscapes that promoted vigorous current mixing and deep upwelling, which typically bring food items to the surface. Areas of the strongest and most persistent upwelling are where greatest numbers of petrels are found, especially in the deeper offshore zone near southern South Carolina and northern Georgia, and the Cape Hatteras, North Carolina region (Jodice et al., 2015). More

specifically, black-capped petrels are most abundant in the immediate frontal region between current eddies (Simons et al., 2013), and relatively scarce in shallower continental shelf areas (U.S. Fish and Wildlife Service, 2018).

Black-capped petrels occur on land during the breeding season, which is estimated to be from January to July (Simons et al., 2013). Breeding occurs outside the Study Area, exclusively in southwestern Hispaniola (U.S. Fish and Wildlife Service, 2018). These nesting sites are mostly found less than 30 km from the coast (Goetz et al., 2012), although there are some accounts of nests further inland. However, little data exist on specific characteristics of historical nesting sites (U.S. Fish and Wildlife Service, 2018). After fledglings exit from the nest burrow, the nest sites remain vacant until approximately mid-October, when the next nesting cycle begins. Active nest burrows may remain in use by the same pair year after year, although burrows are sometimes abandoned after death of one member of the pair (U.S. Fish and Wildlife Service, 2018).

The geographic distribution of breeding populations needs further study. Using radar surveys, Environmental Protection in the Caribbean (2015) detected 64-320 "petrel-like targets" across eight sites in the Dominican Republic (including three potential new nesting areas), and detections ranging from 6-1,570 individuals across an additional eight sites in Haiti. Similar radar surveys in Dominica detected a total of 968 "petrel-like targets" across 17 locations while also visually confirming at least eight individuals (Environmental Protection in the Caribbean, 2015). Most of the detections were at four locations: Morne Diablotin, Morne Anglais, Morne Micotrin, and Morne Trois Piton. Recent advances in detection methodology, specifically digital acoustic monitoring, helped McKown (2014) find evidence of approximately 60 active nest sites in the nesting areas of southwestern Dominican Republic (U.S. Fish and Wildlife Service, 2018).

F.7.2.5.3 Population Trends

The black-capped petrel has a very small, fragmented and declining breeding range and population. It has already been extirpated from some sites, and declines are likely to continue as a result of habitat loss and degradation, hunting and invasive predators (BirdLife International, 2024). Population estimates and trends for this species has uncertainties because the inherent difficulty of conducting accurate counts, particularly at breeding sites, where all current counts have been conducted (U.S. Fish and Wildlife Service, 2018). Though uncertain, estimates suggest that the numbers of breeding pairs at sites in the Dominican Republic may be between 10 to 100 (Simons et al., 2013), while those in Haiti may range from 500 to 1,500 (Goetz et al., 2012). Both Simons et al. (2013) and Goetz et al. (2012) suggested that nesting areas in Haiti may contain up to 95 percent of currently known nest sites for this species (U.S. Fish and Wildlife Service, 2018).

F.7.2.5.4 Predator and Prey Interactions

The black-capped petrel is primarily nocturnal and crepuscular, feeding on squid, fish, crustaceans, and *Sargassum* (BirdLife International, 2024). In its primary foraging range, it is most influenced by the position of the Gulf Stream, a dynamic current system, and not sea surface temperature or depth (Simons et al., 2013). Their high, arching flight pattern likely facilitates visual detection of potential feeding sites (Simons et al., 2013). Black-capped petrels may also be attracted to waste discarded from ships and fishing vessels. However, it is believed that such attraction may be greatest in times of low or unpredictable natural food abundance (Simons et al., 2013).

Primary predators to the black-capped petrel are land mammals found near nesting sites. Black rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), domestic dogs (*Canis familiaris*), feral pigs (*Sus scrofa*), domestic cats (*Felis domesticus*) and the Indian mongoose (*Herpestes javanicus*) were historically

introduced following European colonization and increased predation pressure (U.S. Fish and Wildlife Service, 2018).

F.7.2.5.5 Species-Specific Threats

The black-capped petrel has threats on land and at sea that impact their population and breeding. Current threats to this species include nesting habitat degradation; harvesting of both adults and nestlings from nest burrows for human consumption; forest fires during their nesting season; predation by introduced mammals; collision with communication towers; artificial lighting; collision of wind farms on and near Caribbean islands; offshore oil and gas activities; exposure to mercury and plastic pollution; entanglement in clear monofilament fishing lines or getting caught in hooks; and more frequent and intense tropical storms (Furness, 2003; Goetz et al., 2012; Simons et al., 2013; U.S. Fish and Wildlife Service, 2018; Wheeler et al., 2021). The USFWS updated Species Status Assessment Report (U.S. Fish and Wildlife Service, 2018) explains in detail each threat to the species and their conservation efforts.

F.7.2.6 Indiana Bat (*Myotis sodalis*)

F.7.2.6.1 Status and Management

The Indiana bat was originally listed as in danger of extinction under the Endangered Species Preservation Act of 1966 and is currently listed as endangered under the ESA. In 2009, its recovery priority was changed from 8 (meaning that the species has a moderate degree of threat and high recovery potential) to 5 (meaning that the species has a high degree of threat and a low recovery potential) due to the emergence and poor understanding of white-nose syndrome (U.S. Fish and Wildlife Service, 2009b). Critical habitat was designated for the species in 1976 (41 *Federal Register* 41914–41916, September 24, 1976). Eleven caves and two mines in six states (Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia) were listed as critical habitat. Significant information gaps remain regarding the species' ecology that hinder sound decision-making on how best to manage and protect the species (U.S. Fish and Wildlife Service, 2007).

F.7.2.6.2 Habitat and Geographic Range

Indiana bats hibernate, typically beginning in mid-October (in northern areas) or by the end of November (in southern areas) and ending by early May (for females) or mid-May (for males), with female peak emergence in mid-April and male peak emergence early May. It is thought that spring migration, which may occur either immediately upon emergence or a few days after emergence, may cause higher mortality due to low fat reserves and food supplies. Large numbers of Indiana bats complete their migration in mid-May, and fall migration begins during the first 2 weeks of August (U.S. Fish and Wildlife Service, 2007). Mating occurs just prior to hibernation (U.S. Fish and Wildlife Service, 2024b).

Hibernacula are patchily distributed northeast-southwest from Vermont to Tennessee, and east-west from Tennessee to Arkansas. Between 1995 and 2005, 281 hibernacula were active for at least 1 year. Of these, only one county (in Connecticut) containing one Priority 4 (i.e., lowest priority) hibernacula was located along the eastern coast of the U.S., and only one county (in New Jersey) containing two Priority 3 (i.e., second-lowest priority) hibernacula are adjacent to a county located along the eastern coast of the U.S. (U.S. Fish and Wildlife Service, 2007).

Confirmed Indiana bat sightings in coastal and coastal adjacent counties since 2007, have been documented in Connecticut, New York, New Jersey, and Florida. However, white nose syndrome was introduced into bat caves in 2006 and associated mortality was evident as of 2007, as the fungus spread throughout the U.S (U.S. Fish and Wildlife Service, 2024f). While coastally adjacent counties in Florida

had one sighting of the Indiana bat in 2007 (Loeb & Winters, 2013), an extensive literature search suggests there has been no other recent sightings of Indiana bats in any county in Florida. Therefore, it is assumed that the species is no longer present in the state of Florida. For the other states, there is evidence of more recent presence of the Indiana bat, although specific county details are unavailable for New York and Connecticut. Thus, the 2007 data are utilized for determining coastal and coastal adjacent county presence and absence in these two states. At the Connecticut sites, the bats were seen in both winter hibernacula and summer maternity roosting. For the one New York County, this species was only seen in its winter hibernacula (Loeb & Winters, 2013). For New Jersey, there was a recent survey completed of all endangered bat species across the state and Indiana bats were found in six coastal and coastal adjacent counties. In all six counties, the species exhibited maternity roosting. In two of the six counties, hibernacula were also identified (U.S. Fish and Wildlife Service, 2023a).

Maternity colonies are generally more clustered, located along the borders of Iowa, Missouri, and Illinois as well as throughout Indiana and southern Michigan (U.S. Fish and Wildlife Service, 2007). Many colonies are present across the Eastern states, but they are mostly inland. At present, the state with the most coastal and coastally adjacent colonies of Indiana bats is New Jersey (U.S. Fish and Wildlife Service, 2023a).

F.7.2.6.3 Population Trends

Estimates of prehistoric Indiana bat populations, based on paleontological evidence, range from 1.7 million to 13 million. One analysis of bone deposits at Bat Cave, Kentucky, in Mammoth Cave National Park, revealed an estimated 300,000 Indiana bats had died during a single flood event; it is uncertain whether this catastrophic population loss occurred during prehistoric times or during a large flood in 1937 that devastated much of the Ohio River valley (U.S. Fish and Wildlife Service, 2007).

When the Indiana bat was originally listed, its range-wide population was estimated at approximately 880,000. In 1983, when the first recovery plan was completed and approved, the range-wide population was estimated at about 550,000. Despite the acquisition and protection of over 35 caves and mines by government agencies or private conservation organizations, the range-wide Indiana bat population was estimated at 353,000 bats in 1997 (U.S. Fish and Wildlife Service, 2009b). These earlier estimates are considered low, however, due to discoveries of new hibernacula. For example, one hibernaculum was discovered in Missouri in 2012 that contained a minimum of 123,000 bats when partially surveyed in January 2013 and over 167,000 bats when more completely surveyed in January 2015. Based on earlier accounts of very large numbers of unidentified bats using this hibernaculum for decades, USFWS decided to add the same number of bats as was found in 2015 (i.e., 167,000) to each previous biennium total for Missouri through 1981. Based on the best available data for the species, USFWS currently estimates that approximately 635,000 bats occurred range-wide in 2007 and that the population fell to approximately 524,000 in 2015 (U.S. Fish and Wildlife Service, 2015). The population has grown slightly based on the population estimate conducted in 2019 that identified 537,297 individuals across 223 hibernacula in 16 states (U.S. Fish and Wildlife Service, 2024b).

F.7.2.6.4 Predator and Prey Interactions

Indiana bats feed on flying insects, with only a very small amount of spiders (presumably ballooning individuals) included in the diet. Four orders of insects contribute most to the diet: Coleoptera, Diptera, Lepidoptera, and Trichoptera. Terrestrial-based prey (moths and beetles) were more common in southern studies, whereas aquatic-based insects (flies and caddisflies) dominated in the north. It is presumed that this difference indicates southern bats foraged more in upland habitats, and northern bats hunted more in wetlands or above streams and ponds. Indiana bats are also known to consume

other flying insects such as Hymenopterans (winged ants) and Asiatic oak weevils (*Cyrtepistomus castaneus*) when opportunistically available (U.S. Fish and Wildlife Service, 2007).

Predators of Indiana bats include snakes, owls, and racoons. However, their nocturnal behavior, flying abilities, and their ability to roots in tall structures makes predation for these species more difficult (Animal Diversity Web, 2024).

F.7.2.6.5 Species-Specific Threats

Threats to the Indiana bat vary during its annual cycle. Within the last 20 years, white-nose syndrome emerged as a significant threat as it causes precipitous declines in populations of cave-hibernating bat species (see the 2018 Final EIS/OEIS Section 3.9.2.1.5.3, Disease and Parasites). Other threats at the hibernacula include modifications to caves, mines, and surrounding areas that change airflow and alter the microclimate within the hibernacula. Human disturbance and vandalism pose significant threats during hibernation through direct mortality and by inducing arousal and consequent depletion of fat reserves. Natural catastrophes can also have a significant effect during winter because of the concentration of individuals in a relatively few sites. During summer months, possible threats relate to the loss and degradation of forested habitat. Migration pathways and swarming sites may also be affected by habitat loss and degradation (U.S. Fish and Wildlife Service, 2007). Pesticides and other contaminants, especially those directly impact the food supply of these bats, are also threats for this species (U.S. Fish and Wildlife Service, 2007, 2024b).

F.7.2.7 Northern Long-Eared Bat (*Myotis septentrionalis*)

F.7.2.7.1 Status and Management

The northern long-eared bat was listed as threatened under the ESA on May 4, 2015, and on November 29, 2022, the USFWS published a final rule (87 *Federal Register* 73488) reclassifying the northern long-earned bat as endangered. This rule came into effect March 31, 2023 (U.S. Fish and Wildlife Service, 2024a). It occurs in the District of Columbia, 13 Canadian provinces, and 37 states (U.S. Fish and Wildlife Service, 2016a), including coastal states from Maine to South Carolina (U.S. Fish and Wildlife Service, 2024d). The primary threat for this species is the fungal infection white-nose syndrome (U.S. Fish and Wildlife Service, 2024d). In January 2016, the USFWS established a white-nose syndrome zone under Rule 4(d) of the ESA. Incidental take of the northern long-eared bat is only allowed outside of the white-nose syndrome zone. The boundary of this zone is updated monthly as new data are collected and is available online at the USFWS's Midwest Region website. In addition, other issues like loss of habitat, changes in temperature and precipitation, and anthropogenic disturbance are also threats for this species (U.S. Fish and Wildlife Service, 2016a, 2024d). Data suggest that the population has declined by 49 percent range-wide and will continue to decline over the next decade (U.S. Fish and Wildlife Service, 2022f). The USFWS has not designated any specific habitat as critical habitat for the species. The USFWS determined that designating wintering habitat as critical habitat for the species would likely increase the threat of vandalism, disturbance, or the spread of white-nose syndrome. Furthermore, the USFWS has determined there are no areas within the summer habitat that meet the definition of critical habitat (U.S. Fish and Wildlife Service, 2016b).

F.7.2.7.2 Habitat and Geographic Range

Hibernation generally occurs from October through April, depending on the local climate. Suitable habitat for hibernation includes caves and cave-like structures (e.g., abandoned or active mines, railroad tunnels). The spring migration period typically runs from mid-March to mid-May. Suitable summer habitat for the northern long-eared bat consists of a wide variety of forested and wooded habitats as well as linear features such as fence rows, riparian forests, and other wooded corridors with variable

amounts of canopy closure. Ultimately, these bats are flexible when it comes to roosting habitat. Any type of crack, crevice, bark, dead tree, or even the hibernaculum cave (for non-reproductive females and males) can function as roosting habitat (U.S. Fish and Wildlife Service, 2024d). Mature forests are an important habitat type for foraging northern long-eared bats (U.S. Fish and Wildlife Service, 2016a).

Unlike the true long-distance migratory bats (*Lasiurus* spp. and *Lasionycteris* spp.), the northern long-eared bat does not undertake long-distance migrations between summer and winter ranges but will make shorter distance movements between summer roosts and winter hibernacula (Yates, 2015). Within the United States, its range extends along the eastern coast from Canada to northeastern North Carolina, with additional small patches along the coast of southern North Carolina and southern South Carolina (U.S. Fish and Wildlife Service, 2017a, 2017b). Within the Study Area, northern long-eared bats are most likely to occur off the coast of the Northeastern United States and Canada (U.S. Department of Energy, 2016).

In a literature review, Pelletier et al. (2013) report that northern long-eared bats were found along the coastline or offshore on islands at:

- Kejimkujik National Park, Brier Island, and Bon Portage Island in Nova Scotia, Canada. Nova Scotia is a peninsula that is separated from the mainland to the south by 30 to 50 mi. of water. Brier Island and Bon Portage Island are separated from Nova Scotia by approximately 8 mi. and about 2 mi., respectively. Observed during summer months.
- Bay of Fundy National Park, New Brunswick, Canada, in summer to early fall.
- Martha's Vineyard, Massachusetts, approximately 4 mi. from mainland, during mist-netting surveys from April through October.
- Mount Desert Island, Maine (2 mi. off the coast), between May and September.

In addition, U.S. Department of Energy (2016) reports that ongoing mist-netting surveys at coastal sites in the northeast have also indicated relatively high numbers of northern long-eared bats post the introduction of white-nose syndrome compared to other, non-coastal areas in the northeast.

Northern long-eared bats have been detected during surveys at a variety of Navy installations along the eastern coast. These installations include:

- Naval Computer and Telecommunications Area Master Station Atlantic Detachment Cutler, located on the coast in Cutler, Maine, near the border with Canada. Data suggest there were likely some long-distance migratory tree-roosting bats spending the summer residency period at the installation and that other long-distance migratory bats moved through the Installation during the fall (Tetra Tech Inc, 2014). However, no northern long-eared bats were detected at the Installation in surveys by Yates (2015).
- Naval Weapons Station Earle in Colts Neck, New Jersey, where northern long-eared bats were present and roosting at the installation (Tetra Tech Inc, 2016c). The survey report authors note that the "presence of a sustained population of northern long-eared bats on Naval Weapons Station Earle is a testament to the amount of preferred habitat, contiguous forest, that the installation is able to provide compared to the surrounding areas."
- Naval Weapons Station Yorktown and Naval Supply Center Cheatham Annex in Williamsburg, Virginia (Tetra Tech Inc, 2017b). One bat was detected during the 2016 surveys, and a juvenile was detected during 2014 surveys. The authors report that the presence of the juvenile "suggests that there may be successful northern long-eared bat maternity colonies in the area."

- Two installations along the coast in Virginia Beach, Virginia:
    - Joint Expeditionary Base Fort Story (Tetra Tech Inc, 2016a).
    - Naval Air Station Oceana Dam Neck Annex (Tetra Tech Inc, 2016b).

In addition to the above, although no northern long-eared bats were detected at Naval Air Station Oceana in Virginia Beach, Virginia, they were detected near the installation in 2014 and 2015, and there is suitable habitat available on the installation (Tetra Tech Inc, 2016d).

A literature review for this species suggests that since 2016, the northern long-eared bat has been observed in coastal or coastally adjacent counties in Maine (U.S. Fish and Wildlife Service, 2016c), Massachusetts (Mass.gov, 2024), Connecticut (CT.gov, 2023), New Jersey (U.S. Fish and Wildlife Service, 2023a), Virginia (Virginia Department of Wildlife Resources, 2023), North Carolina (U.S. Fish and Wildlife Service, 2021b), and South Carolina (South Carolina Department of Natural Resources, 2024). This bat species has been observed both in hibernacula and maternity roosting across its coastal range, with peak present in coastal areas within the northeast.

There is a small chance that the species could be present along the coast in Florida and Georgia. In Florida, however, the latest data suggest that the last sighting of the northern long-eared bat was at least 50 years ago (Florida Bat Conservancy, 2024). For Georgia, all current sightings of this species have been inland (U.S. Fish and Wildlife Service, 2024c).

F.7.2.7.3 Population Trends

The U.S. Fish and Wildlife Service (2016d) estimated the range-wide northern long-eared bat population at over 6.5 million adults. The Midwest supports 43 percent of the total population, followed by the southern range (38 percent), the Eastern range (17 percent), and the Western range (2 percent). Arkansas and Minnesota are the two states with the largest populations, with approximately 863,850 (13 percent) and 829,890 (13 percent) adults, respectively. In areas affected by white-nose syndrome, however, the population is likely overestimated as (1) there is a clear downward trend in these areas, (2) most data are at least 1 year old, and (3) 3 years of occupancy data were used.

Based on the winter hibernacula data, there has been a 49 percent decline in the northern long-earned bat population. There has also been a decline in the number of extant winter colonies by 81 percent and the colonies are becoming smaller. Data modeling suggests that by 2030, there will be a 95 percent decline in the population and a spatial decline of 75 percent. While the summer data support a similar trend (U.S. Fish and Wildlife Service, 2022f), the data are less certain than the winter data because of this species flexibility with roosting habitat. The most likely cause of this population trend is the white-nose syndrome, climatic variability, and habitat loss (U.S. Fish and Wildlife Service, 2022f).

F.7.2.7.4 Predator and Prey Interactions

The northern long-eared bat has a diverse diet including moths, flies, leafhoppers, caddisflies, and beetles, and its diet differs geographically and seasonally. It forages using both hawking (catching prey in flight) and gleaning (picking motionless insects from vegetation and water surfaces) behaviors (U.S. Fish and Wildlife Service, 2016a, 2017a). Lepidopterans (moths) and coleopterans (beetles) are the most common insects found in northern long-eared bat diets, although arachnids are also a common prey item. Most foraging occurs above the understory, 1 to 3 m above the ground, but under the canopy on forested hillsides and ridges, rather than along riparian areas (U.S. Fish and Wildlife Service, 2016b). At present, there is no known predator for this bat species. However, the predators are likely the same as the for other bats in its range (State University of New York College of Environmental Science and Forestry, 2024).

F.7.2.7.5 Species-Specific Threats

The northern long-eared bat is one of the species of bats most impacted by white-nose syndrome (see 2018 Final EIS/OEIS Section 3.9.2.1.5.3, Disease and Parasites), which has caused declines of 90 to 100 percent where the disease has been found and is the primary factor supporting the endangered species status determination. Declines in the numbers of northern long-eared bats are expected to continue as white-nose syndrome extends across the species' range (U.S. Fish and Wildlife Service, 2016a). In addition to this fungal infection, other sources of population impacts include wind turbines, changes in temperature and precipitation, and habitat loss and disturbance (U.S. Fish and Wildlife Service, 2024d).

F.7.2.8 Tricolored Bat (*Perimyotis subflavus*)

F.7.2.8.1 Status and Management

The tricolored bat was proposed as an endangered species under the ESA on September 13, 2022. The species occurs throughout portions of North and Central America, including a small part of southeastern Canada, 39 states, Mexico, Guatemala, Honduras, Belize, and Nicaragua (U.S. Fish and Wildlife Service, 2022b). White-nose syndrome is what puts the tricolored bat's population most at risk. Over 100 State and Federal agencies, Tribes, organizations, and institutions are working to fight against white-nose syndrome and conserve affected bats. Partners from all 39 states in the tricolored bat range, Canada, and Mexico are committed to manage disease surveillance, population monitoring, and management actions in response to white-nose syndrome (87 *Federal Register* 56381). USFWS created a white-nose syndrome zone to help identify where this disease is located, and which bats are affected. The boundary of this zone is updated monthly as new data are collected by USFWS's Midwest Region website (U.S. Fish and Wildlife Service, 2020a). It is estimated that over 90 percent of tricolored bat colonies have been affected by white-nose syndrome and the disease is currently present across 59 percent of the species' range (U.S. Fish and Wildlife Service, 2022c). In addition, other issues like loss of habitat, environmental variability, and anthropogenic disturbance, including vandalism and disturbance of winter habitat are also threats for this species (Center for Biological Diversity, 2024). One complication is that the data suggest the sex ratio is skewed with more male than female bats in a hibernacula, potentially due to higher annual survival rates by males but the data on this information are limited (for review see: McCoshum et al. (2023)). If the sex ratio data and higher survival rates of males are accurate, then whatever is causing these issues will compound the other threats impacting the population. The USFWS has determined that the designation of critical habitat would not be beneficial to the species, as designating wintering habitat as critical habitat would likely increase the threat of vandalism, disturbance, or the spread of white-nose syndrome. This species exhibits high site fidelity both for their overwintering habitat as well as for their summer habitat (U.S. Fish and Wildlife Service, 2024e).

F.7.2.8.2 Habitat and Geographic Range

Tricolored bats are the first among North American bats to hibernate and the last to emerge in late spring, making their hibernation period extended (U.S. Fish and Wildlife Service, 2022e). A suitable habitat for hibernation in the winter includes caves and cave-like structures (e.g., abandoned or active mines). In the southern U.S., since caves are scarce, tricolored bats are often found in road-associated culverts, tree cavities and abandoned water wells. Suitable spring and summer habitat for the tricolored bat consists of a wide variety of forested and wooded habitats. They are found in trees, primarily in leaf clusters of live or recently dead deciduous hardwood trees. In the southern and northern portions of their range, tricolored bats will also roost in Spanish moss (*Tillandsia usneoides*) and lichen (*Usnea trichodea*) (U.S. Fish and Wildlife Service, 2023e).

For many years, this species has been considered a short-distance migratory or residential species, with limited movements from summering grounds to winter hibernation sites. Although, recent research has demonstrated that tricolored bats may be partially migratory, with some individuals in the central and northern portion of their habitat range. It is estimated that these bats migrate hundreds of kilometers north to south between summer breeding and foraging and winter hibernation (Smith et al., 2022a). Within the Study Area, tricolored bats are most likely to occur off the coast of the eastern United States and Canada (U.S. Fish and Wildlife Service, 2023d).

F.7.2.8.3 Population Trends

The total adult population of the tricolored bat is unknown but exceeds 10,000 individuals. Summer and winter colony sizes are relatively small. Winter colonies average 61 individuals and can range up to 396 individuals in size (NatureServe, 2023). Current demographic conditions based on past species population reduction indicate the total number of tricolored bats known to still be thriving in winter colonies has declined by 29 percent. Declining trends in tricolored bat populations are also supported by summer data. The tricolored bats' range-wide occupancy declined by 28 percent in the period 2010-2019, and mobile acoustic detections decreased by 53 percent. The species also has a low probability of recovering from low population size given their low reproduction rates. Projected declines in tricolored bat populations show that under current conditions, by 2030, their range-wide abundance will decline by 89 percent, the number of known winter colonies will decline by 91 percent, and their spatial extent will decline by 65 percent (U.S. Department of the Interior & Fish and Wildlife Service, 2022).

F.7.2.8.4 Predator and Prey Interactions

Tricolored bats are opportunistic feeders and consume small insects including caddisflies, moths, beetles, wasps, flying ants and flies. This species of bat emerges early in the evening and forages near treetop level or above, but occasionally forages closer to ground later in the evening. The tricolored bat exhibits slow, erratic, fluttery flight, while foraging (U.S. Fish and Wildlife Service, 2023e). Small moths, beetles, and other insects among the trees along the waterways and forest edges are the most common prey for tricolored bats. They use echolocation to find prey and navigate through their habitat (U.S. Fish and Wildlife Service, 2022g). Predators of tricolored bats include house cats, racoons, other bats, frogs, voles, and even a dark fishing spider (*Dolomedes tenebrosus*) (for review see: McCoshum et al. (2023)).

F.7.2.8.5 Species-Specific Threats

The leading threat to the tricolored bat is white-nose syndrome. Within the last 20 years, white-nose syndrome emerged as a significant threat as it causes precipitous declines in populations of cave-hibernating bat species (see the 2018 Final EIS/OEIS Section 3.9.2.1.5.3, Disease and Parasites). The tricolored bat's prolonged hibernation period increases their exposure, and vulnerability, to white-nose syndrome, which is driving dramatic population declines across their range (U.S. Fish and Wildlife Service, 2022e). Other threats during their dormancy period include modifications to caves, mines, and surrounding areas that change airflow and alter the microclimate within their hibernation location. Human disturbance creates significant threats during hibernation by causing increased arousals. This leads to additional energy use in the winter when food and water resources are scarce. Disturbance is even more impactful to a bat in hibernation with white-nose syndrome because frequent arousals from torpor increase the probability of mortality in bats with little fat stores (U.S. Department of the Interior & Fish and Wildlife Service, 2022). Wind energy facilities are starting to become a consequential stressor at local and regional levels for tricolored bat mortality, especially in combination with impacts from white-nose syndrome. Most bat mortality located at these wind energy facilities is caused by direct collisions with the moving turbine blades. As of September 2022, wind energy development overlaps

with 53 percent of the tricolored bat range in the U.S. and is still expanding (U.S. Fish and Wildlife Service, 2022g). Changes in temperature and precipitation create disturbance to bats in their roosting, foraging, commuting, and wintering habitats (U.S. Fish and Wildlife Service, 2022c).

F.7.3 Species Not Listed under the Endangered Species Act

F.7.3.1 Bird Species

There are 11 major taxonomic groups of birds represented in the Study Area. These birds may be found in the air, at the water surface, or in the water column. The vertical distribution provided for each taxonomic group are generalized and may not apply to all species within that group. The sections following describe each group of birds.

F.7.3.1.1 Geese, Swans, Dabbling and Diving Ducks (Order Anseriformes)

There are 50 species of swans, geese, dabbling, diving, and sea ducks in the family Anatidae in North America. No birds from this group are considered Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Birds from this group range from dabbling ducks found in coastal bays, estuaries, and lagoons to more open water ducks found in deeper water environments. Twenty-three of these species are diving ducks that inhabit nearshore or offshore waters of the Study Area (Sibley, 2014). Eiders, scoters, long-tailed duck (*Clangula hyemalis*), and harlequin duck (*Histrionicus histrionicus*) are sea ducks that winter in nearshore ocean waters. All these species can be found in deep water where they dive to forage (Sibley, 2014), some also forage on the bottom in shallow water. Most diving duck species dive to depths of up to 33 ft. (10 m) but long-tailed ducks have been reported to dive to depths 218 ft. (66 m) with a dive time of around 35 seconds (Sibley, 2014). Some inshore shark species, as well as alligators and crocodiles, prey on ducks on the surface of the water (Ehrlich et al., 1988).

Sea ducks and some diving ducks (e.g., scaups) breed inland but winter in large numbers in the Atlantic coastal waters of the Study Area and dive to the bottom, feeding primarily on benthic invertebrates. The harlequin duck is small and agile and prefers very turbulent water such as freshwater streams during the breeding season. Their winter habitat includes coastal intertidal areas, but they roost at night on open water farther offshore (greater than 0.6 mi. [1 km]) (Robertson & Goudie, 1999). The long-tailed duck winters in small groups in shallow ocean habitat.

Representative species that can be found in coastal bays, estuaries, and lagoons include geese (e.g., Canada goose [*Branta tellate*], brant [*Branta bernicla*]); swans (e.g., trumpeter swan [*Cygnus buccinators*], tundra swan [*Cygnus columbianus*]); dabbling ducks (e.g., mallard [*Anas platyrhynchos*], gadwall [*Anas strepera*], mottled duck [*Anas fulvigula*], American black duck [*Anas rubripes*], American wigeon [*Anas tellate*], northern shoveler [*Anas clypeata*], blue-winged teal [*Anas discors*], and green-winged teal [*Anas crecca*]); diving ducks (e.g., redhead [*Aythyatellate*], bufflehead [*Bucephala albeola*], common goldeneye [*Bucephala clangula*], and red-breasted merganser [*Mergus serrator*]); eiders (e.g., common eider [*Somateria mollissima*], king eider [*Somateria spectabilis*]); and scoters (e.g., surf scoter [*Melanitta perspicillata*], black scoter [*Melanitta tellate*]) (American Ornithologists' Union, 1998).

F.7.3.1.2 Loons (Order Gaviiformes)

There are five species of loons in the family Gaviidae in North America (American Ornithologists' Union, 1998), three of which occur in the Study Area. There are no birds in this group on the list of Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Loons are medium to large fish-eating birds that capture prey by diving underwater (Sibley, 2014). Loons can dive down to 250 ft. (76 m) with an average dive time of 40 seconds (Sibley, 2014). Loons move ashore only to breed, and all loon species nest on banks of inland ponds or lakes, requiring specific habitat features such as undeveloped shoreline

and nest sites that have steep drop offs so they can approach their nest from underwater (Cornell Lab of Ornithology, 2009). For example, common loons spend their time in both freshwater and saltwater environments but prefer to nest on islands where the shoreline is not developed. Most loons need about 100 ft. (30.5 m) of room to take off, so size is another habitat feature that is important for nesting areas. During migration, loons fly high above land or water in loose groups or singly. They winter in coastal, nearshore, or open water marine habitats (Sibley, 2014). For example, the Pacific loon (*G. pacifica*) prefers deep water and is found on the open ocean and in bays. The red-throated loon, a representative species within the Study Area, has a circumpolar distribution, breeds in high latitudes on remote ponds, and winters along the Atlantic and Pacific coasts (American Ornithologists' Union, 1998).

F.7.3.1.3 Grebes (Order Podicipediformes)

There are seven species of grebes in the family Podicipedidae in North America (American Ornithologists' Union, 1998). There are no birds in this group on the list of Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Grebes can be found in a variety of aquatic habitats ranging from seasonally flooded scrubland and roadside ditches to deep lakes and coastal bays. Most grebe species winter in open waters while preferring marshy, vegetated habitats during the summer months (Sibley, 2014). Grebes forage by diving for small aquatic animals such as insects, fish, and crustaceans in the water column. For example, horned grebes can dive for up to 3 minutes and travel 500 ft. underwater, where they are sometimes preyed upon by sharks and orcas (Ehrlich et al., 1988). Grebes tend to escape predators by diving or sinking, leaving only the head exposed, rather than taking flight. All grebe species build floating nests in marshes and winter on the ocean and nearshore coastal areas (Sibley, 2014).

F.7.3.1.4 Albatrosses, Fulmars, Petrels, Shearwaters, and Storm-Petrels (Order Procellariiformes)

Procellariiformes is a large order of open ocean seabirds that are divided into four families: Diomedeidae (albatrosses), Procellariidae (petrels and shearwaters), Hydrobatidae (storm-petrels), and Pelecanoididae (diving petrels) (Enticott & Tipling, 1997; Onley & Scofield, 2007). This order includes species that are generally long-lived, breed once a year, and lay only one egg; thus, they have a low reproductive output. One of these species is listed as endangered under the ESA (Section F.7.2.4, Bermuda petrel [*Pterodroma cahow*]) (U.S. Fish and Wildlife Service, 2010b) and six are Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a).

Many seabirds spend most of their lives at sea and come to land only to breed, nest, and occasionally roost (Schreiber & Chovan, 1986). Colonial breeding is believed to have evolved in response to the limited availability of relatively predator-free nesting habitats and distance to foraging sites from breeding grounds (Siegel-Causey & Kharitonov, 1990). Benefits of colonial breeding include increased detection of predators and decreased chance of predation of young while parent birds are foraging away from the nest (Gill, 1995).

Seabirds can be found in high numbers resting on the water surface in flocks where prey is concentrated (Enticott & Tipling, 1997). Some species are found around fishing boats, where they often feed on bycatch and may become injured from longline gear (Enticott & Tipling, 1997; Onley & Scofield, 2007). Also, because of their pelagic nature, this group is preyed on by some pelagic shark species (Ehrlich et al., 1988). Oceanic fronts (gradients in current speed, temperature, salinity, density, and enhanced circulation) attract seabirds due to increased foraging opportunities. For example, the at-sea distribution of some seabirds is associated with oceanic fronts, which support increased numbers of prey and provide favorable foraging conditions (Bost et al., 2009).

There are 20 species of Procellariiformes in North America, with 13 species representing two families — the storm-petrels and petrels and shearwaters (American Ornithologists' Union, 1998) — occurring within the Study Area. Most of the petrel species in the Study Area are not considered part of the diving petrels and forage along the surface of the ocean. Petrels are colonial nesters and tend to nest on remote islands uninhabited by people.

Storm-petrels pick prey off the surface while foraging. Most breed in natural holes/cryptic burrows and visit their colonies only at night (Enticott & Tipling, 1997; Onley & Scofield, 2007). Fulmarine petrels, such as the northern fulmar (*Fulmarus glacialis*) and the black-capped petrel (*Pterodroma hasitata*), feed by landing on the sea and grabbing prey near the surface. Most fulmarine petrels nest in burrows or on cliff ledges and visit nests by day (Enticott & Tipling, 1997; Onley & Scofield, 2007). Gadfly petrels are generally species of the *Pterodroma* genus and are long-winged, fast flying, and highly pelagic. They feed on the wing and land on the sea (Onley & Scofield, 2007). Some gadfly petrels nest in burrows or crevices and visit colonies at night (Enticott & Tipling, 1997; Onley & Scofield, 2007).

Shearwaters are small- to medium-sized and dive to varying depths for prey (Onley & Scofield, 2007). For example, Cory's shearwater (*Calonectris diomedea*) rarely dives to 16 ft. (5 m) below the surface, while sooty (*Puffinus griseus*) and short-tailed shearwaters (*Puffinus tenuirostris*) can reach depths of 230 ft. (70 m), swimming underwater with half-open wings (Enticott & Tipling, 1997; Onley & Scofield, 2007). Greater shearwaters in the South Atlantic Ocean have been reported to dive down to 62 ft. (19 m) and as long as 40 s in a single dive. However, the majority of their dives were less than 6.6 ft. (2 m) (Ronconi et al., 2010).

F.7.3.1.5 Boobies, Gannets, Cormorants, and Frigatebirds (Order Suliformes)

The Suliformes order is a diverse group of large seabirds including anhingas, gannets, boobies, cormorants, and frigatebirds. This order is composed of 16 species in 4 families—12 species representing 2 families that occur within the Study Area. The magnificent frigatebird (*Fregata magnificens*) is considered a Bird of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Species of concern within the Study Area include the brown booby (*Sula dactylatra),* masked booby (*Sula dactylatra*), and magnificent frigatebird (American Ornithologists' Union, 1998).

Suliformes are less pelagic than the Procellariiformes, although some of these species such as frigatebirds are pelagic. Most species are colonial, feed on fish, and use a variety of breeding habitats including trees and bushes (but not burrows). Breeding strategies vary among species, with some being long-lived and having low breeding success, while others have higher annual breeding success, but higher annual adult death (Enticott & Tipling, 1997; Onley & Scofield, 2007).

Cormorants are voracious predators on inshore fishes and have been implicated as a major threat to the recovery efforts of Atlantic salmon in the Gulf of Maine where they feed on juvenile salmon (smolts) leaving the estuaries (Fay et al., 2006; National Marine Fisheries Service & U.S. Fish and Wildlife Service, 2005). Their offshore foraging range is limited by their need for undisturbed, dry nocturnal roosting sites (Shields et al., 2002).

Boobies and gannets are large seabirds that plunge from the air to capture their prey. Filling similar niches, boobies inhabit warmer areas and gannets colder regions. Boobies and gannets often nest on islands in colonies, with gannets nesting on cliffs (BirdLife International, 2012) and boobies generally on the ground if predators allow (Pratt et al., 1987). They forage offshore in large flocks at night, often feeding on squid.

Like tropicbirds and pelicans, members of this group all have webbed feet and eight toes, and all have a throat sac, called a gular sac (Brown & Harshman, 2008). This sac is highly developed and visible in pelicans and frigatebirds but is also readily apparent in boobies and cormorants. Pelicans use the sac to trap fish, frigatebirds use it as a mating display and to feed on fish, squid, and similar marine life (Dearborn et al., 2001), and cormorants and boobies utilize the sac for heat regulation. These birds nest in colonies, but individual birds are monogamous (Brown & Harshman, 2008).

F.7.3.1.6 Tropicbirds (Order Phaethontiformes)

Tropicbirds are medium-sized seabirds, predominately white with black patterning on the back, wings, and face. They have thick, pointed bills that are red or orange in color that are slightly decurved. Their most notable feature is the extremely long and narrow central tail feathers, which can be 11 to 22 in. long. Their wingspans average around 3 ft. Superficially, tropicbirds resemble terns. Tropicbirds are highly pelagic foragers in tropical and subtropical oceans, coming to land mainly to breed (Sibley, 2014). Tropicbirds are plunge-divers that feed on fish and could occur as rare visitors offshore in the Study Area in the Gulf of Mexico, Caribbean Sea, and southeast U.S. Continental Shelf Large Marine Ecosystems, and in the Gulf Stream and North Atlantic Gyre Open-Ocean Areas (Sibley, 2014). No birds from this group are considered Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a).

F.7.3.1.7 Pelicans, Herons, Egrets, Ibis, and Spoonbills (Order Pelecaniformes)

Pelecaniformes is a large group composed of long-legged, large billed species that includes pelicans, herons, egrets, ibis, and spoonbills. However, with the exception of two species of pelicans (described below), they inhabit marshes and are likely to occur only in nearshore areas of the Study Area. Herons, egrets, ibises, and spoonbills feed on variety of live aquatic prey hunted while wading in shallow nearshore or inshore waters. Two species, reddish egret (*Egretta rufescens*) and great blue heron (*Ardea herodias*), are Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a).

The brown pelican (*Pelecanus occidentalis*) primarily occurs in shallow (less than 150 ft. [46 m]) warm coastal marine and estuarine environments, as well as offshore where they forage primarily on fish by headfirst plunge-diving. Most plunge-diving is limited to 3.5 to 6.5 ft. (1 to 2 m) within the water column. Foraging occurs within 12 mi. (20 km) of nesting islands during the breeding season, and up to 47 mi. (75 km) offshore during the nonbreeding season (Shields et al., 2002). American white pelicans (*Pelecanus erythrorhynchos*) are found in shallow coastal bays, inlets, and estuaries that support forage fish (Knopf & Evans, 2004). Flocks forage cooperatively, swimming and encircling fish as a coordinated group or driving them into shallows, where they are caught with synchronized bill dipping (Enticott & Tipling, 1997; Onley & Scofield, 2007).

F.7.3.1.8 Flamingos (Order Phoenicopteriformes)

Flamingos are gregarious (social) wading birds in the genus *Phoenicopterus*, and the only genus in the family Phoenicopteridae. The American flamingo (*P. ruber)* species is found in the Study Area. The distribution range of the flamingo is extremely large and includes many Caribbean and South American countries. However, their occurrence in the United States is limited to the southern tip of Florida (Everglades National Park) (Sibley, 2014; Stevens & Pickett, 1994).

These wading birds forage in intertidal areas by rhythmically swinging their bills from side to side and filtering small organisms out of the mud (Sibley, 2014). Though most of their life cycle is spent along coastal areas, migration over offshore areas does occur (Elphick, 2007).

F.7.3.1.9 Osprey, Bald Eagles, Kites, and Falcons (Orders Accipitriformes and Falconiformes)

Accipitriformes is a large group consisting of 60 species in three families (American Ornithologists' Union, 1998). This order generally has broad wings well-suited for soaring. Falconiformes include nine North American species that, with the exception of the caracara (*Caracara cheriway*), are fast flying predators with pointed wings and a streamlined body shape (Sibley, 2014). Members of both orders hunt by day and feed on a variety of prey, including fish, small mammals, reptiles, and carrion. Species that are likely to occur within the Study Area include the osprey (Pandion haliaetus), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), and swallow-tailed kite (*Elanoides forficatus*). The swallow-tailed kite is a Bird of Conservation Concern (U.S. Fish and Wildlife Service, 2021a).

Ospreys live near slow-moving waters of coastal, nearshore, and freshwater environments in many parts of the Study Area. They are plunge feeders but also have the ability to capture prey with their feet while keeping their head above water. Fish make up a large portion of their diet, and therefore, their vision is well adapted to detecting underwater objects from 33–131 ft. (10–40 m) above water (Poole et al., 2002). Ospreys migrate from northern latitudes to southern latitudes twice a year and cross bodies of open ocean to reach their destinations (Lott, 2006).

Bald eagles nest, forage, and winter along the Atlantic coast especially in the Chesapeake Bay region. Bald eagles also occur throughout Florida, although no bald eagle sightings have been recorded at Port Canaveral in 27 years (Federal Emergency Management Agency, 2012; Florida Fish and Wildlife Conservation Commission, 2017). Bald eagles have steadily increased since the ban on the pesticide DDT from 60 pairs in the 1970s to 646 in 2001. The Chesapeake Bay is very important to bald eagles because it is a convergence point for all three geographically distinct populations (northeast, southeast, and Chesapeake Bay) and has played an important part in their recovery (Watts et al., 2007). Bald eagles are opportunistic feeders that generally prefer fish over other food types (Buehler, 2000). Adults are known to scavenge prey items, pirate food from other species, and capture prey such as ducks from the water's surface.

Swallow-tailed kites breed in the southeastern United States but winter in South America, making long-distance migrations each year between wintering and breeding grounds. Studies in Florida show swallow-tailed kites feed on various animals in the following proportions: frogs (53 percent), birds (30 percent), and reptiles (11 percent) and the remaining prey were insects (Meyer et al., 2004).

Most peregrine falcons occur throughout the nearshore and coastal portions of the Study Area, particularly near barrier islands and mudflats during the winter months. Some peregrine falcons migrate along the coast, cross bodies of water such as the Gulf of America and occur offshore of the Atlantic coast to reach their wintering/breeding territories on a yearly basis (Lott, 2006). They can reach altitudes up to 12,000 ft. (Cornell Lab of Ornithology, 2011). Peregrine falcons feed mostly on other birds, including shorebirds, ducks, grebes, gulls, and petrels. They occasionally feed on fish while in coastal habitats (Cornell Lab of Ornithology, 2011).

F.7.3.1.10 Coots, Cranes, Rails (Order Gruiformes)

The order Gruiformes consists of a wide variety of loosely related birds that are highly varied including the coots, cranes and rails, which could occur along the shoreline in the Study Area. Two species, king rail (*Rallus elegans*) and yellow rail (*Coturnicops noveboracensis*), are Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a).

The members of this order most commonly found in the Study Area are coots and rails. Coots are medium-sized water birds similar to ducks in body and habitat. Coots are omnivorous, primarily eating plant material but also insects, fish, eggs, snails, and tadpoles by dabbling at the water surface, diving or

grazing on land. In nonbreeding season, they are commonly found in groups in shallow waters. Rails are a large diverse family of small- to medium-sized, ground-living birds. There are five species in North America, all of which may occur in the Study Area along the southeastern and eastern coastlines of the U.S. These are secretive species commonly found in marshes.

F.7.3.1.10.1 Order: Caprimulgiformes

The order Caprimulgiformes contains birds such as nightjars, frogmouths, and oilbirds that are distributed all over the world except Antarctica. Two species that migrate through the Study Area, Chuck-will's-widow (*Antrostomus carolinensis*) and Eastern whip-poor-will (*A. vociferus*), are Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Both species breed in forests in southeastern U.S. near the Study Area and winter in central and South America. Both feed on insects caught on the wing at night, primarily beetles, and both nest on the ground.

F.7.3.1.11 Shorebirds, Phalaropes, Gulls, Noddies, Terns, Skimmers, Skuas, Jaegers, and Alcids (Order Charadriiformes)

Shorebirds are small, generally long-legged coastal birds, many of which forage below the high tide in the surf zone by picking and probing for small aquatic prey (Sibley, 2014). Shorebirds undergo some of the longest distance migrations known for birds, for example, the red knot annually migrates more than 9,300 mi. (U.S. Fish and Wildlife Service, 2005). Though most of their life cycle is spent in coastal areas, shorebird migration over open ocean does occur (Elphick, 2007).

The Charadriiformes include shorebirds, phalaropes, gulls, noddies, terns, skimmers, skuas, jaegers, and alcids (Cornell Lab of Ornithology, 2009). There are 81 species from this diverse group that occur within the Study Area ranging from small shorebirds to large pelagic seabirds. Two endangered species under the ESA belong to this group, the roseate tern and piping plover (U.S. Fish and Wildlife Service, 2010a). Twenty-five species from this group are Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Some species in this order are highly pelagic (e.g., jaegers, skuas, alcids), whereas others are more coastal or nearshore species (e.g., shorebirds, gulls).

Although taxonomically grouped among some shorebirds, two species of phalaropes in the family Scolopacidae that occur within the Study Area are functionally seabirds, spending the nonbreeding months out on the open ocean. For example, the red-necked phalarope (*Phalaropus lobatus*) spends up to 9 months at sea, gathering in small flocks at upwellings and convergence zones, foraging on zooplankton and other small aquatic animals that rise to the surface (Rubega et al., 2000). The red phalarope ranges farthest from shore, spending 11 months at sea feeding on small invertebrates (Cornell Lab of Ornithology, 2002).

Skuas and jaegers are oceanic birds that come to land only to nest. On the nesting grounds they prey on lemmings, small birds, and other animals; in other seasons they pirate much of their food from other seabirds by chasing them and forcing them to relinquish captured prey (Sibley, 2014). Representative species from this group include: semipalmated plover (*Charadrius semipalmatus*), great skua (*Stercorarius skua*), long-tailed jaeger (*Stercorarius longicaudus*), sooty tern (*Onychoprion fuscatus*), brown noddy (*Anous stolidus*), dovekie (*Alle alle*), common murre (*Uria aalge*), razorbill (*Alca torda*), long-billed murrelet (*Brachyramphus perdix*), Atlantic puffin (*Fratercula arctica*), and red phalarope (*Phalaropus fulicarius*).

Noddies are tropical tern-like seabirds found foraging over warm, open ocean waters where they feed by swooping or dipping along the surface. Brown noddies breed in colonies on islands, islets, and rocky outcrops in warm seas. They only lay one egg a year and build their nests in trees, shrubs, cliffs, and manmade structures (Sibley, 2014).

Terns are generally more marine or pelagic than gulls, though some tern species do occur more commonly within coastal areas (e.g., least terns). Terns roost and nest in large groups on shorelines, and feed on small fish by plunge-diving headfirst from the air into the water, often beginning from a hovering position. They feed closer to shore when raising young during the nesting season, but venture farther offshore for longer periods after young have fledged (Sibley, 2014). In the North Atlantic, Gulf Stream eddies attract foraging seabirds such as the sooty tern and bridled tern (*Onychoprion anaethetus*) (Bost et al., 2009).

Alcids or auks (family *Alcidae*), are small oceanic species that inhabit cold Northern Hemisphere seas, rarely wandering south into the tropics (Pratt et al., 1987). They come to land only to breed (Enticott & Tipling, 1997) and nest colonially in crevices or burrows. Alcids do not undergo long-distance foraging trips but form feeding aggregations in areas where food is concentrated, though they do not form tight flocks (Enticott & Tipling, 1997). All alcids use their wings to dive underwater where they feed on fishes and invertebrates. Auks are pursuit divers and are entirely wing-propelled rather than foot-propelled, as are loons and grebes, for example. Atlantic puffins can dive between 135 to 224 ft. (41 to 68 m) for periods of up to 1 minute (Burger & Simpson, 1986).

The Charadriiformes influence the distribution and abundance of invertebrates, and indirectly algae, in rocky intertidal communities of New England (Ellis et al., 2007). Gulls are one particular group that can be found over land, along the coast, in nearshore, and offshore environments. The great black-backed gull (*Larus marinus*) and the herring gull (*Larus argentatus*) are dominant predators along the rocky shores throughout the North Atlantic. They forage while walking, swimming, or flying, sometimes dipping into the water and sometimes plunge-diving (National Audubon Society, 2015). They often feed on crabs, sea urchins, and mussels in the rocky intertidal habitat; once a prey item is caught, the gull will fly up and drop it on rocks below to break it open.

F.7.3.1.12 Neotropical Migrant Songbirds, Thrushes, Cuckoos, Swifts, Owls, and Allies (Orders Passeriformes, Cuculiformes, Apodiformes and Strigiformes)

There are 185 bird species in the orders Passeriformes, Cuculiformes, Apodiformes, and Strigiformes that are considered nocturnal migrants and neotropical migrants with a potential to occur in the Study Area. Eight of these species are Birds of Conservation Concern (U.S. Fish and Wildlife Service, 2021a). Most of these species are nocturnal migrants and take advantage of favorable weather conditions to migrate (Kerlinger, 2009). Oceans are typically an obstacle for this group of birds because most songbirds cannot swim, or even rest on the water's surface. Migrants tend to avoid large water crossings and follow land to the extent possible. Migration has a substantial risk to birds, ranging from mass mortality events due to inclement weather events (Newton, 2007) and other mortality events associated with lighting of vessels (Merkel & Johansen, 2011) and oil and gas platforms (Poot et al., 2008). In the Gulf of America, long-distance migrants are commonly found stopping over and resting on oil and gas platforms as well as on small boats and vessels. Most neotropical migrants, especially warblers and thrushes from the family *Parulidae* and family *Turdidae*, cross water at some point twice a year to reach their wintering and breeding grounds. For example, the Bicknell's thrush *(Cartharus bicknelli*) breeds in mountainous forests of New England and migrates across open oceans in the fall to reach their wintering grounds in the Caribbean.

Aerial insect feeders such as swifts and predatory birds such as owls may feed opportunistically during migration across the ocean (Elphick, 2007), but the vast majority of bird species in this diverse group do not feed within the Study Area.

F.7.3.2 Bats

At least 24 species of bats are known or expected to occur in the Study Area (Table 3.9-3), either during migration or foraging. Additional bat species are known to occur in areas near, or adjacent to, the Study Area.

In temperate North America, most species that roost in trees, such as hoary bats, migrate south for winter when insects become scarce. In the fall, hundreds of hoary bats from across the United States gather along the coasts and in northern Mexico. Mexican free-tailed bats that roost in Carlsbad Caverns during the summer also migrate to Mexico over winter (National Park Service, 2017).

The Navy has performed bat surveys (both mist-netting and passive acoustic surveys) at several installations along the eastern coast of the United States. Results of these surveys are described below. Since echolocation calls for Eastern red bats and Seminole bats are indistinguishable from each other, survey results combine these two species. In addition, it typically is not possible to identify specific species from passive acoustic survey recordings of *Myotis* species, and occasionally it is not possible to make a determination more specific than "high-frequency call."

- Cutler, Maine (Tetra Tech Inc, 2014):
    - All seven bat species expected to occur in Maine that are not federally listed are known to occur at Naval Support Activity Cutler: little brown bat, Eastern small-footed bat, tricolored bat, silver-haired bat, big brown bat, Eastern red bat, and hoary bat.
    - Little brown bats were the most frequently detected species and occurred across the installation at all acoustic sites during the 2013 survey. Eastern red bat was the second most common species recorded at the Installation and occurred across all acoustic sites. Silver-haired bats and the Eastern red bat are known to be active from late April through mid-October, big brown bats from late March through early October, and hoary bats from early May through early October.
    - The installation provides the local bat community with habitat from the late spring to late fall. The data also suggest that bats are utilizing habitat and traveling closer to the coast within forested and edge habitats.
    - The occurrence of migratory bat species during the summer season indicates that long-distance migratory tree-roosting bats spent the summer residency period at the installation. Data also suggest that long-distance migrants move through the installation during the fall.
- Colts Neck, New Jersey (Tetra Tech Inc, 2016c):
    - Baseline bat survey at NWS Earle acoustically documented activity of eight different bat species, including big brown bat, Eastern red bat, hoary bat, silver-haired bat, little brown bat, Eastern small-footed bat, northern long-eared bat, and tricolored bat. Mist-net surveys further confirmed the presence of big brown bats, Eastern red bat, and northern long-eared bat.
- Norfolk and Portsmouth, Virginia (Tetra Tech Inc, 2017a):
    - At Naval Station Norfolk and Naval Supply Center Craney Island Fuel Terminal at Norfolk and Portsmouth, Virginia, mist-netting surveys captured Eastern red bats (*Lasiurus borealis*). Approximately 75 percent of acoustic detections were identified as Eastern red bats/Seminole bats; the remainder were mostly designated as

"high-frequency" bats. Manual review of all tricolored bat passes were determined to not contain enough detail to accurately identify to species.

- Virginia Beach, Virginia (Tetra Tech Inc, 2016d):
    - Surveys at Naval Air Station Oceana in Virginia Beach, Virginia detected nine bat species: Rafinesque's big-eared bat, big brown bat, Eastern red/Seminole bat, hoary bat, silver-haired bat, southeastern bat, little brown bat, evening bat, and tricolored bat. Big brown bats were the most commonly recorded, accounting for 50 percent of the total calls, followed by silver-haired bats (24 percent), Eastern red bats/Seminole bats (11 percent), hoary bats (4 percent), and *Myotis* sp. bats (4 percent). Species with 2 percent or less of the total calls were little brown bats, southeastern bats, Rafinesque's big-eared bats, evening bats, tricolored bats, and high frequency bats.

Surveys at Joint Expeditionary Base Fort Story on the coast acoustically documented activity of at least 10 different species of bats including Rafinesque's big-eared bat, big brown bat, Eastern red/Seminole bat, hoary bat, silver-haired bat, southeastern myotis, little brown bat, northern long-eared bat, evening bat, and tricolored bat. Eastern red bats, however, are very common and Seminole bats only occur occasionally in Virginia. The overall activity rate at Joint Expeditionary Base Fort Story was the highest detected at the four Navy bases surveyed in Virginia (Tetra Tech Inc, 2016a).

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APPENDIX G
NON-ACOUSTIC IMPACTS SUPPORTING INFORMATION

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

G NON-ACOUSTIC IMPACTS SUPPORTING INFORMATION G-1

G.1 Habitats G-1

G.1.1 Energy Stressors G-1
G.1.2 Physical Disturbance and Strike Stressors G-1
G.1.3 Entanglement Stressors G-2
G.1.4 Ingestion Stressors G-2
G.1.5 Secondary Stressors G-2

G.2 Vegetation G-2

G.2.1 Energy Stressors G-2
G.2.2 Physical Disturbance and Strike Stressors G-2
G.2.3 Entanglement Stressors G-2
G.2.4 Ingestion Stressors G-2
G.2.5 Secondary Stressors G-3

G.3 Invertebrates G-3

G.3.1 Energy Stressors G-3
G.3.2 Physical Disturbance and Strike Stressors G-3
G.3.3 Entanglement Stressors G-3
G.3.4 Ingestion Stressors G-3
G.3.5 Secondary Stressors G-3

G.4 Fishes G-4

G.4.1 Energy Stressors G-4
G.4.2 Physical Disturbance and Strike Stressors G-4
G.4.3 Entanglement Stressors G-5
G.4.4 Ingestion Stressors G-5
G.4.5 Secondary Stressors G-6

G.5 Marine Mammals G-6

G.5.1 Energy Stressors G-6
G.5.2 Physical Disturbance and Strike Stressors G-6
G.5.3 Entanglement Stressors G-11
G.5.4 Ingestion Stressors G-12

G.5.5 Secondary Stressors G-12
G.6 Reptiles G-13
G.6.1 Energy Stressors G-14
G.6.2 Physical Disturbance and Strike Stressors G-16
G.6.3 Entanglement Stressors G-18
G.6.4 Ingestion Stressors G-19
G.6.5 Secondary Stressors G-19
G.7 Birds and Bats G-20
G.7.1 Energy Stressors G-20
G.7.2 Physical Disturbance and Strike Stressors G-20
G.7.3 Entanglement Stressors G-20
G.7.4 Ingestion Stressors G-20
G.7.5 Secondary Stressors G-20

List of Figures

This appendix does not contain figures.

List of Tables

This appendix does not contain tables.

G NON-ACOUSTIC IMPACTS SUPPORTING INFORMATION

G.1 HABITATS

The following topics were updated from the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS) (hereinafter referred to as the 2018 Final EIS/OEIS) Section 3.5 (Habitats):

- Distribution and abundance of benthic invertebrates along the depth gradient in the Study Area and relevance to the analysis. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the diminished impact of military expended materials on the deepest regions of the Study Area.
- Expected burial rate of military expended materials. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the diminished impact of military expended materials on shallow regions of the Study Area.

G.1.1 ENERGY STRESSORS

The background information for energy stressor effects on abiotic habitat in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.5.3.3) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.1.2 PHYSICAL DISTURBANCE AND STRIKE STRESSORS

The background information for vessels and in-water devices, seafloor devices, and pile driving substressor effects on abiotic habitat in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.5.3.4) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.1.2.1 Impacts from Military Expended Materials

The following information was updated from the 2018 Final EIS/OEIS:

Disturbance of the bottom from ship hulks may occur, but impairment of habitat function is not expected because the material is sunk in the abyssal zone where bottom organisms are generally small and sparsely populated (Rex et al., 2006); the deep ocean has a sparse supply of food items for sedentary deposit or filter feeders. The only densely populated areas in the deep ocean are around the occasional hydrothermal vent/cold seep.

The vast majority of heavy materials falling on soft or intermediate substrate areas (94 percent of the Study Area less than 2,500 meters [m] deep) would be completely buried after a year based on observations of mine shape burial under a variety of bottom conditions (Inman & Jenkins, 2002). On average, the data from Inman and Jenkins (2002) suggests most of the heavy materials (80 percent) would be buried after only six months. The 7-year footprint of the heavier military expended materials calculated in Appendix I (Military Expended Materials and Direct Strike Impact Analysis) is likely vastly overestimated as a persistent impact on the substrate surface. There is also a relationship between burial rate, impact on benthic organisms, and proximity to shore for heavy materials littering the seafloor. Recent research on marine debris presented in Section F.1.1.3 (General Threats) of Appendix F (Biological Resources Supplemental Information) reported a lengthy persistence of heavy materials in deep-water areas where the size and biomass of benthic organisms is very small and low, respectively (refer to Section F.3, Invertebrates, for supporting details). Conversely, the size and biomass of benthic organisms is typically high where the burial rates are also generally high (on the continental shelf), with some exceptions. Based on complex modeling of heavy munitions burial/mobility on the seafloor, the

greatest potential for mobility occurs closest to dynamic shorelines with generally greater burial in deeper water and softer sediment on the continental shelf (Jenkins & Wever, 2007; Menzel et al., 2022).

G.1.3 Entanglement Stressors

The background information for entanglement stressor effects on abiotic habitats in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.5.3.5) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.1.4 Ingestion Stressors

The background information for ingestion stressor effects on abiotic habitats in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.5.3.6) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.1.5 Secondary Stressors

The background information for secondary stressor effects on abiotic habitats in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.5.3.7) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.2 Vegetation

The following topic was updated from the 2018 Final EIS/OEIS Section 3.3 (Vegetation):

- Consideration for ingestion by some marine microalgae species. This information addresses an overlooked aspect of algal biology in the previous analysis for vegetation and stressors.

G.2.1 Energy Stressors

The background information for energy stressor effects on vegetation in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.3.3.3) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.2.2 Physical Disturbance and Strike Stressors

The background information for physical disturbance and strike stressor effects on vegetation in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.3.3.4) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.2.3 Entanglement Stressors

The background information for entanglement stressor effects on vegetation in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.3.3.5) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.2.4 Ingestion Stressors

The following was updated from the 2018 Final EIS/OEIS (Section 3.3.3.6):

Ingestion stressors are not applicable to vegetation that uses photosynthesis vice ingestion to obtain necessary nutrients. However, there are numerous species of microscopic organisms (termed "mixotrophs") that acquire energy from both the sun and by consuming other microorganisms (Stoecker et al., 2017). This includes many phytoplankton species that have profound impacts on marine planktonic ecosystems. Microscopic algae that ingest other algae (i.e., mixotrophic phytoplankton) would be unaffected by military readiness activities due to their vast populations, multiple methods of reproduction, fast growth, and resilience.

G.2.5 Secondary Stressors

The following was updated from the 2018 Final EIS/OEIS (Section 3.3.3.7):

Prey availability as an indirect link is not applicable to vegetation, as most species acquire energy directly from the sun and will not be analyzed further in this section. Whereas there are mixotrophic microalgae that eat other algae (refer to Section G.2.4, Ingestion Stressors, for details) and as such, the impact of phytoplankton eating other phytoplankton is not analyzed from the perspective of prey availability for vegetation or any other biological resource (e.g., fish eating other fish). Impacts from the Proposed Action Alternatives on vegetation availability as prey/forage are analyzed in the respective prey sections of other biological resources (e.g., Section 3.5, Invertebrates, and Section 3.6, Fishes).

G.3 Invertebrates

The following topic was updated from the 2018 Final EIS/OEIS Section 3.4 (Invertebrates):

- Population-level effect of microplastic consumption on marine invertebrates. The 2018 Final EIS/OEIS did not provide information on the population-level effect of microplastic consumption on marine invertebrates, for vital context.

G.3.1 Energy Stressors

The background information for energy stressor effects on invertebrates in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.4.3.3) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.3.2 Physical Disturbance and Strike Stressors

The background information for physical disturbance and strike stressor effects on invertebrates in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.4.3.4) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.3.3 Entanglement Stressors

The background information for entanglement stressor effects on invertebrates in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.4.3.5) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.3.4 Ingestion Stressors

The following information was updated from the 2018 Final EIS/OEIS (Section 3.4.3.6):

Overall population-level effects of microplastic consumption across a broad range of species remain difficult to predict (Kaposi et al., 2014; Wright et al., 2013). The analysis in Hamilton et al. (2021) found mostly neutral effects of exposure to microplastics on marine invertebrates, with the most consistent effect being a reduction in consumption of natural prey among mostly filter feeders. There is also some evidence to suggest large quantities of microplastics end up the skeleton of reef-building corals, where it is effectively removed from circulation (Reichert et al., 2022).

G.3.5 Secondary Stressors

The background information for secondary stressor effects on invertebrates in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.4.3.7) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.4 FISHES

The following topics were updated from the 2018 Final EIS/OEIS Section 3.6 (Fishes):

- Density of fishes located near the surface during the day in portions of some range complexes. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the low potential for vessels, in-water devices, and military expended materials to strike fish near the surface.
- Vertical distribution of some sturgeon species in the water column. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the generally low potential for vessels, in-water devices, and military expended materials to strike sturgeons near the surface, although the information confirms that at least some species occasionally surface or leap into the air.
- The effects of underwater vehicles on fish. This information strengthens the reasoning presented in the 2018 Final EIS/OEIS for the low potential for in-water devices to strike fish.
- Information on the potential for various fishes to ingest plastic particles, including particle size, fish feeding method, and proximity to plastic debris sources. This information provides additional context for evaluating potential impacts associated with ingestion of plastic military expended materials or fragments of these materials.
- Potential for bio-inspired slime to block a fish's throat if ingested. Bio-inspired slime is a new type of biodegradable polymer and was therefore not addressed in the 2018 Final EIS/OEIS.

G.4.1 ENERGY STRESSORS

The background information for energy stressor effects on fishes in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.3.3 (Energy Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.4.2 PHYSICAL DISTURBANCE AND STRIKE STRESSORS

The information in this section was updated from the 2018 Final EIS/OEIS Section 3.6.3.4 (Physical Disturbance and Strike Stressors).

Information on fish abundance and density in the Study Area is provided in a study of marine species located near the surface within a potential offshore wind energy corridor off the U.S. Atlantic coast (Willmott et al., 2021). The results suggest a low daytime fish density and therefore low potential for strikes. Aerial surveys were conducted off the coasts of North Carolina and South Carolina, which coincides with all or portions of the Virginia Capes Range Complex, Navy Cherry Point Range Complex, and Charleston operating area (OPAREA), out to the 30-m depth contour. The combined daylight density of rays, sharks, and large bony fishes (e.g., tunas, mahi-mahi, billfish, and sunfish) observed near the surface, averaged over all survey seasons, was 1.66 animals per square kilometer (km^2) (Willmott et al., 2021).

Some sturgeon species, particularly the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), have been documented to be susceptible to vessel strikes. Although generally considered benthic species, sturgeons are occasionally found at the surface and some species are known to leap into the air, possibly to take air into the swim bladder to maintain neutral buoyancy (Dunbar, 2015; Thorn & Falgiani, 2013; Watanabe et al., 2008). An investigation of depth and vertical movements of Atlantic sturgeon and shortnose sturgeon (*A. brevirostrum*) in the Penobscot River, Maine, found that all fish remained at the bottom for extended time periods, sometimes for days (Dunbar, 2015). Out of hundreds of thousands of recorded data points, only 33 occurred at depths less than 0.5 m; these were assumed to be associated with surfacing behavior. Although a different species on a different continent, a study of

seven Chinese sturgeons (*A. sinensis*) found two swim patterns and depth profiles, presumably related to buoyancy and swim bladder function (Watanabe et al., 2008). Four individuals actively swam in the water column at depths of 7 to 31 m, surfacing occasionally. Three fish spent nearly all their time (88 to 94 percent) on the bottom, also surfacing occasionally and immediately returning to depth. Surfacing behavior was suspected to be for the purpose of gulping air. A subsequent study involving Chinese sturgeons found that all individuals swam in an up-and-down pattern, moving between the bottom and approximately 5 m depth with individuals occasionally surfacing (Watanabe et al., 2012).

An investigation into the effects of various underwater vehicles documented no strikes on fishes (Campbell et al., 2021). Researchers observed only attraction or avoidance behaviors, depending on the general type of fish, the range between fish and device, speed of the device, and the habitat complexity. Fish were less reactive with increasing range (high end of the 2- to 50-m range) and decreasing speed (low end of the 0.5 to 3.5 knot range). Fish exhibiting attraction to the underwater vehicles were large pelagic and demersal (living on or near the seafloor) predators, including groupers. Smaller reef-associated species tended to hide when a fast-moving underwater vehicle was detected. In another experiment, an unmanned underwater vehicle traveling at three knots caused only localized school compression of Atlantic herring (*Clupea harengus*), a behavior that typically occurs on close approach of a potential predator (Fernandes et al., 2000). The vehicle was using navigational sonar and was powered by an electric motor. Generally, fishes may react behaviorally in response to noise produced by in-water devices. For example, one study designed to observe sound producing fish behavior found that remotely operated vehicle noise caused a startle response in various species (Rountree & Juanes, 2010). However, many of the unmanned underwater vehicles associated with proposed activities are battery powered and relatively quiet, and the potential for noise-related disturbance would therefore be low.

G.4.3 Entanglement Stressors

The background information for entanglement stressor effects on fishes in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.3.5 (Entanglement Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.4.4 Ingestion Stressors

The following information in this section was updated from the 2018 Final EIS/OEIS Section 3.6.3.6 (Ingestion Stressors).

Recent studies on the effects of debris ingestion by fish have focused on plastic debris, particularly microplastics (generally considered to be particles less than 5 millimeters [mm] in size). Plastic debris may block the digestive tract of fishes, and substances adsorbed to plastic (e.g., pesticides) may be absorbed by fishes that ingest them. The potential for ingestion seems to be mostly influenced by particle size (and potentially color) and feeding method. Overall, pelagic species that rely on vision for feeding are more likely to ingest non-food items (including plastic debris) than benthic species, most of which primarily use chemosensory cues such as taste (López-López et al., 2018; Roch et al., 2020). For example, Menezes et al. (2019) found a large (approximately 100 square centimeters [cm^2]) plastic item in a mahi-mahi (*Coryphaena hippurus*) stomach. However, the results of one experiment suggest that at least some fishes that feed in the water column may visually distinguish between food and non-food items, even if they are of similar size. Juvenile spiny chromis (*Acanthochromis polyacanthus*), a plankton-feeding reef fish, consumed few plastic particles that were the same size as typical planktonic food, regardless of concentration in the water (Critchell & Hoogenboom, 2018). However, consumption increased substantially for plastic items that were one-fourth the size of natural food, presumably because the fish could not easily distinguish them visually as non-food items. The result suggests greater potential for ingestion and associated effects as plastic degrades into smaller particles.

In general, microplastic particles are more likely than larger plastic particles to occur in fishes because fishes may incidentally ingest them while foraging or drinking water, absorb them through the gills, or consume other animals that contain them. In a study involving pelagic and demersal fishes of the Adriatic and Ionian seas, microplastic particles were found in 40 to 87 percent of fishes examined (depending on the location), while plastic particles greater than 1 mm in size were found in only about 2 to 26 percent of fish (Anastasopoulou et al., 2018). The proximity of fishes to anthropogenic debris sources and the degree of sampling difficulty may affect the reported incidences of plastic uptake. Markic et al. (2020) found that most plastic ingestion studies on wild marine fishes involved coastal benthic species and oceanic pelagic species, with few studies involving oceanic benthic or benthopelagic species. In one study, plastic debris was found in 48 percent of coastal demersal fishes located near a highly urbanized area, but in only about 2 percent of offshore pelagic and demersal fishes (Murphy et al., 2017). The overall effect of plastic ingestion on marine fish populations is unclear. The results of an extensive literature review on the effects of microplastics (less than 5 mm) on feeding, growth, reproduction, and survival indicate that feeding in larval and juvenile fish was negatively affected, but that no effects on adult fish were evident (Foley et al., 2018).

The potential for bio-inspired slime to block a fish's throat, if ingested soon after expenditure, could be greater than that of other biodegradable polymers because of the tacky nature of the material. However, the material would break down within hours to days after deployment, and the encounter rate in the Study Area would be low. The overall conclusions regarding the effects of biodegradable polymers would not change relative to those described in the 2018 Final EIS/OEIS Section 3.6.3.6.2 (Impacts from Military Expended Materials – Other Than Munitions).

G.4.5 Secondary Stressors

The background information for secondary stressor effects on fishes in the Study Area as described in the 2018 Final EIS/OEIS Section 3.6.3.7 (Secondary Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.5 Marine Mammals

Following a review of recent literature, information on potential impacts to marine mammals from proposed non-acoustic training and testing activities in the Study Area has not appreciably changed from what was presented the 2018 Final EIS/OEIS Section 3.7 (Marine Mammals). As such, the information presented in the 2018 Final EIS/OEIS remains valid with exceptions provided below.

G.5.1 Energy Stressors

Following a review of recent literature, the background information for energy stressor effects on marine mammals in the Study Area as described in the 2018 Final EIS/OEIS Section 3.7.3.3 (Energy Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.5.2 Physical Disturbance and Strike Stressors

G.5.2.1 Impacts from Vessels and In-Water Devices

Surface vessels can be a source of acute and chronic disturbance for cetaceans (Au & Green, 2000; Bejder et al., 2006; Hewitt, 1985; Lusseau et al., 2009; Magalhães et al., 2002; Nowacek et al., 2007; Nowacek et al., 2004b; Richter et al., 2006; Richter et al., 2003; Schoeman et al., 2020; Watkins, 1986; Würsig & Richardson, 2009). Studies have established that cetaceans engage in avoidance behavior when surface vessels move toward them. Overall, strike avoidance success is dependent on a marine

mammal's ability to identify and locate the vessel from its radiated sound and the animal's ability to maneuver away from the vessel in time.

Various research findings report that mysticetes have variable responses to vessels dependent on the context (Nowacek et al., 2004a; Richardson et al., 1995; Watkins, 1986). Similarly, odontocetes have also demonstrated responses to vessels. One study showed that harbor porpoises in a net-pen displayed behavioral responses (increasing swim speed or repeated alternating surfacing and diving behaviors [i.e., porpoising]) to the high-frequency components of vessel noise at long ranges (more than 1,000 m) in shallow waters (Dyndo et al., 2015). These distances correspond to where radiated noise would be more likely to elicit the response, rather than physical presence of the vessel (Dyndo et al., 2015; Palka & Hammond, 2001). Conversely, another study demonstrated that physical vessel presence, and not just noise, was associated with a short-term reduction in foraging activity in bottlenose dolphins (Pirotta et al., 2015). It is noteworthy that the dolphins associated with this report were exposed primarily to commercial and leisure boat traffic, not related to military vessel activities. Even repeated exposures from increasing vessel traffic in the same area resulting in increased responses to the disturbance may not be biologically significant. Mathematic modeling has predicted that bottlenose dolphin population dynamics would remain unchanged from a sixfold increase in vessel traffic (70 to 470 vessels per year) as dolphins are able to compensate for increased disturbance levels with little to no impacts on health and vital rates (New et al., 2013). Aside from the potential for an increased risk of strike addressed below, physical disturbance from vessel use is not expected to result in more than a short-term behavioral response.

Hauled-out pinnipeds are also disturbed when approached at close distance, although the research indicates this is somewhat context-dependent. For example, one study showed that harbor seals were disturbed by tourism-related vessels, small boats, and kayaks that stopped or lingered by haulout sites, but that the seals "do not pay attention to" passing vessels at closer distances (Johnson & Acevedo-Gutiérrez, 2007). Pinnipeds in the water generally appear less responsive (Richardson et al., 1995) than those at haulout sites. Walrus and polar bears have also appeared to be attracted to vessels at times (Harwood et al., 2005) and manatees have displayed vulnerabilities to vessel impacts (Nowacek et al., 2004b).

In some circumstances, marine mammals respond to vessels with the same behavioral repertoire and tactics they employ when they encounter predators. It is not clear what environmental cue or cues marine animals might respond to; they may include the sounds of water being displaced by the ships, the sounds of the ships' engines, or a combination of environmental cues surface vessels produce while they transit. For example, in one study, North Atlantic right whales showed little overall reaction to the playback of sounds of approaching vessels, but they did respond to a novel sound by swimming strongly to the surface, which may increase their risk of strike (Nowacek et al., 2004a).

Vessel strikes from commercial, recreational, and Navy vessels are known to have resulted in serious injury and occasional fatalities to cetaceans (Abramson et al., 2011; Berman-Kowalewski et al., 2010; Calambokidis, 2012; Douglas et al., 2008; Laggner, 2009; Lammers et al., 2003; Van der Hoop et al., 2013; Van der Hoop et al., 2012). Reviews of the literature on ship strikes mainly involve strikes between commercial vessels and whales (Jensen & Silber, 2004; Laist et al., 2001). Juvenile whales of some species may be particularly vulnerable to vessel strikes due to their particular habitat use and surface foraging behavior in nearshore waters, where smaller vessel numbers are higher (Stepanuk et al., 2021).

Vessel speed, size, and mass are all important factors in determining potential impacts of a vessel strike to marine mammals (Conn & Silber, 2013; Gende et al., 2011; Silber et al., 2010; Vanderlaan & Taggart, 2007; Wiley et al., 2016). For large vessels, speed and angle of approach can influence the severity of a strike. Based on modeling conducted by Silber et al. (2010), researchers found that whales at the surface

experienced impacts that increased in magnitude with the ship's increasing speed. Another study found that there was a 3.4-fold decrease in close encounters between their research vessel and humpback whales when they traveled at speeds of 12.5 knots or less as opposed to greater than 12.5 knots (Currie et al., 2017).

G.5.2.1.1 Mysticetes

Vessel strikes have been documented for almost all of the mysticete species (Van der Hoop et al., 2012). This includes blue whales (Berman-Kowalewski et al., 2010; Calambokidis, 2012; Van Waerebeek et al., 2007), fin whales (Douglas et al., 2008; Van Waerebeek et al., 2007), North Atlantic right whales (Firestone, 2009; Fonnesbeck et al., 2008; Vanderlaan et al., 2009; Wiley et al., 2016) sei whales (Felix & Van Waerebeek, 2005; Van Waerebeek et al., 2007), Bryde's whales (Felix & Van Waerebeek, 2005; Van Waerebeek et al., 2007), minke whales (Van Waerebeek et al., 2007), humpback whales (Douglas et al., 2008; Lammers et al., 2003; Van Waerebeek et al., 2007), and bowhead whales (Halliday, 2020). Generally, mysticetes are larger than odontocetes and are not able to maneuver as well as odontocetes to avoid vessels. In addition, mysticetes do not typically aggregate in large groups and are therefore difficult to visually detect from the water surface.

Research suggests that the increasing noise in the ocean has made it difficult for whales to detect approaching vessels, which has indirectly raised the risk of vessel strike (Elvin & Taggart, 2008). For example, North Atlantic right whales are documented to show little overall reaction to the playback of sounds of approaching vessels, suggesting that some whales perform only a last-second flight response (Nowacek et al., 2004a). Some individuals may become habituated to low-frequency sounds from shipping and fail to respond to an approaching vessel (National Marine Fisheries Service, 2008). Because surface activity includes feeding, breeding, and resting, whales may be engaged in this activity and not notice an approaching vessel. Acoustic shadows may also form ahead of a moving vessel, where radiated ship noise levels approach or fall below ambient noise and therefore would be hard to detect if an animal is directly ahead of the ship (Gerstein et al., 2005).

On the other hand, the lack of an acoustic cue of vessel presence can be detrimental as well. One study documented multiple cases where humpback whales struck anchored or drifting vessels; in one case a humpback whale punched a 1.5-m hole through the hull of an anchored 22-m wooden sailboat, and another instance a humpback whale rammed a powered down 10-m fiberglass sailboat (Neilson et al., 2012). These results suggest that either the whales did not detect the vessel, or they intentionally struck it. In this study, vessel strikes to multiple cetacean species were included in the investigation; however, humpback whales were the only species that displayed this type of interaction with an unpowered vessel.

Another study found that 79 percent of reported strikes between sailing vessels and cetaceans occurred when the vessels were under sail, suggesting it may be difficult for whales to detect the faint sound of sailing vessels (Ritter, 2012). However, in some instances, avoidance behavior has been observed even after exposure to noise. A blue whale was observed in a near strike with a ship while the whale was tagged with a tag that collected depth information (Szesciorka et al., 2019). A 263-m container ship approached the whale while traveling at 11.3 knots and came within 93 m of the whale while the whale was at a depth of 67.5 m ascending from a foraging dive. The whale slowed its ascent and switched to a descent dive, surfacing 3 minutes later. This incident took place in Southern California, and prior to the near strike with the ship, the blue whale had been exposed to simulated mid-frequency (3 to 4 kHz) active sonar (Southall et al., 2019), which ended 62 minutes prior to the observation presented here.

Vessel strikes are a primary threat to North Atlantic right whale survival (Firestone, 2009; Fonnesbeck et al., 2008; Knowlton & Brown, 2007; Nowacek et al., 2004a; Vanderlaan et al., 2009). Studies of North

Atlantic right whales tagged in April 2009 on the Stellwagen Bank feeding grounds found that they spent most of their time at a depth of 6.5 feet, which makes them less visible at the water's surface (Bocconcelli, 2009; Parks & Wiley, 2009). Between 2017 and 2023, 12 North Atlantic right whales were confirmed to have been killed by vessel strikes, and two more are considered to have serious injuries as the result of vessel strike (Koubrak et al., 2021; Kowarski et al., 2020; National Marine Fisheries Service, 2023).

Mysticetes that occur within the Study Area have varying patterns of occurrence and distribution, which overlap with areas where vessel use associated with military readiness activities would occur. For example, humpback whales that utilize the waters of the Chesapeake Bay near Naval Station Norfolk were found to spend considerable time (82 percent) engaged in foraging behavior at or near the mouth of the bay in close proximity to or directly in the shipping channel (Aschettino et al., 2020). Most of these animals were found to be juveniles, so there may be higher risk in younger animals who also have less experience maneuvering around vessels (Aschettino et al., 2020). Age-specific differences in habitat use compared to vessel density has been found in other areas within the Study Area as well (Stepanuk et al., 2021).

Risk of vessel strikes may increase depending on behavior. Increases in both nighttime foraging of some species and ship traffic overall contributes to increased risk of strike in some areas (Caruso et al., 2021). North Atlantic right whale mother-calf pairs spend 45 to 80 percent of their time surface resting or near-surface feeding during the first nine months of the calf's life (Cusano et al., 2019).

G.5.2.1.2 Odontocetes

Odontocetes that occur within the Study Area have varying patterns of occurrence and distribution, which overlap with areas where vessel use associated with military readiness activities would occur. Available literature suggests based on their smaller body size, maneuverability, larger group sizes, and hearing capabilities, odontocetes are not as likely to be struck by a vessel as mysticetes. When generally compared to mysticetes, odontocetes are more capable of physically avoiding a vessel strike, and, since some species occur in large groups, they are more easily seen when they are close to the water surface.

In general, odontocetes move quickly and seem to be less vulnerable to vessel strikes than other cetaceans; however, most small whale and dolphin species have at least occasionally suffered from vessel strikes, including killer whale (Van Waerebeek et al., 2007; Visser & Fertl, 2000), short-finned and long-finned pilot whales (Aguilar et al., 2000; Van Waerebeek et al., 2007), bottlenose dolphin (Bloom & Jager, 1994; Van Waerebeek et al., 2007; Wells & Scott, 1997), white-beaked dolphin (Van Waerebeek et al., 2007), short-beaked common dolphin (Van Waerebeek et al., 2007), spinner dolphin (Camargo & Bellini, 2007; Van Waerebeek et al., 2007), striped dolphin (Van Waerebeek et al., 2007), Atlantic spotted dolphin (Van Waerebeek et al., 2007), and pygmy sperm whales (*Kogia breviceps*) (Van Waerebeek et al., 2007). Beaked whales documented in vessel strikes include Arnoux's beaked whale (Van Waerebeek et al., 2007), goose-beaked whale (formerly Cuvier's beaked whale) (Aguilar et al., 2000; Van Waerebeek et al., 2007), and several species of *Mesoplodon* (Van Waerebeek et al., 2007).

However, evidence suggests that beaked whales may be able to hear the low-frequency sounds of large vessels and thus potentially avoid strike (Ketten, 1998). Sperm whales may be exceptionally vulnerable to vessel strikes as they spend extended periods of time "rafting" at the surface to restore oxygen levels within their tissues after deep dives (Jaquet & Whitehead, 1996; Watkins et al., 1999). Based on hearing capabilities and dive behavior, sperm whales may not be capable of successfully completing an escape maneuver, such as a dive, in the time available after perceiving a fast-moving vessel. This supports the suggestion that vessel speed is a critical parameter for sperm whale strike risks (Gannier & Marty, 2015). Data on vessel strikes of smaller cetaceans are generally scarce likely due, at least in part, to a reporting bias rather than strikes being less frequent (Schoeman et al., 2020).

G.5.2.1.3 Pinnipeds

Ship strikes were not reported as a global threat to pinniped populations by Kovacs et al. (2012). Pinnipeds in general appear to suffer fewer impacts from vessel strikes than do cetaceans or sirenians. This may be due, at least in part, to the time they spend on land resting and breeding, and their high maneuverability in the water. A review of seal stranding data from Cape Cod, Massachusetts, from 1999 to 2004 found that 622 pinniped strandings were recorded by the Cape Cod Stranding Network. Of these 622 strandings, 11 (approximately two percent) were found to be caused by boat strikes. Mortalities of pinnipeds (specifically harbor seals and gray seals) have initially been attributed to injuries sustained from ducted propellers on vessels such as workboats, tugs, and other support vessels (Bexton et al., 2012). However, further investigations have lead researchers to conclude that injuries that appeared to be the result of propellers were actually due to gray seal predation, cannibalism, and infanticide (Brownlow et al., 2016). Studies done in other areas have found similarly low trends—one study in the Salish Sea only found 27 instances of vessel strike out of 3,633 cases, with the majority of these cases found in pups (Olson et al., 2021).

G.5.2.1.4 Manatees

West Indian manatees respond to vessel movement via acoustic and possibly visual cues by moving away from the approaching vessel, increasing their swimming speed, and moving toward deeper water (Miksis-Olds et al., 2007; Nowacek et al., 2004b). The degree of the response varies with the individual manatee and may be more pronounced in deeper water where they are more easily able to locate the direction of the approaching vessel (Nowacek et al., 2004b). This disturbance is a temporary response to the approaching vessel. West Indian manatees have also been shown to seek out areas with a lower density of vessels (Buckingham et al., 1999). West Indian manatees exhibit a clear behavioral response to vessels within distances of 25 to 50 m (Nowacek et al., 2004b). Rycyk et al. (2018) found pronounced behavioral responses in tagged manatees when vessels passed within 10 m of the animal. While vessel speed did not have an impact on the occurrence, type, or number of behavioral changes observed in tagged manatees, results showed that manatees have more time to respond and changed their behavioral earlier when vessels approached slowly compared to vessels transiting on a plane at high speeds (approximately 20 miles per hour or greater) (Rycyk et al., 2018). Vessel traffic and recreation activities that disturb West Indian manatees may cause them to leave preferred habitats and may alter biologically important behaviors such as feeding, suckling, or resting (Haubold et al., 2006). Manatees use nearshore boat channels and open water fairways as migratory and travel corridors, but have been shown to use the nearshore channel more frequently (Cloyed et al., 2019).

In addition to disturbance, West Indian manatees are particularly susceptible to vessel strikes (both strikes with the hull and propeller strikes) because they hover near the surface of the water, move very slowly, and spend most of their time in inshore waters where vessel traffic tends to be more concentrated (Calleson & Frohlich, 2007; Gerstein, 2002; Haubold et al., 2006; Runge et al., 2007). Recent modeling suggests that approximately 96 percent of adults, 70 percent of subadults, and 34 percent of calves have watercraft-related scars (Bassett et al., 2020). Vessel strikes are the direct agent of most human-caused deaths to adult West Indian manatees (Rommel et al., 2007), accounting for approximately 21 percent of all manatee deaths from 1974 to 2016 (Bassett et al., 2020), and 15 percent of all manatee injuries recorded in Florida between 2008 and 2012 (U.S. Fish and Wildlife Service, 2014). An analysis of a 5-year subset (2000 to 2004) of historical mortality data suggests that a disproportionate number of propeller-caused watercraft-related mortalities could be attributed to propeller diameters greater than or equal to 17 inches, suggesting that these were caused by watercraft greater than 40 feet (Rommel et al., 2007). The USFWS indicates that manatees are probably struck by

smaller watercraft more often, but the likelihood of mortality is dependent on the force of strike, which is a factor of the speed and size of the vessel. Martin et al. (2015) found that the expected number of manatee and boat encounters in a given area increased with vessel speed and distance traveled by the boat. The findings in Rycyk et al. (2018) on manatee response time to slower vessels suggest strikes with slow-moving vessels are less likely to be lethal compared to high-speed vessels.

Not all strikes are fatal, as evidenced by the fact that most West Indian manatees in Florida bear scars from previous boat strikes (Rommel et al., 2007). In fact, the Manatee Individual Photo-identification System identifies more than 3,000 Florida manatees by scar patterns mostly caused by boats, and most cataloged manatees have more than one scar pattern, indicative of multiple boat strikes (81 *Federal Register* 1000, January 8, 2016). Non-lethal injuries may reduce the breeding success of females (Haubold et al., 2006) and may lower a manatee's immune response (Halvorsen & Keith, 2008).

G.5.3 Entanglement Stressors

Following a review of recent literature, the background information for entanglement stressor effects on marine mammals in the Study Area as described in the 2018 Final EIS/OEIS Section 3.7.5.3 (Entanglement Stressors) has not appreciably changed. As such, the majority of the information presented in the 2018 Final EIS/OEIS remains valid, with the exception of updated text for Mysticetes provided below.

G.5.3.1 Mysticetes

Mysticete species with documented entanglement reports include humpback whales, North Atlantic right whales, Rice's whales, minke whales, and bowhead whales (Cassoff et al., 2011; National Oceanic and Atmospheric Administration Marine Debris Program, 2014). Aside from Rice's whales, the aforementioned species have records directly linking entanglement to marine debris as opposed to active fishing gear (Baulch & Perry, 2014; Laist, 1997). It has been estimated that a minimum of 52 percent and a maximum of 78 percent of whales have been non-lethally entangled in their lifetime in some populations (Neilson et al., 2009). In 2020, there were 25 reports of live entangled large whales along the east coast of the United States, and 33 in 2019 (National Marine Fisheries Service, 2022a, 2022b).

Entanglement of many large whales most often begins with rope being caught in its baleen plates. Based on feeding adaptations for mysticetes, oral entanglement may pose one of the greatest threats to survival, due to impaired foraging and possibly loss of function of the hydrostatic seal (formed when upper and lower lips come together and keep the mouth closed), requiring the whale to expend energy to actively keep the mouth closed during swimming (Cassoff et al., 2011). Impaired foraging could lead to deterioration of health, making the animal more susceptible to disease or eventual starvation over a long period of time, or chronic poor body condition which could result in suppressions to growth, age of sexual maturation and calving rates (Christiansen et al., 2020).

Compounding the issue, trailing lengths of rope or line may become wrapped around the animal's appendages as it struggles to free itself (Kozuck, 2003), limiting the animal's mobility and increasing drag. This reduced mobility can also reduce foraging success or even limit the animal's ability to surface. Notably, the single acute cause of entanglement mortalities has been associated with drowning from multiple body parts being entangled (Cassoff et al., 2011). Even if a whale is freed of an entanglement, the recovery time is estimated to be an average of 1.3 to 3 months (Moore et al., 2021; van der Hoop et al., 2017), extending the sub-lethal effects of an entanglement.

Common sources of entanglements for mysticetes include line and net fragments attached through the mouth or around the tail and flippers (National Oceanic and Atmospheric Administration Marine Debris Program, 2014). Rope diameter and breaking strengths may also determine an animal's ability to break free from entanglement. Increased rope strength has been found to be positively correlated with injury severity in right whales, but not for humpback whales (Knowlton et al., 2016). Minke whales were also found entangled in lower breaking strength ropes (10.47 kilonewtons [2,617 pound (lb.)-force]) than both humpback and right whales (17.13 and 19.30 kilonewtons [3,851 and 4,339 lb.-force], respectively) (Knowlton et al., 2016). These are significantly greater than the breaking strength of torpedo guidance wires (maximum 42 lb.-force) as described in the 2018 Final EIS/OEIS Section 3.0.3.3.5.1 (Wires and Cables). Entanglement would be more likely for materials with similar physical properties as those described above.

In the western North Atlantic, entanglement in fishing gear is a known cause of humpback whale injury and mortality, with all components of both pot and gillnet gear documented during 30 separate humpback whale entanglement events (Johnson et al., 2005). This study also found one entanglement event involving a vessel anchor line rather than fishing gear. Overall, between 6 and 26 percent (average 12 percent) of the population exhibits evidence of new entanglement injuries every year (Robbins, 2009), though the proportion of entanglements due to fishing gear is unknown. Available data indicate that males typically have more entanglement scars than females and may become entangled more frequently. Juvenile whales were found to have a higher rate of entanglement and be more at risk of serious injury and mortality when entangled than mature animals of the same species (Robbins, 2009, 2010).

Military expended material is expected to sink to the ocean floor. It is possible that marine mammals could encounter these items within the water column as they sink to the bottom. Less buoyant items that sink faster are not as likely to become entangled with a marine mammal compared to more buoyant materials that would sink slower to the floor. Mysticetes that occupy the water column or skim feed along the water surface would have to encounter a military expended material at the same time and location it is either expended or as it sinks.

Almost 3 percent of all right whale sightings between 1980 and 2016, and over half of all cataloged North Atlantic right whales (58 percent) have been observed with seafloor sediment on their bodies, which suggests these whales make frequent contact with the seafloor (Hamilton & Kraus, 2019). Mysticete species that feed near or at the bottom in the areas where activities are conducted that result in military expended materials could encounter items that have already sunk and, therefore, do not have to be present at the precise time when items are expended.

G.5.4 Ingestion Stressors

Following a review of recent literature, the background information for ingestion stressor effects on marine mammals in the Study Area as described in the 2018 Final EIS/OEIS Section 3.7.3.6 (Ingestion Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.5.5 Secondary Stressors

Following a review of recent literature, the background information for secondary stressor effects on marine mammals in the Study Area as described in the 2018 Final EIS/OEIS Section 3.7.3.7 (Secondary Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.6 REPTILES

The following information was updated since the 2018 Final EIS/OEIS (Section 3.8, Reptiles).

- In 2024, Naval Undersea Warfare Center provided broad scale prediction models of in-water abundance, density, and distribution for four protected species of sea turtles (green, Kemp's ridley, leatherback, and loggerhead) along the United States east coast. The research is cited as (DiMatteo et al., 2024). In 2022, the National Oceanic and Atmospheric Administration Southeast Fisheries Science Center provided density spatial prediction models to estimate in-water abundance, density, and distribution for four protected species of sea turtles (as mentioned above) in the Gulf of America. The research is cited as (Garrison et al., 2023; Rappucci et al., 2023). The models predict where animals may or may not occur within the study area based on relationships with certain environmental and habitat variables. The abundance and density distribution predictions produced from these models show areas of low and higher density and abundance values based on these relationships.
    - Green sea turtle density off the United States east coast was predicted to be highest in summer months (June to August) and lower in other months. Density was predicted to be high year-round near Georgia and Florida, as well as in the Florida Keys.
    - Kemp's ridley sea turtle densities were predicted to be high year-round in Georgia and Florida. They were predicted to be in and around the Outer Banks in North Carolina during cooler months, moving northward in the late spring to occupy seasonal neritic habitats.
    - Leatherback turtles were predicted throughout waters off the United Sates east coast, including offshore areas. Animals were predicted off Georgia and Florida year-round, with higher densities in warm months.
    - Loggerhead sea turtle mean abundance off the United States east coast was predicted to be higher in cooler months (December to May) and lower in warmer months (June to November). Low but consistent density was predicted all months north of Long Island, New York and into the Gulf of Maine. Density off Florida was high year-round.
    - Green sea turtle density was predicted to be highest in warm waters close to shore throughout the eastern and southeastern Gulf of America. They are predicted to be in the northern region of the Gulf of America year-round with density increasing from late spring to early fall.
    - Kemp's ridley sea turtles were predicted to be throughout the Gulf of America during all seasons, with higher densities off the west coast of Florida and Louisiana, particularly during winter months. Their predicted densities tended to be highest at intermediate water depths and declined quickly in waters greater than 15 m depth.
    - Leatherback sea turtles were predicted to be present during all seasons. In the winter and spring, they were predicted to be east of the mouth of the Mississippi River. Higher density was predicted in the middle of the continental shelf and offshore waters deeper than 50 m.
    - Loggerhead sea turtle densities were predicted to be highest in the eastern Northern Gulf of America and in nearshore waters of the central Northern Gulf of America. The highest overall densities were predicted in January through April and higher density areas were found off Louisiana and the Florida panhandle south to the Florida Keys.

- Sea turtle dive behavior and foraging depths from updated literature were incorporated into the section discussing physical disturbances, particularly vessel strike stressors, and entanglement stressors.
- Updated literature has been added to secondary stressors with respect to average daily intake of harsh metals increasing in sea turtle populations.
- Updated literature on anthropogenic debris found in reptiles has been incorporated into the ingestion stressors section.
- Bathythermographs are added to the discussion as a potential entanglement stressor for marine reptiles in the Study Area. Added information to the Wires and Cables section.

G.6.1 Energy Stressors

Disturbance from energy stressors that may impact reptiles consists of: (1) in-water electromagnetic devices and (2) high-energy lasers. Because energy stressors would not occur in habitats used by the American crocodile (*Crocodylus acutus*), the impacts that may potentially occur from energy stressors are limited to sea turtles, American alligators, and diamondback terrapins.

The background information for high-energy stressor effects on terrapins and alligators in the Study Area as described in the 2018 Final EIS/OEIS Section 3.8.3.3 (Energy Stressors) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid. Below is a brief summary of background context to support updated literature provided regarding energy stressor impacts to sea turtles in the Study Area.

G.6.1.1 Impacts from In-Water Electromagnetic Devices

Several different electromagnetic devices are used during training and testing activities. A discussion of the characteristics of energy introduced into the water through training and testing activities and the relative magnitude and location of these activities is presented in Section 3.0.3.3.3 (Energy Stressors) of the 2018 Final EIS/OEIS. Table 3.0-6 (Number and Location of Activities Using In-Water Electromagnetic Devices) shows the number and location of proposed activities that include energy stressors that are considered in this Supplemental EIS/OEIS and the equivalent information from the 2018 Final EIS/OEIS for comparison.

The devices producing an electromagnetic field are towed or unmanned mine countermeasure systems. Studies on behavioral responses to magnetic fields have been conducted on green and loggerhead sea turtles. Loggerheads were found to be sensitive to field intensities ranging from 0.005 to 4,000 microteslas, and green sea turtles were found to be sensitive to field intensities from 29.3 to 200 microteslas (Bureau of Ocean Energy Management, 2011). Because these data are the best available information, this analysis assumes that the responses would be similar for other sea turtle species.

Sea turtles use geomagnetic fields to navigate at sea, and therefore changes in those fields could impact their movement patterns (Lohmann & Lohmann, 1996; Lohmann et al., 1997). Sea turtles in all life stages orient to Earth's magnetic field to position themselves in oceanic currents, and directional swimming presumably aided by magnetic orientation has been shown to occur in some sea turtles (Christiansen et al., 2016; Putman & Mansfield, 2015). This helps them locate seasonal feeding and breeding grounds and return to their nesting sites (Lohmann & Lohmann, 1996; Lohmann et al., 1997). Evidence has shown that natal homing is accomplished by sea turtles in two steps: (1) long-distance movements through the open ocean into the vicinity of the natal area which is likely guided by magnetic navigation and geomagnetic imprinting (Brothers & Lohmann, 2015; Lohmann & Lohmann, 2019;

Putman et al., 2015) and (2) localization of a suitable site for reproduction. Sea turtles might imprint on a single element of the geomagnetic field (either inclination angle or intensity) at the location to which they will return to nest. To locate the area later in life, the sea turtle would need only to find the coastline, and then swim north or south along it to reach the target location (Lohmann & Lohmann, 2019). Studies confirmed that nesting females locate their natal beaches by seeking out specific magnetic signatures (Brothers & Lohmann, 2018). A study on loggerhead sea turtles found that sea turtles at nesting beaches with similar magnetic fields were genetically similar compared to nesting populations at beaches marked by larger differences in magnetic fields and therefore had greater genetic differences (Brothers & Lohmann, 2018).

As stated in Section 3.0.3.3.3 (Energy Stressors) of the 2018 Final EIS/OEIS, the static magnetic fields generated by electromagnetic devices used in training and testing activities are of relatively minute strength. The maximum strength of the magnetic field is approximately 2,300 microteslas, with the strength of the field decreasing further from the device. At a distance of 4 m from the source of a 2,300-microtesla magnetic field, the strength of the field is approximately 50 microteslas, which is within the range of Earth's magnetic field (25 to 65 microteslas). At 8 m, the strength of the field is approximately 40 percent of Earth's magnetic field, and only 10 percent at 24 m away from a 2,300 microtesla magnetic field at the source. At a distance of 200 m the magnetic field would be approximately 0.2 microteslas (U.S. Department of the Navy, 2005), which is less than one percent of the strength of Earth's magnetic field. This is likely within the range of detection for sea turtle species, but at the lower end of the sensitivity range.

G.6.1.2 Impacts from High-Energy Lasers

High-energy laser weapons training and testing involves the use of up to 30 kilowatts of directed energy as a weapon against small surface vessels and airborne targets (see Table 3.0-7, Number and Location of Activities Using High-Energy Lasers). These weapons systems are deployed from surface ships and helicopters to create small but critical failures in potential targets and used at short ranges from the target.

This section analyzes the potential impacts of high-energy lasers on sea turtles. As discussed in 2018 Final EIS/OEIS Section 3.0.3.3.3 (Energy Stressors), high-energy laser weapons are designed to disable surface targets, rendering them immobile. High-energy lasers would only be used in open-ocean areas for training and testing activities; therefore, crocodilian and terrapin species are not included in the analysis for potential impacts from high-energy lasers because they would not be in areas where high-energy lasers would be used.

The primary concern for high-energy weapons training and testing is the potential for a sea turtle to be struck by a high-energy laser beam at or near the water's surface, which could result in injury or death from traumatic burns from the beam. The Navy conducted a strike analysis using sea turtle species with the highest average month density in the training and testing areas of interest which is the green sea turtle within the Virginia Capes Range Complex and the loggerhead sea turtle within the Jacksonville Range Complex.

The only potential effect on sea turtles from the use of high-energy lasers is direct exposure to laser light incident on the water's surface at the time a sea turtle is at or near the water's surface, and for the exposure to cause injury. A sea turtle could only be exposed if a laser beam missed the intended target and inadvertently struck a nearby sea turtle. Should the laser strike the sea surface, individual sea turtles at or near the surface could be exposed. The potential for exposure to a high-energy laser beam decreases as the water depth increases. Because laser platforms are typically helicopters and ships, sea turtles at sea would likely move away or submerge in response to other stressors, such as ship or aircraft noise, although some sea turtles would not exhibit a response to an oncoming vessel or aircraft,

increasing the risk of contact with the laser beam. Per the Navy's strike analysis, the probability of a strike from a high-energy laser to green sea turtle in the Virginia Capes Range Complex and for loggerheads in the Jacksonville Range Complex is a probability of less than 1 percent (see Appendix I, Military Expended Materials and Direct Strike Impact Analysis). The probability analysis does not take into account that high-energy laser systems used in military readiness activities automatically shut down when target-lock is lost; meaning that if a high-energy laser beam aimed at a small boat on the surface, either from aircraft of surface vessel, moves off the target, the system ceases projecting laser light, preventing any energy from striking the water or a nearby sea turtle.

G.6.2 Physical Disturbance and Strike Stressors

The physical disturbance and strike stressors that may impact reptiles consist of (1) vessels and in-water devices; (2) military expended materials, including non-explosive practice munitions and fragments from high-explosive munitions; and (3) seafloor devices. Detailed information describing these stressors can be found in Section 3.0.3.3.4 (Physical Disturbance and Strike Stressors) of the 2018 Final EIS/OEIS. While the majority of information is the same as the 2018 Final EIS/OEIS, there are several updates to this stressor contained in Section 3.0.3.3.4 and Tables 3.0-9 (Number and Location of Activities Including Vessels) and 3.0-10 (Number and Location of Activities Including In-Water Devices) in this Supplemental EIS/OEIS. Following a review of recent literature, the background information for effects of these stressors on reptiles in the Study Area has not appreciably changed, as described in the 2018 Final EIS/OEIS Section 3.8.3.4 (Physical Disturbance and Strike Stressors). With the exception of vessel strike stressor effects to sea turtles, all physical disturbance and strike stressors analyzed in the 2018 Final EIS/OEIS for reptiles remain valid. Updated literature is provided below for vessel strike effects on sea turtles based on recent dive behavior studies and population density information available.

G.6.2.1 Impacts from Vessels and In-Water Devices

G.6.2.1.1 Vessels

Loggerhead sea turtles are the most abundant sea turtle species found in the nearshore environment of the Study Area. Loggerheads, considered to be the most generalist of sea turtle species in terms of feeding and foraging behavior, apparently exhibit varied dive behavior that is linked to the quantity and quality of available resources and sea surface temperatures. Researchers tracked 25 female loggerheads after nesting in the Gulf of America for 2 years; these results showed that the sea turtles dove, on average, 41.9 times per day, with most dives being 30 to 40 minutes long and within the top 25 m of the water column (Iverson et al., 2019). This demonstrates the potential vulnerability loggerheads have around vessels at all times, as the majority of their day is spent in this "strike zone" or area where there is high risk of boat strikes (Iverson et al., 2019; Patel et al., 2018; Patel et al., 2016). Arendt et al. (2012) demonstrated the distributional patterns and diving habits of 25 reproductively active and four inactive male loggerhead sea turtles in Cape Canaveral, Florida. Distribution patterns varied between breeding and non-breeding periods with resident and migrant male loggerheads co-occurring close to shore during breeding and shifting to offshore areas after the breeding period. Reproductively active males were found to make shorter dives than inactive males which is suspected to be due to energy demand of breeding males in pursuit of females. The study also found correlations between environmental conditions and dive times, with dive times being substantially longer during high winds and high waves (Arendt et al., 2012). A tracking study conducted on the dive behavior of 10 pelagic juvenile loggerhead sea turtles in the eastern North Atlantic observed greater dive activity in shallow depths (0 to 10 m) at night and during transit as compared to greater activity at depths of 10 to 50 m during the daytime when there is strong lunar illumination (Freitas et al., 2018).

Leatherback sea turtles are more likely to feed at or near the surface in open ocean areas. Chambault et al. (2017) researched the role of the Gulf Stream frontal system in the selection of specific areas for sea turtles to habituate after mating and found that they also spend the majority of their time in the upper approximately 40 m of the water column. This study found that their choice of more long-term habitat was strongly correlated with phytoplankton blooms, which bring ample nutrients into the mixed layer of the water column. It is important to note that leatherbacks can demonstrate diving behavior while foraging for jellyfish, but bring them back to the surface to ingest (Benson et al., 2007; Chambault et al., 2017; Dodge et al., 2014; Fossette et al., 2007; James & Herman, 2001). Research conducted by National Marine Fisheries Service (2022c) provides a more recent look at the leatherback turtle's swimming patterns and diving habits along the east coast of the United States. The range at which they would travel at long distances spanned from as far south as Florida to as far north as Nova Scotia, and having concentrated movements between North Carolina and Massachusetts during non-migration stages of life. Depth sensors showed that during the months of February, March, and May, sea turtles spent most of their time during the day within the top 2 m of the water column (National Marine Fisheries Service, 2022c).

Green, hawksbill, loggerhead, and Kemp's ridley sea turtles are more likely to forage in coastal and inshore waters, and although they may feed along the seafloor, they surface periodically to breathe while feeding and moving between near shore habitats. Kemp's ridley and loggerhead sea turtles can spend extended periods foraging at depth (meaning any depth greater than an assumed visible depth of 4 m), even in open-ocean areas (DiMatteo et al., 2022; Roberts et al., 2022; Sasso & Witzell, 2006; Seney, 2016; Servis et al., 2015). Overall, each species only spent on average approximately 16 to 18 percent of the time at the surface, while the rest of the time was scattered throughout the rest of the top 25 to 30 m layer of the water column (Roberts et al., 2022). A study by Stokes et al. (2023) showed that for hawksbills, there was a strong correlation of dive depth with temperature, but also to tidal patterns, with dives becoming longer and deeper during high tide. Hawksbills were found to spend the majority of their time in the upper approximately 5 m of the water column (Stokes et al., 2023). Welsh and Witherington (2023) conducted a study in Florida on vulnerability of vessels strikes for loggerhead, green, and leatherback sea turtles. In this study, "vulnerable turtles" were defined as ones within the typical "strike zone" (depth of water that an engine, propeller, skeg, or hull of a vessel sits at when underway). Researchers considered any sea turtle within one meter of the surface to be vulnerable; the sightings consisted of 181 green sea turtles, 171 loggerhead sea turtles, and 2 leatherback sea turtles. Higher densities of sea turtles were observed during spring and summer months, and they are often seen basking on the water's surface for means of foraging or mating (Welsh & Witherington, 2023).

Basking on the water's surface is also common for all species in the Study Area as a strategy to thermoregulate and, also places them in the part of the water column that is exposed to boat traffic. The reduced activity associated with basking may pose higher risks for sea turtle strikes because of a likely reduced capacity to avoid cues (Foley et al., 2019).

Density surface models are typically used for understanding sea turtle spatial distribution and can be used to assess coastal exposure of sea turtles to vessel strike hazards (see summaries of predicted densities for green, Kemp's ridley, leatherback, and loggerhead turtles off the United States east coast and in the Gulf of America, as provided by DiMatteo et al. (2024), Garrison et al. (2023), and Rappucci et al. (2023). A study by Chaloupka et al. (2008), however, found that a vessel management zone closest to shore would be more efficient in protecting mating and inter-nesting sea turtles from vessel strikes near nesting beaches. Smaller, faster vessels that operate in nearshore waters, where green, Kemp's ridley, loggerhead, and hawksbill sea turtles can be more densely concentrated, pose a greater risk (Chaloupka et al., 2008). For example, Kemp's ridley and loggerhead sea turtle occurrence increases in nearshore areas within the Chesapeake Bay from late spring to early fall, most likely due to foraging (Barco et al., 2018a; Barco et al., 2018b). Other studies have shown that the potential for vessel strike increases in

areas important for foraging sea turtles (Denkinger et al., 2013). Loggerhead turtle preferred habitat was found to extend farther north in the Chesapeake Bay as well as in deeper areas of the Bay compared to Kemp's ridley turtles (DiMatteo et al., 2022).

G.6.3 Entanglement Stressors

The background information for entanglement stressor effects on reptiles in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.8.3.5) has not appreciably changed. Updated research on entanglement impacts (specifically from wires and cables) to sea turtles is presented below, while the information on decelerators/parachutes and biodegradable polymers presented in the 2018 Final EIS/OEIS remains valid.

G.6.3.1 Impacts from Wires and Cables

For a discussion of the types of activities that use wires and cables see Appendix B (Activity Stressor Matrices). For a discussion on where they are used and how many wires and cables would be expended under each alternative, see Section 3.0.3.3.5 (Entanglement Stressors) in this Supplemental EIS/OEIS. A sea turtle that becomes entangled in nets, lines, ropes, or other foreign objects under water may suffer temporary hindrance to movement before it frees itself or may remain entangled. The sea turtle may suffer minor injuries but recover fully, or it may die as a result of the entanglement.

Bathythermographs, which are instruments used to measure water temperature with depth, are used by the Navy during training and testing. The device is made up of a probe carrying a temperature sensor and a transducer, which is dropped nearly freely through the water column until reaching a pre-determined depth. At depth, the temperature sensor and transducer are stopped from falling by a wire attached to the rest of the bathythermograph at the surface. This wire can cause risk of entanglement in sea turtles, as it is used in the same layer of the water column in which they occupy the majority of their time (National Oceanic and Atmospheric Administration, 2024).

Increased risk of sea turtle interactions with fiber-optic cables include the amount of time it is in the same vicinity of a sea turtle; however, these cables will only be within the water column during the activity and while they sink. The likelihood of a sea turtle, especially hatchlings and pre-recruitment juveniles due to their occurrence at or near the water's surface, encountering and becoming entangled within the water column is extremely low. Further, activities that use fiber-optic cables occur in deep waters. These factors reduce the likelihood that a fiber-optic cable would be in close proximity to a sea turtle. The cable is only buoyant during the training and testing activity, and subsequently sinks after use to rest in the benthic habitats. Updated literature on entanglement to sea turtles is discussed below.

Coastal waters off Massachusetts are an important seasonal habitat for leatherbacks, most likely due to the spring production peak that occurs in this coastal ecosystem (Dodge et al., 2014). Recent studies by Dodge et al. (2022) analyzed a 15-year dataset of entanglement reports to characterize sea turtle bycatch in fisheries in Massachusetts. The study took place primarily within the Massachusetts jurisdiction off Cape Cod, and entangled sea turtles were found both nearshore and offshore towards Martha's Vineyard and Nantucket Island. With this data, researchers were able to determine the number of sea turtles that were injured or dead as a result of entanglement, as well as analyze the behavior and recovery or survival rate of alive sea turtles found entangled. The study focused on adult males, adult females, and subadults. Of the 280 confirmed sea turtle entanglements documented during this study, 272 were leatherback turtles. The majority of sea turtles were entangled in actively fished and commercial areas, and entanglements occurred from May to November, with peak reporting in August. A total of 224 entangled leatherbacks were found alive at first sighting, 47 were found dead in gear, and 1 case was unknown. Though data was limited on the survival rate of alive entangled sea

turtles, post-release monitoring suggested they can survive days, even years after entanglement (Dodge et al., 2022).

Research conducted by Duncan et al. (2017) also demonstrated the consequences of sea turtles interacting with anthropogenic devices or debris on a global scale; of the thousands of sea turtle strandings encountered by the observers, across six species and all life stages, 5.5% were found entangled, and 90.6% of these were dead. The majority of recorded entanglements were with lost or discarded fishing gear. It is evident that anthropogenic materials, such as some of the wires and cables that will be used during training and testing activities, are a serious hazard to sea turtles; however, this interaction is expected to be minimal, and wires and cables as an entanglement stressor do not pose a significant threat to sea turtle species during training and testing activities.

G.6.4 Ingestion Stressors

The background information for ingestion stressor effects on reptiles in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.8.3.6) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid.

G.6.5 Secondary Stressors

There is the potential for impacts on sea turtles, crocodilians, and terrapins exposed to stressors indirectly through impacts on their habitat (sediment or water quality) or prey availability. For the purposes of this analysis, indirect impacts on reptiles via sediment or water quality that do not require trophic transfer (e.g., bioaccumulation) to be observed are considered here. Bioaccumulation considered previously in this document in the analyses of fishes (Section 3.6), invertebrates (Section 3.5), and marine habitats (Section 3.3) indicated minimal to no impacts on potential prey species of sea turtles, crocodilians, or terrapins. It is important to note that the terms “indirect” and “secondary” do not imply reduced severity of environmental consequences but instead describe how the impact may occur in an organism.

Stressors from training and testing activities that could pose indirect impacts on sea turtles via habitat or prey include: (1) explosives, (2) explosive byproducts and unexploded munitions, (3) metals, and (4) chemicals. Stressors from training and testing activities that could pose indirect impacts on crocodilians or terrapins via habitat or prey include metals from training and testing activities within inshore waters. Analyses of the potential impacts on sediment and water quality are discussed in Section 3.2 (Sediment and Water Quality).

The background information for secondary stressor effects including explosives, explosive byproducts, and chemicals on reptiles and metals on crocodilians and terrapins in the Study Area as described in the 2018 Final EIS/OEIS (Section 3.8.3.7) has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS remains valid. Updated research on the impact of metals on sea turtles has been incorporated since 2018, and a summary of the findings are presented below.

G.6.5.1 Metals

Metals are introduced into seawater and sediments as a result of training and testing activities involving ship hulks, targets, munitions, and other military expended materials (see 2018 EIS/OEIS Section 3.0.3.3.2, Explosive Stressors) (Environmental Sciences Group, 2005). Some metals bioaccumulate and physiological impacts begin to occur only after several trophic transfers concentrate the toxic metals (Section 3.3, Habitats, and Chapter 4, Cumulative Impacts). Evidence from several studies (Briggs et al., 2016; Koide et al., 2016) indicate metal contamination is very localized and that bioaccumulation resulting from munitions cannot be demonstrated. Specifically, in sampled marine life living on or around munitions on the seafloor, metal concentrations could not be

definitively linked to the munitions since comparison of metals in sediment next to munitions show relatively little difference in comparison to other "clean" marine sediments used as a control/reference (Koide et al., 2016). Recent literature by Shaw et al. (2023) studied green sea turtles that resided near a shooting range in Kailua Bay, Oahu to determine if they had elevated blood and scute lead, arsenic, and antimony concentrations as a result of lead deposition at the site. Results found that the sea turtles had higher lead concentrations than reference populations due to their close proximity to the gun range and residing in an area with such heavy metal deposition into the land. Intake of metals at higher rates could pose a range of problems for these species, as metal ingestion is known to have detrimental health effects. In this study, negative relationships between concentration of metals found in blood and variables such as growth rate and reproductive success were found among green sea turtles (Shaw et al., 2023). Research has demonstrated that some smaller marine organisms are attracted to metal munitions as a hard substrate for colonization or as shelter (Smith & Marx, 2016). Although this would likely increase prey availability for some benthic foraging sea turtles that feed on molluscs (e.g., loggerheads), the relatively low density of metals deposited by training and testing activities compared to concentrated dump and range sites would not likely substantively benefit sea turtles. Inshore waters, which would receive small-caliber shells from training activities have the potential to be deposited in substrates in estuaries used by some sea turtles (in particular Kemp's ridley, loggerhead, and green sea turtles).

G.7 Birds and Bats

G.7.1 Energy Stressors

Following a review of recent literature, the background information for energy stressor effects on birds and bats in the Study Area as described in the 2018 Final EIS/OEIS has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS (Section 3.9.3.3) remains valid.

G.7.2 Physical Disturbance and Strike Stressors

Following a review of recent literature, the background information for physical disturbance and strike stressor effects on birds and bats in the Study Area as described in the 2018 Final EIS/OEIS has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS (Section 3.9.3.4) remains valid.

G.7.3 Entanglement Stressors

Following a review of recent literature, the background information for entanglement stressor effects on birds and bats in the Study Area as described in the 2018 Final EIS/OEIS has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS (Section 3.9.3.5) remains valid.

G.7.4 Ingestion Stressors

Following a review of recent literature, the background information for ingestion stressor effects on birds and bats in the Study Area as described in the 2018 Final EIS/OEIS has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS (Section 3.9.3.6) remains valid.

G.7.5 Secondary Stressors

Following a review of recent literature, the background information for secondary stressor effects on birds and bats in the Study Area as described in the 2018 Final EIS/OEIS has not appreciably changed. As such, the information presented in the 2018 Final EIS/OEIS (Section 3.9.3.7) remains valid.

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APPENDIX H
AIR QUALITY EMISSIONS CALCULATIONS

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

H AIR QUALITY EMISSIONS CALCULATIONS H-1

H.1 Air Quality Emissions Calculations H-1

H.2 Navy Record Of Non-Applicability (RONA) For Clean Air Act Conformity H-52

H.2.1 Rhode Island Ozone Nonattainment Area H-52

H.2.2 Metropolitan Portland/Cumberland County, Maine, Ozone Maintenance Area H-54

H.2.3 Hampton Roads, Virginia, Ozone Maintenance Area H-56

H.2.4 Jacksonville, Florida, Sulfur Dioxide Maintenance Area H-60

List of Figures

Figure H-1: Island 30 Miles Southwest of Bar Harbor H-1

Figure H-2: Northern Tip of Cape Cod H-2

Figure H-3: Directly Between the Boston and Narragansett Bay Operating Areas H-3

Figure H-4: On the Inshore Boundary of the Narragansett Bay Operating Area H-4

Figure H-5: Site Is 1 Mile from the Coast Inside the Atlantic City Marina Entrance Channel H-5

Figure H-6: Fifty Miles North/Northeast of Virginia Beach and East of Chesapeake Bay H-6

Figure H-7: On the Coast at Virginia Beach H-7

Figure H-8: Central North Carolina – 72 Miles Southwest of Cape Hatteras H-8

Figure H-9: Directly on the Coast East Of Jacksonville H-9

Figure H-10: On the Beach at Cape Canaveral H-10

Figure H-11: A Few Miles North of the Key West Operating Area, Elevation 6 Feet Mean Sea Level H-11

Figure H-12: Site Is on the Coast and Directly North of the Boundary of the Panama City Operating Area H-12

Figure H-13: This Site Is 132 Miles Southwest of Morgan City and Just West of the New Orleans Operating Area H-13

Figure H-14: On the Beach 20 Miles Northeast of Brownsville H-14

Figure H-15: A Few Miles East of the Center of the Corpus Christi Operating Area H-15

List of Tables

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities H-17
Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities H-27
Table H-3: Vessel Emissions by OPAREA – Outside State Waters – Phase III H-38
Table H-4: Vessel Emissions by OPAREA – Inside State Waters – Phase III H-38
Table H-5: Aircraft Emissions by OPAREA – Outside State Waters – Phase III H-38
Table H-6: Aircraft Emissions by OPAREA – Inside State Waters – Phase III H-39
Table H-7: Munitions Emissions by OPAREA – Phase III H-39
Table H-8: Emissions by OPAREA – Inside State Water Boundaries – Phase III H-39
Table H-9: Grand Total Emissions Summary by OPAREA – Phase III H-40
Table H-10: Vessel Emissions by OPAREA – Outside State Waters – Phase IV Alternative 1 ..... H-40
Table H-11: Vessel Emissions by OPAREA – Inside State Waters – Phase IV Alternative 1 ..... H-40
Table H-12: Aircraft Emissions by OPAREA – Outside State Waters – Phase IV Alternative 1 ..... H-41
Table H-13: Aircraft Emissions by OPAREA – Inside State Waters – Phase IV Alternative 1 ..... H-41
Table H-14: Munitions Emissions by OPAREA – Phase IV Alternative 1 ..... H-41
Table H-15: Emissions by OPAREA – Inside State Water Boundaries – Phase IV Alternative 1 ..... H-42
Table H-16: Grand Total Emissions Summary by OPAREA – Phase IV Alternative 1 ..... H-42
Table H-17: Vessel Emissions by OPAREA – Outside State Waters – Phase IV Alternative 2 ..... H-42
Table H-18: Vessel Emissions by OPAREA – Inside State Waters – Phase IV Alternative 2 ..... H-43
Table H-19: Aircraft Emissions by OPAREA – Outside State Waters – Phase IV Alternative 2 ..... H-43
Table H-20: Aircraft Emissions by OPAREA – Inside State Waters – Phase IV Alternative 2 ..... H-43
Table H-21: Munitions Emissions by OPAREA – Phase IV Alternative 2 ..... H-44
Table H-22: Emissions by OPAREA – Inside State Water Boundaries – Phase IV Alternative 2 ..... H-44
Table H-23: Grand Total Emissions Summary by OPAREA – Phase IV Alternative 2 ..... H-44
Table H-24: Conformity Applicability Analyses – Phase IV minus Phase III Emissions H-45
Table H-25: Data Organization by Geographic Areas H-45
Table H-26: Vessel and Boat Engine Specifics and Emission Factors H-46
Table H-27: Aircraft Engine Specifics and Emission Factors H-49
Table H-28: Aircraft Engine Emission Factors References H-50
Table H-29: Assumptions Used in the Estimation of Emissions for the AFTT Final Supplemental EIS/OEIS - Phase IV H-51
Table H-30: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year) H-52
Table H-31: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year) H-54

Table H-32: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year) H-56

Table H-33: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year) H-58

Table H-34: Proposed Action Sulfur Dioxide Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year) H-60

Acronyms and Abbreviations

AESO	Aircraft Environmental Support Office
AFTT	Atlantic Fleet Training and Testing
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
DE	Delaware
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FL	Florida
GA	Georgia
HC	hydrocarbons
JAX	Jacksonville
JEB	Joint Expeditionary Base
lb/hr	pounds per hour
MA	Massachusetts
ME	Maine
mph	miles per hour
MS	Mississippi
MT	metric ton
NAVAIR	Naval Air Systems
NAVSEA	Naval Sea Systems
NC	North Carolina
NJ	New Jersey
NM	nautical mile
NO_X	nitrogen oxides
NS	Naval Station
NSB	Naval Submarine Base
NSWC	Naval Surface Warfare Center
NUWC	Naval Undersea Warfare Center
OEIS	Overseas Environmental Impact Statement
ONR	Office of Naval Research
OPAREA	Operations Area
RONA	Record of Non-Applicability
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter

Pt	Point
RC	Range Complex
RI	Rhode Island
SEIS	Supplemental EIS
SFOMF	South Florida Ocean Measurement Facility Testing Range
SINKEX	Sinking Exercise
SO_2	sulfur dioxide
SO_X	sulfur oxides
TPY	tons per year
TX	Texas
U.S.	United States
USCG	United States Coast Guard
VA	Virginia
VACAPES	Virginia Capes
VOC	volatile organic compound

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H AIR QUALITY EMISSIONS CALCULATIONS

H.1 AIR QUALITY EMISSIONS CALCULATIONS

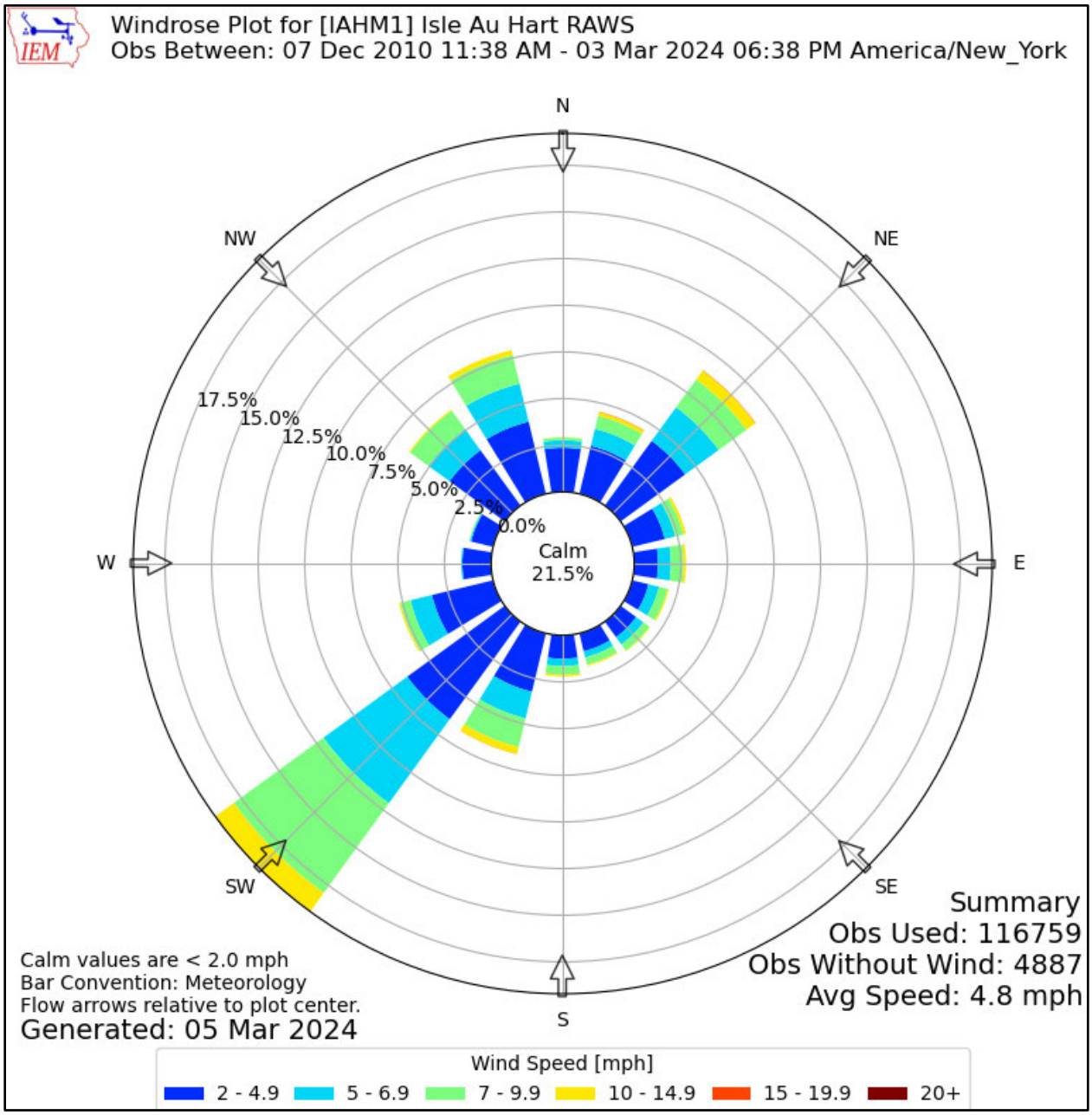


Figure H-1: Island 30 Miles Southwest of Bar Harbor

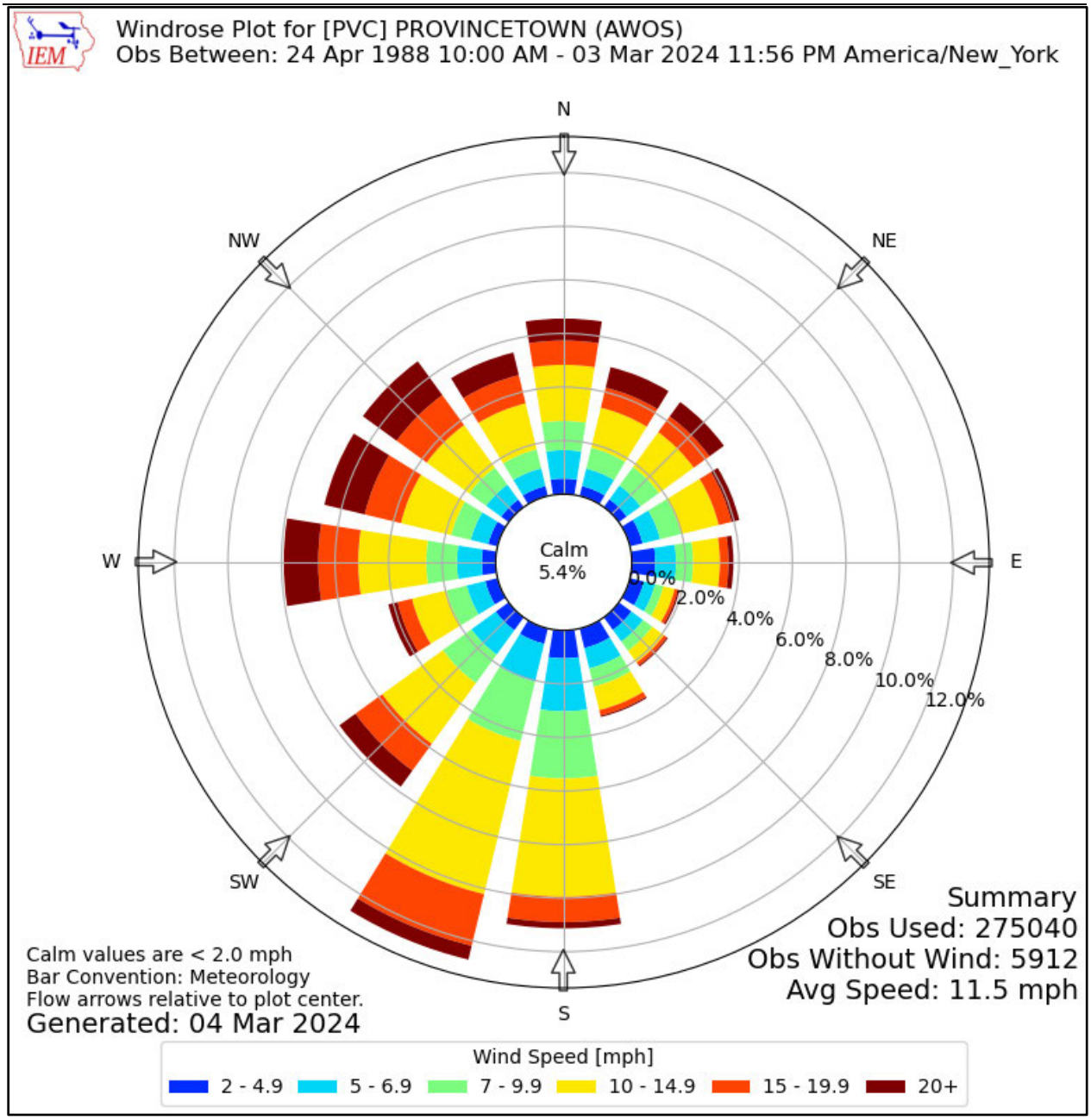


Figure H-2: Northern Tip of Cape Cod

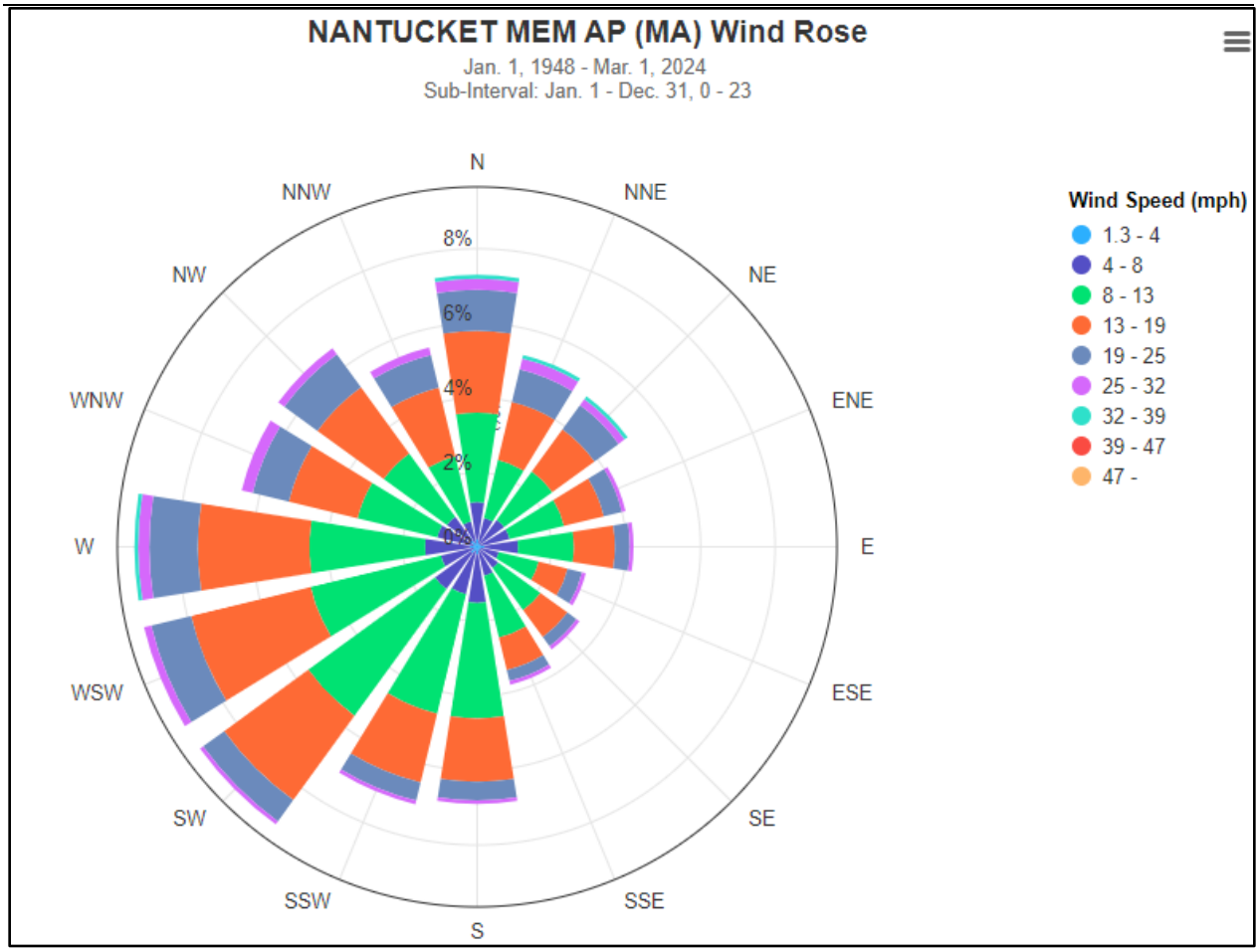


Figure H-3: Directly Between the Boston and Narragansett Bay Operating Areas

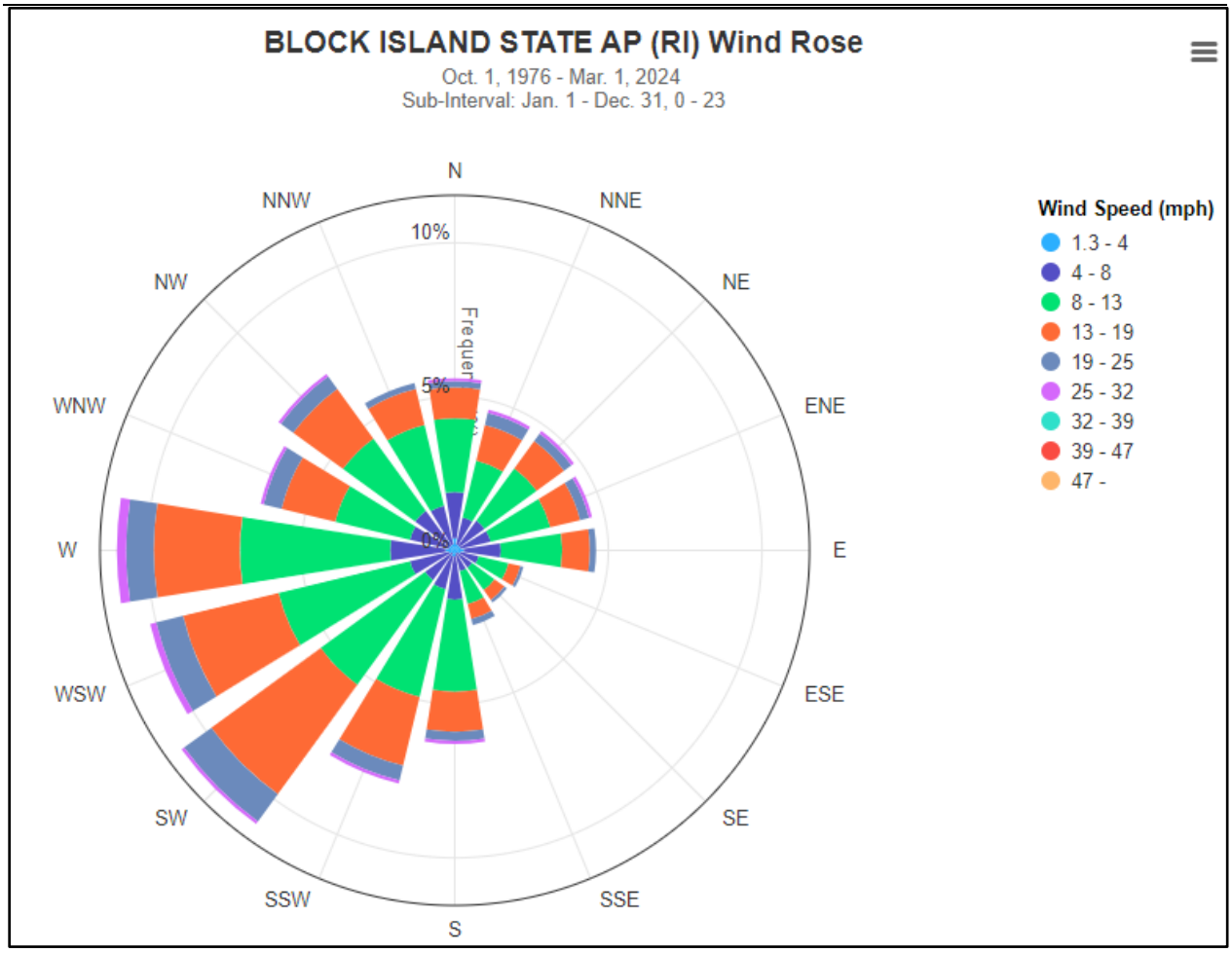


Figure H-4: On the Inshore Boundary of the Narragansett Bay Operating Area

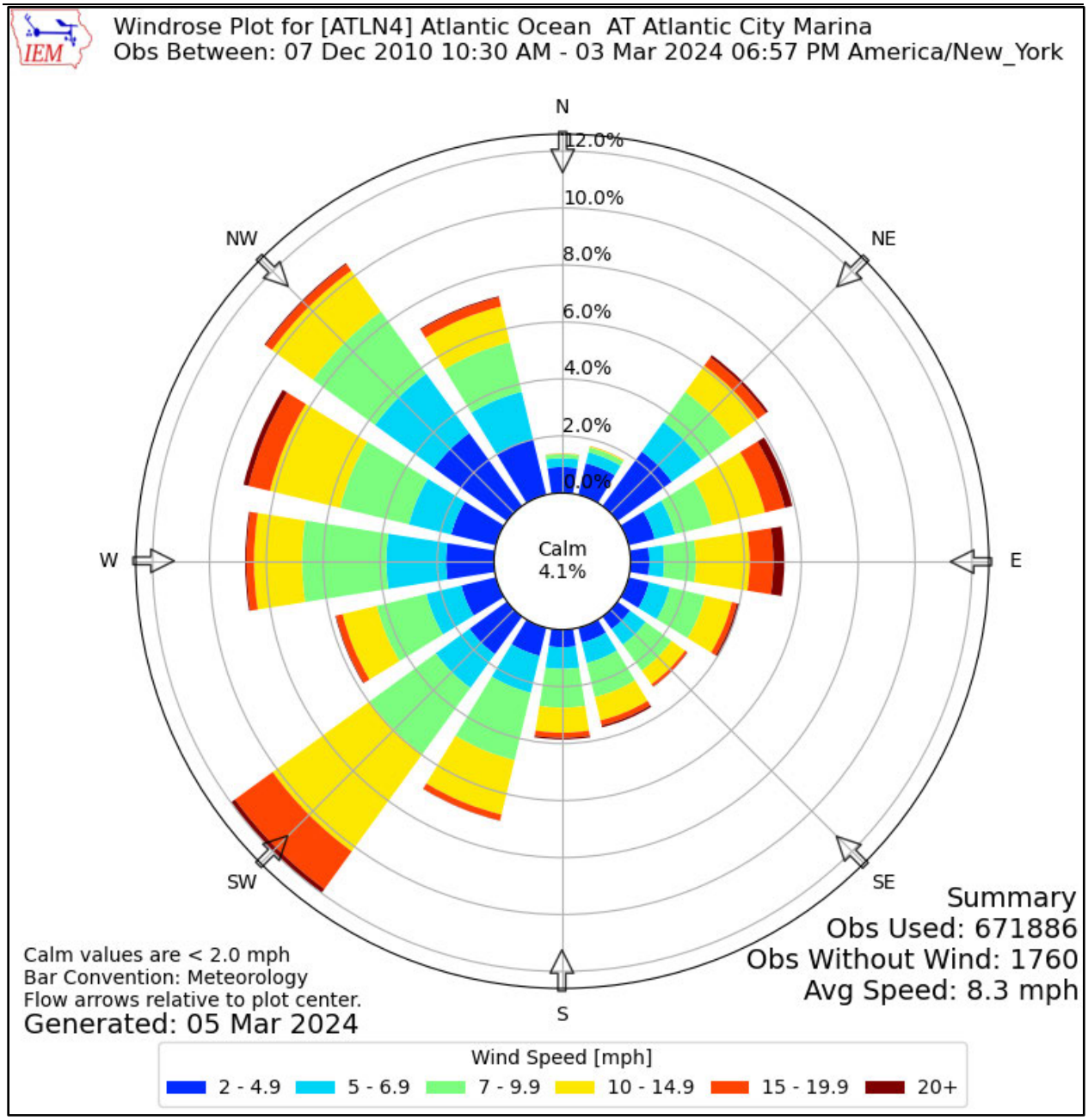


Figure H-5: Site Is 1 Mile from the Coast Inside the Atlantic City Marina Entrance Channel

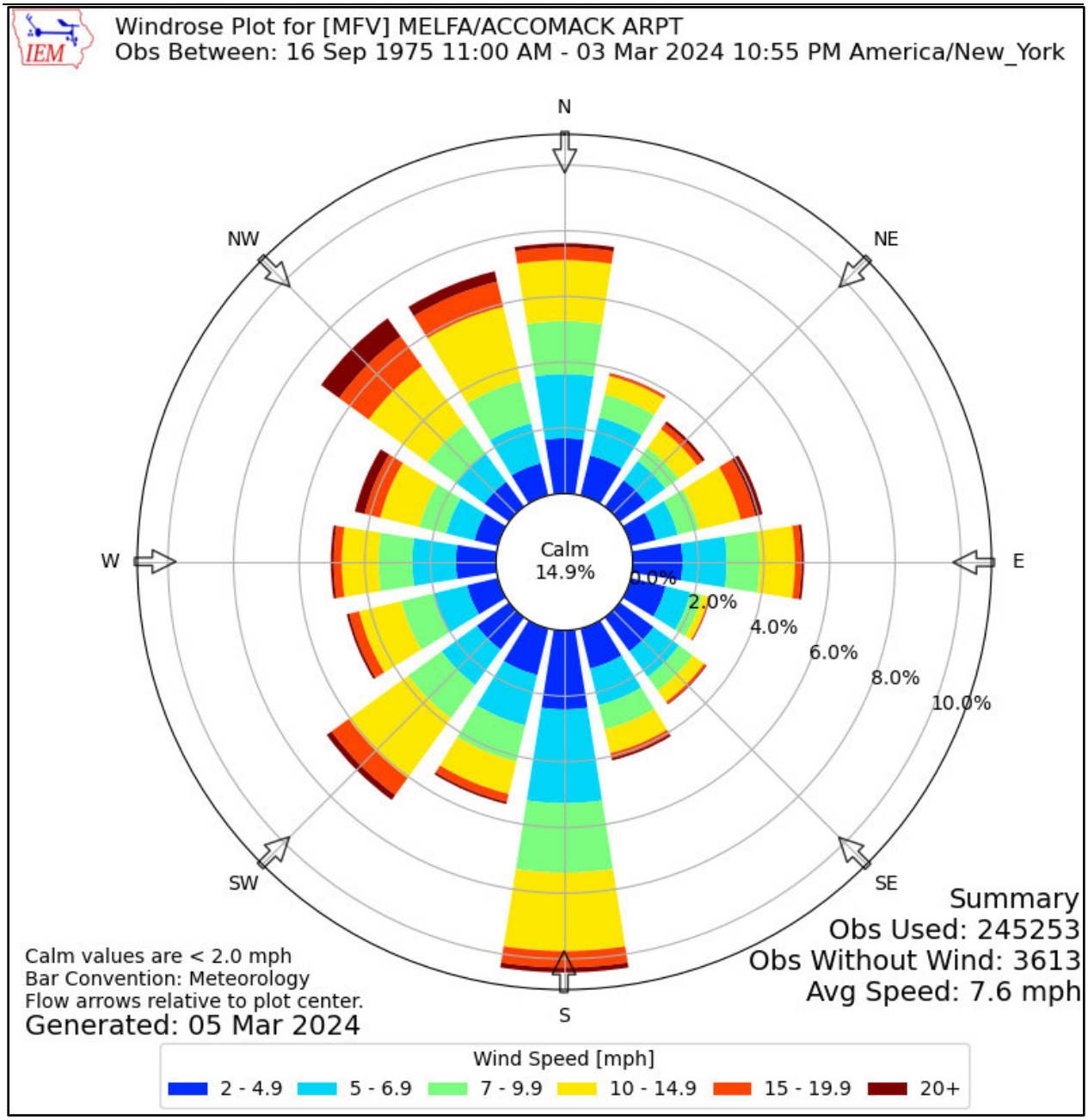


Figure H-6: Fifty Miles North/Northeast of Virginia Beach and East of Chesapeake Bay

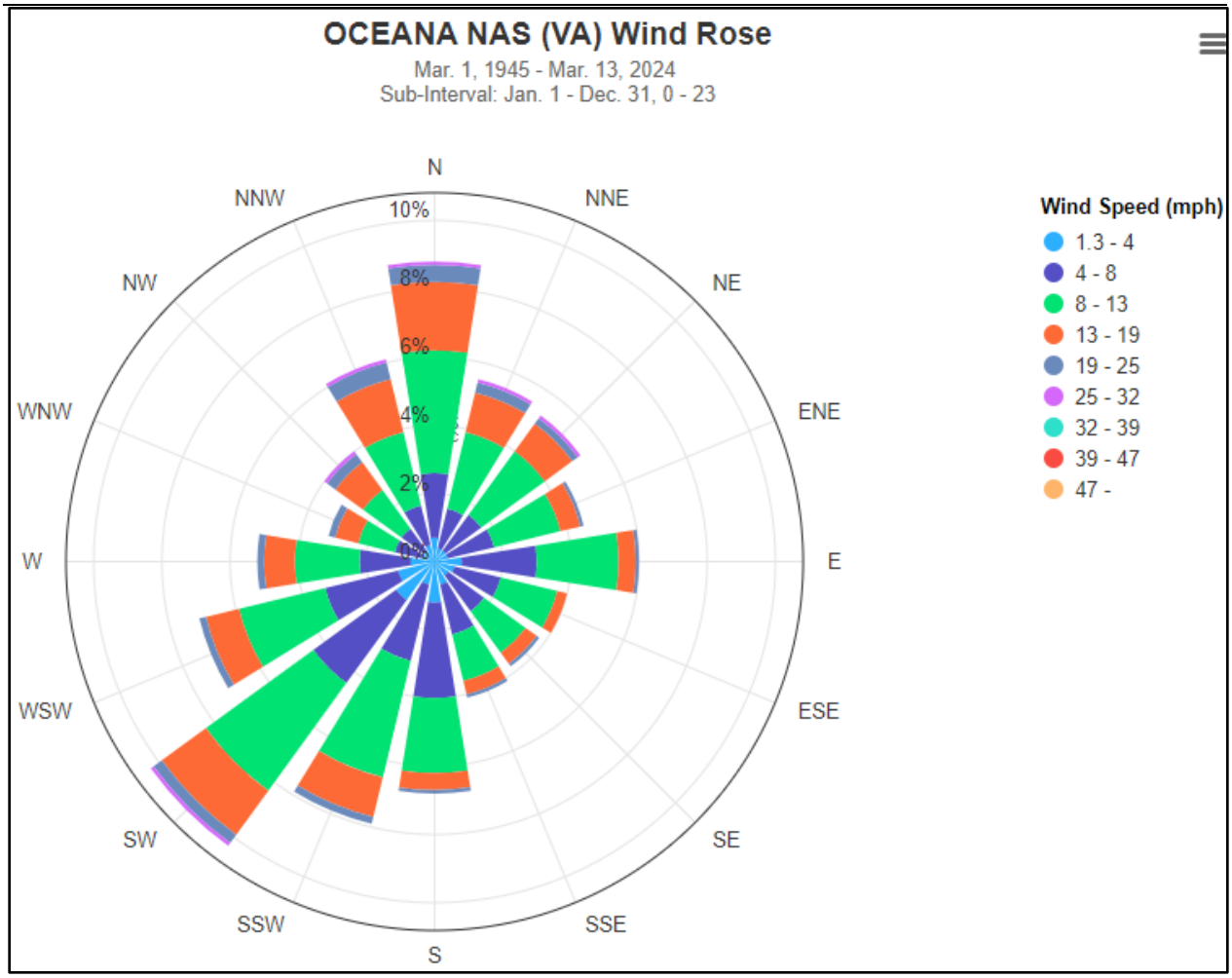


Figure H-7: On the Coast at Virginia Beach

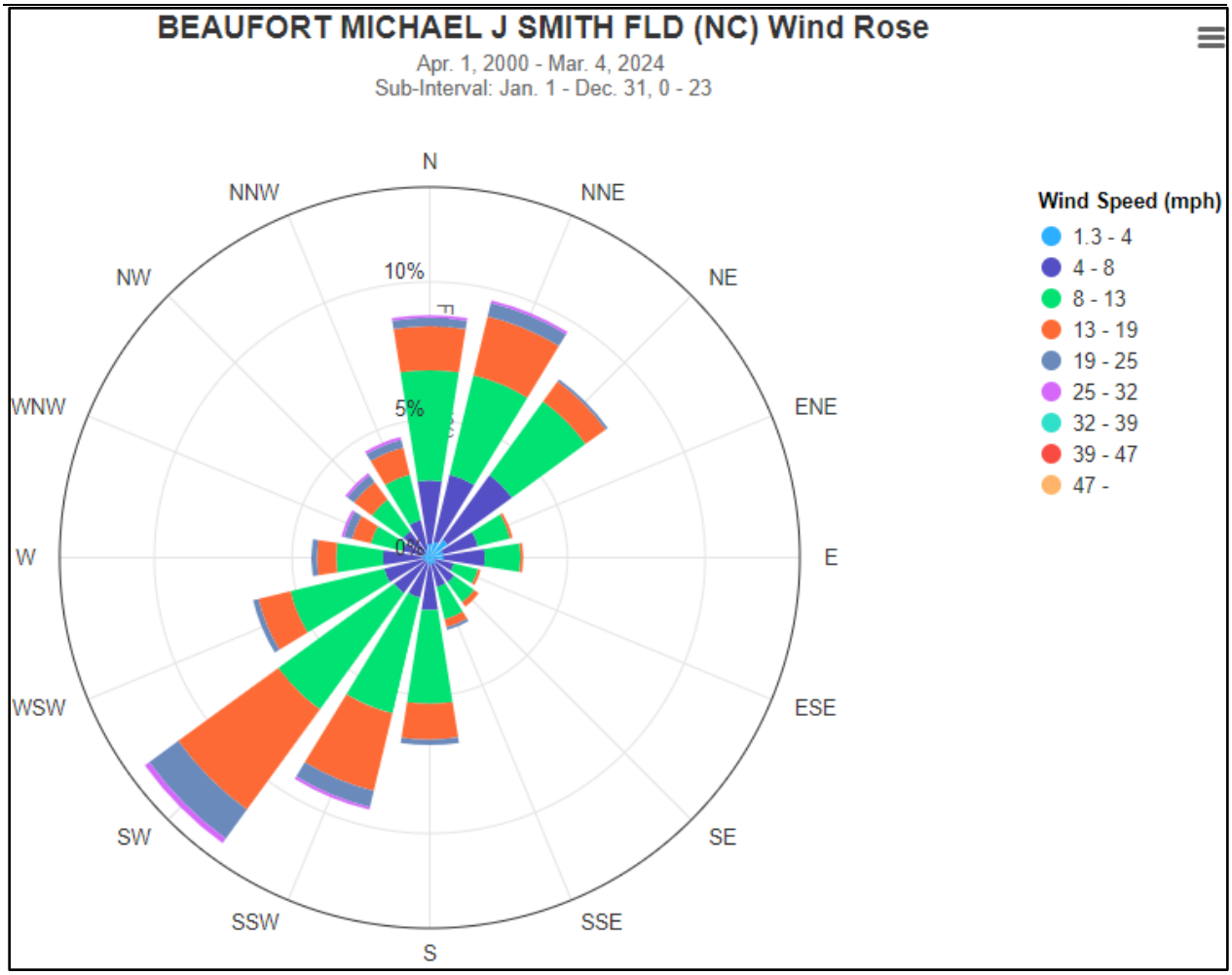


Figure H-8: Central North Carolina – 72 Miles Southwest of Cape Hatteras

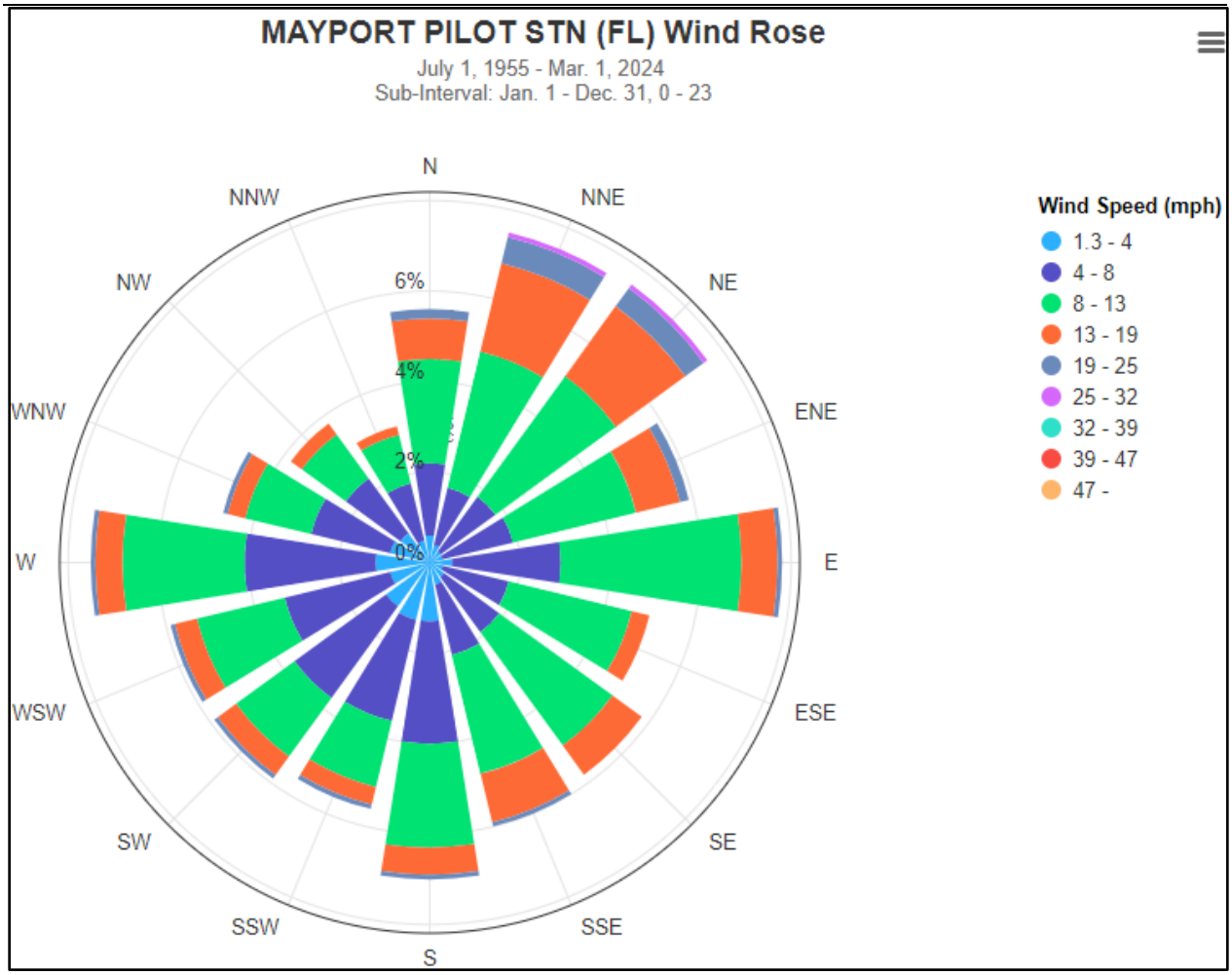


Figure H-9: Directly on the Coast East Of Jacksonville

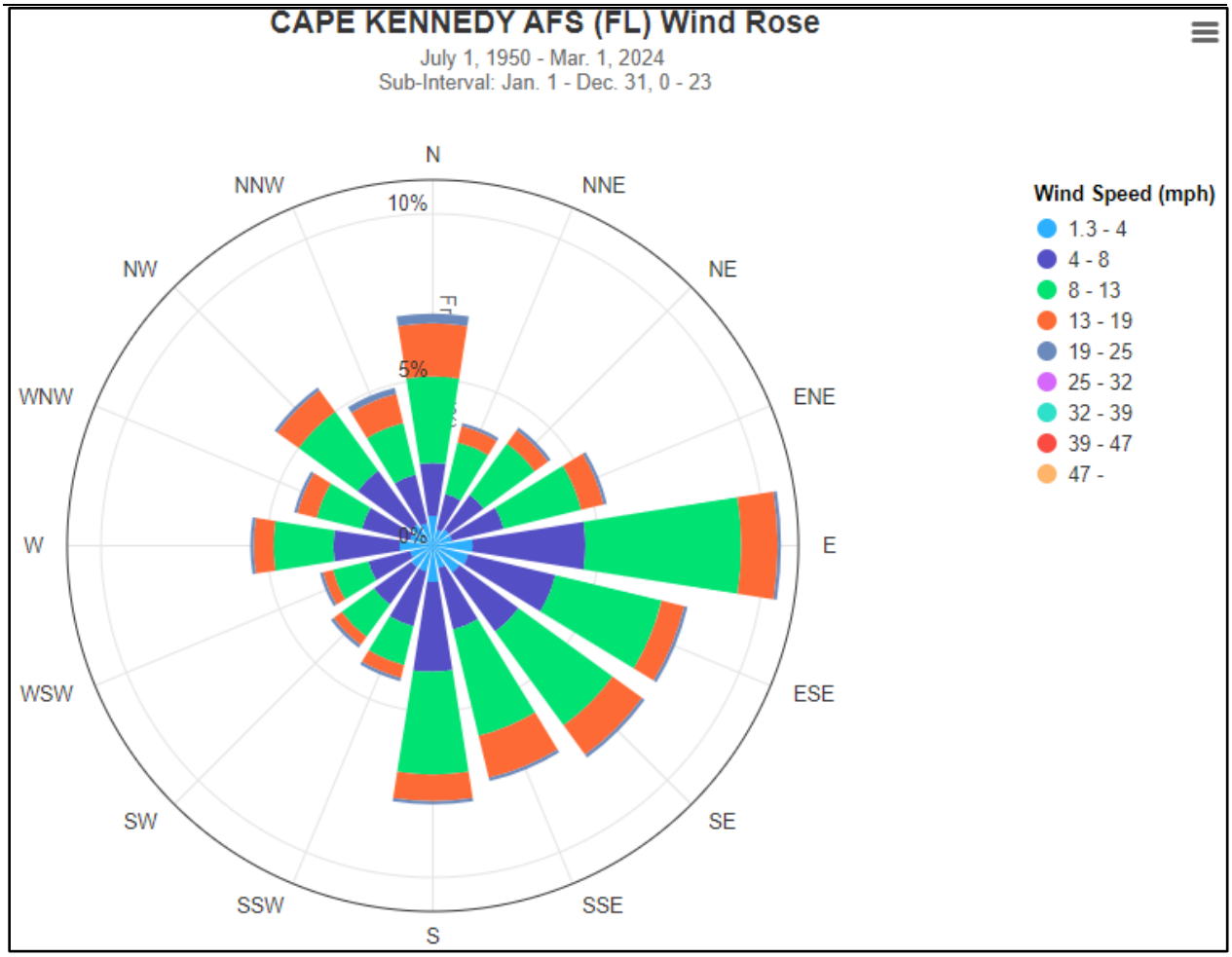


Figure H-10: On the Beach at Cape Canaveral

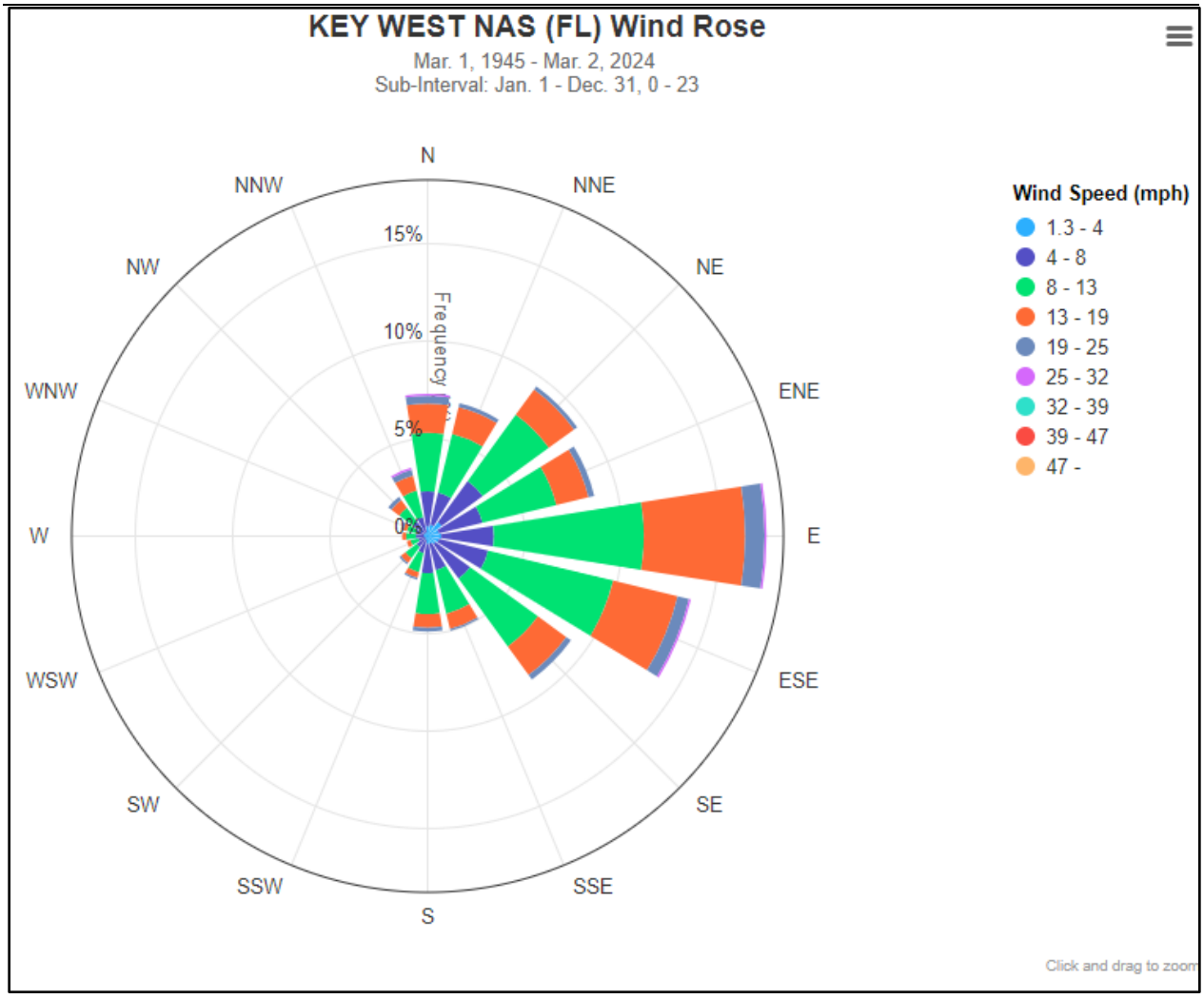


Figure H-11: A Few Miles North of the Key West Operating Area, Elevation 6 Feet Mean Sea Level

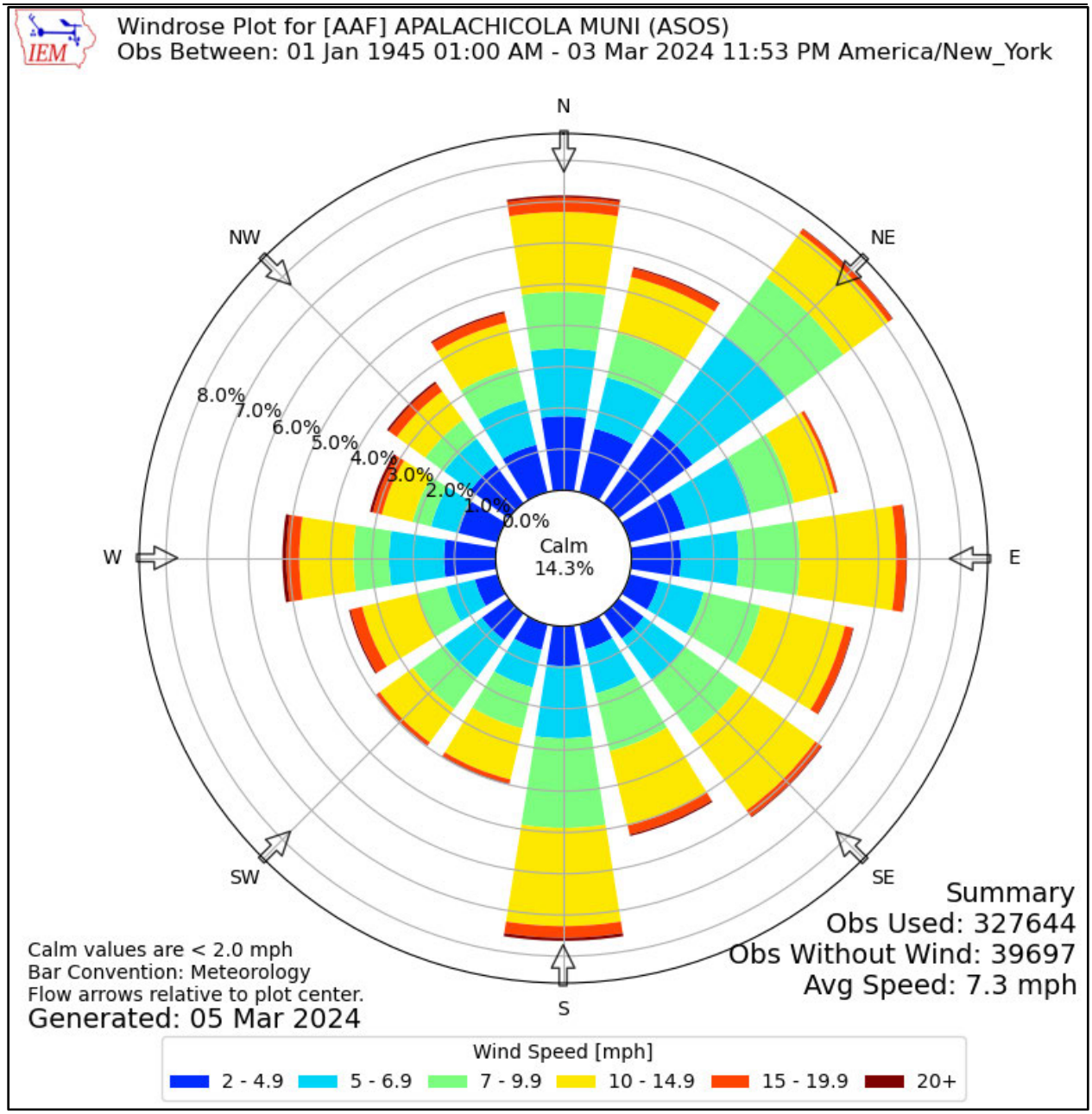


Figure H-12: Site Is on the Coast and Directly North of the Boundary of the Panama City Operating Area

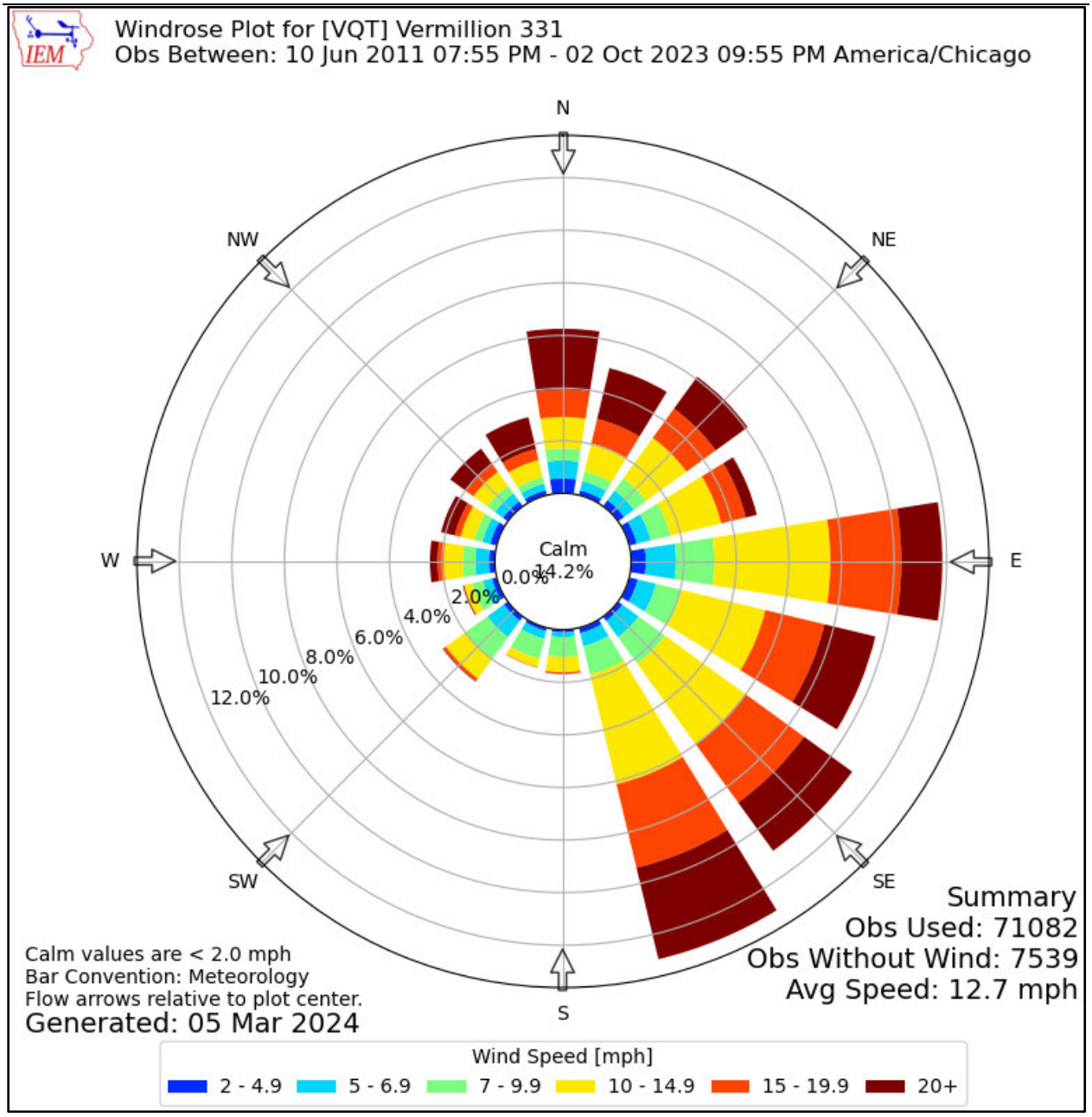


Figure H-13: This Site Is 132 Miles Southwest of Morgan City and Just West of the New Orleans Operating Area

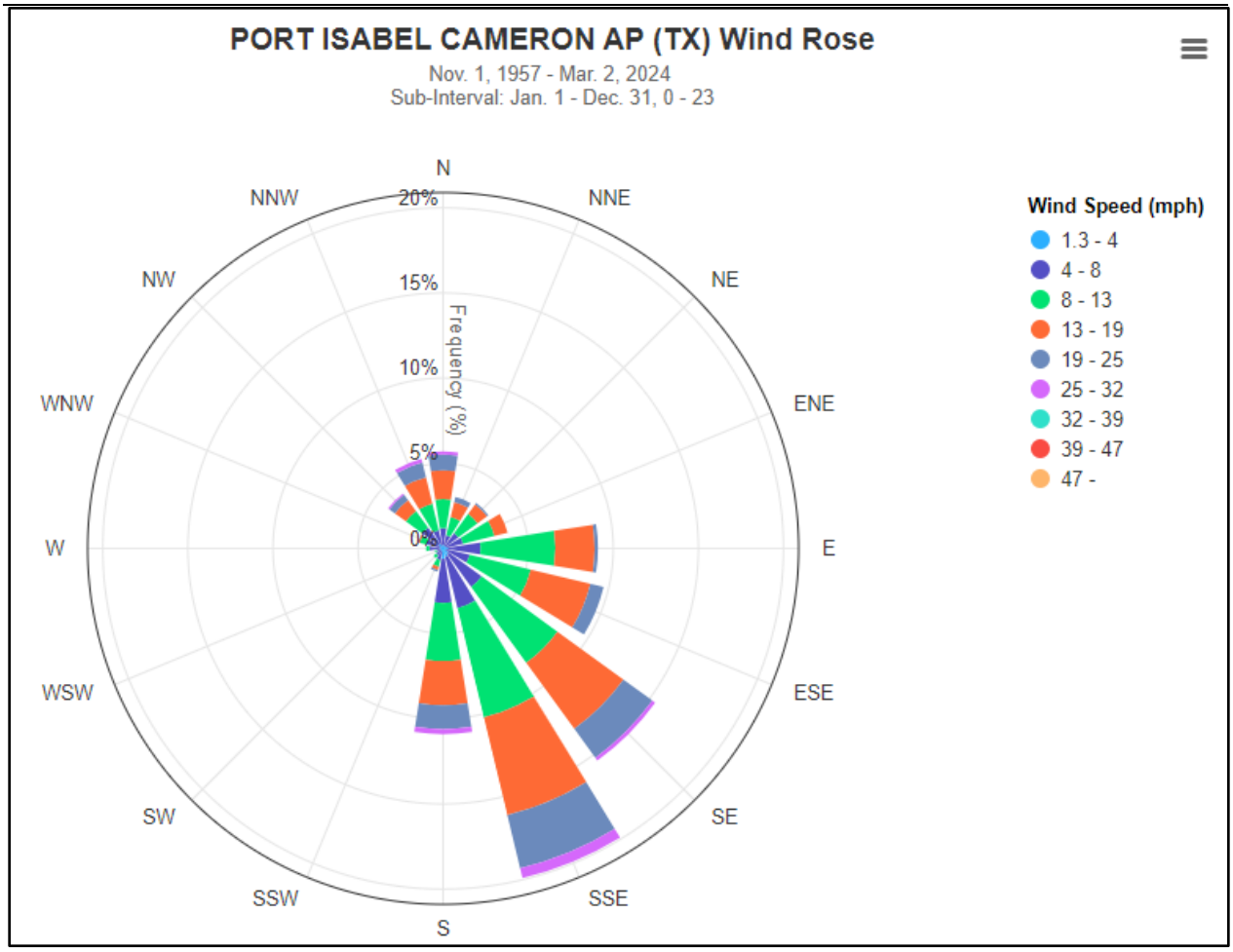


Figure H-14: On the Beach 20 Miles Northeast of Brownsville

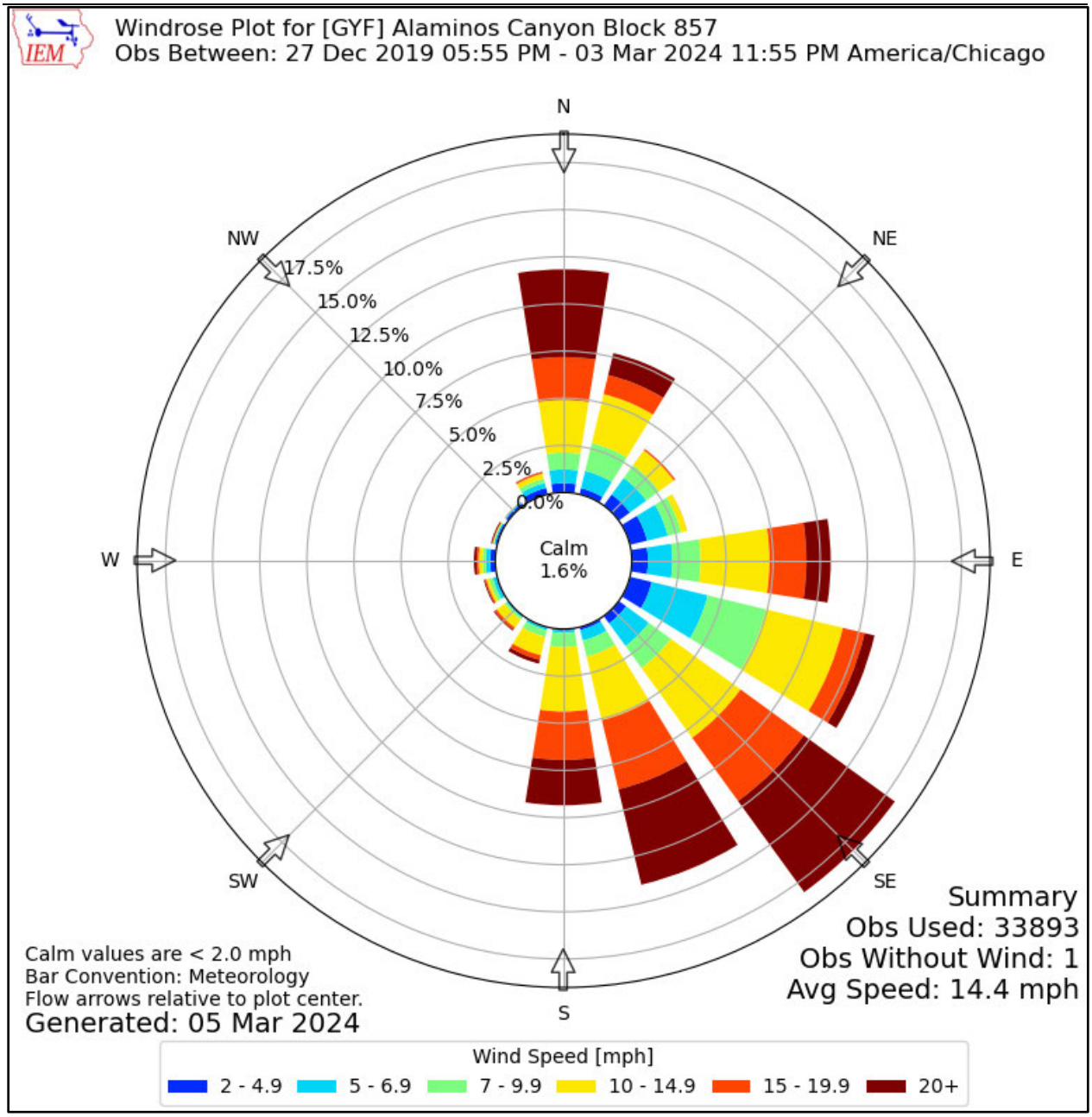


Figure H-15: A Few Miles East of the Center of the Corpus Christi Operating Area

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Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Major Training Exercise - Large Integrated ASW							
Composite Training Unit Exercise	Northeast						
	VACAPES	2		2		3	
	Cherry Pt	2		2		3	
	JAX	2		2		3	
	Key West						
	Gulf Range Complex					1	
	Other AFTT Areas						
	Total	6		6		10	
Major Training Exercise - Medium Integrated ASW							
Sustainment Exercise	Northeast						
	VACAPES	6		2		2	
	Cherry Pt	6		2		2	
	JAX	6		2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	18		6		6	
Small Integrated ASW Training							
Navy Undersea Warfare Training Assessment Course	Northeast						
	VACAPES	6		2		2	
	Cherry Pt	6		2		2	
	JAX	6		2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	18		6		6	
Surface Warfare Advanced Tactical Training	Northeast						
	VACAPES	6		2		2	
	Cherry Pt	6		2		2	
	JAX	6		2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	18		6		6	
Medium Coordinated ASW Training							
Anti-Submarine Warfare Tactical Development Exercise	Northeast						
	VACAPES	1		1			
	Cherry Pt	1					
	JAX	2		1			
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	4		2			
Small Coordinated ASW Training							
Group Sail	Northeast						
	VACAPES	5		5		5	
	Cherry Pt	5		4		4	
	JAX	4		5		5	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	14		14		14	
Amphibious Ready Group Marine Expeditionary Unit Composite Training Unit Exercise	Northeast						
	VACAPES						
	Cherry Pt	5		1		1	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	5		1		1	
Air Warfare							
Air Combat Maneuvers	Northeast						
	VACAPES	1,200		1,200		1,200	
	Cherry Pt	1,155		1,925		1,925	
	JAX	1,270		1,270		1,270	
	Key West	6,300		6,300		6,300	
	Gulf Range Complex						
	Other AFTT Areas						
	Total	9,925		10,695		10,695	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Air Defense Exercise	Northeast						
	VACAPES	3,425		3,425		3,425	
	Cherry Pt	5,166		1,601		1,601	
	JAX	5,157		938		938	
	Key West						
	Gulf Range Complex	85		85		85	
	Other AFTT Areas						
	Total	13,833		6,049		6,049	
Gunnery Exercise Air-to-Air Medium Caliber	Northeast						
	VACAPES	120		80		80	
	Cherry Pt	40		40		40	
	JAX	75		40		40	
	Key West	70		20		20	
	Gulf Range Complex						
	Other AFTT Areas						
	Total	305		180		180	
Gunnery Exercise Air-to-Air Small-Caliber	Northeast						
	VACAPES			5		5	
	Cherry Pt						
	JAX			5		5	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			10		10	
Missile Exercise Air-to-Air	Northeast						
	VACAPES	40		16		16	
	Cherry Pt	48		15		15	
	JAX	48		15		15	
	Key West	8		16		16	
	Gulf Range Complex			30		30	
	Other AFTT Areas						
	Total	144		92		92	
Gunnery Exercise Surface-to-Air Large Caliber	Northeast						
	VACAPES	25		25	20	25	20
	Cherry Pt						
	JAX	7		10	5	10	5
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	32		35	25	35	25
Gunnery Exercise Surface-to-Air Medium Caliber	Northeast						
	VACAPES	59		36	3	36	3
	Cherry Pt	23		9		9	
	JAX	31		20	2	20	2
	Key West						
	Gulf Range Complex						
	Other AFTT Areas	10					
	Total	123		65	5	65	5
Missile Exercise Surface-to-Air	Northeast	2		2		2	
	VACAPES	30		36		36	
	Cherry Pt	2		2		2	
	JAX	5		6		6	
	Key West						
	Gulf Range Complex	2		2		2	
	Other AFTT Areas						
	Total	41		48		48	
Missile Exercise Man-Portable Air Defense System	Northeast						
	VACAPES						
	Cherry Pt	5		14		14	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	5		14		14	
Amphibious Warfare							
Naval Surface Fire Support Exercise - Land-Based Target	Northeast						
	VACAPES						
	Cherry Pt	13		13		13	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	13		13		13	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Naval Surface Fire Support Exercise - at Sea	Northeast						
	VACAPES	38		19		19	
	Cherry Pt	2		2		2	
	JAX	12		6		6	
	Key West						
	Gulf Range Complex	4		2		2	
	Other AFTT Areas						
	Total	56		29		29	
Amphibious Ready Group Marine Expeditionary Unit Composite Training Unit Exercise	Northeast						
	VACAPES						
	Cherry Pt	5		1		1	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	5		1		1	
Amphibious Assault	Northeast						
	VACAPES						
	Cherry Pt	5		5		5	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	5		5		5	
Amphibious Operations in a Contested Environment	Northeast						
	VACAPES			12		12	
	Cherry Pt			45		45	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			57		57	
Amphibious Raid	Northeast						
	VACAPES						
	Cherry Pt	34		34		34	
	JAX	20		20		20	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	54		54		54	
Non-Combat Evacuation Operation	Northeast						
	VACAPES						
	Cherry Pt	1		1		1	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	1		1		1	
Amphibious Squadron Marine Expeditionary Unit Integration Training	Northeast						
	VACAPES						
	Cherry Pt	1		1		1	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	1		1		1	
Amphibious Vehicle Maneuvers	Northeast						
	VACAPES RC Inshore			256		256	
	VACAPES	186		46		46	
	Cherry Pt						
	JAX	2		2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	188		304		304	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Surface Warfare							
Maritime Security Operations	Northeast RC Inshore	13		13		13	
	Northeast				50		55
	VACAPES RC Inshore			374		374	
	VACAPES	895		521	498	521	548
	Cherry Pt	75		75	116	75	128
	JAX RC Inshore			45		45	
	JAX	210		165	149	165	164
	Key West				50		55
	Gulf Range Complex	59		59	89	59	98
	Other AFTT Areas						
	Total	1,252		1,252	952	1,252	1,048
Gunnery Exercise Surface-to-Surface Ship Small Caliber	Northeast				1		1
	VACAPES	450		180		180	
	Cherry Pt	20		12		12	
	JAX	300		120		120	
	Key West						
	Gulf Range Complex	10		4	4	4	4
	Other AFTT Areas	50		20	1	20	1
	Total	830		336	6	336	6
Gunnery Exercise Surface-to-Surface Ship Medium Caliber	Northeast						
	VACAPES	321		319	100	319	100
	Cherry Pt	72		70	20	70	20
	JAX	161		110	40	110	40
	Key West						
	Gulf Range Complex	33		34	12	34	12
	Other AFTT Areas	41		40		40	
	Total	628		573	172	573	172
Gunnery Exercise Surface-to-Surface Ship Large Caliber	Northeast				15		15
	VACAPES	75		63	20	63	20
	Cherry Pt	35		34	10	34	10
	JAX	51		46	15	46	15
	Key West						
	Gulf Range Complex	9		8	29	8	29
	Other AFTT Areas	10		9		9	
	Total	180		160	89	160	89
Gunnery Exercise Surface-to-Surface Boat Small Caliber	Northeast	18		6		6	
	VACAPES	330		213	20	213	20
	Cherry Pt	92		28	2	28	2
	JAX	84		25	6	25	6
	Key West						
	Gulf Range Complex	67		21	11	21	11
	Other AFTT Areas						
	Total	591		293	39	293	39
Gunnery Exercise Surface-to-Surface Boat Medium Caliber	Northeast	2		2	11	2	11
	VACAPES	260		404		404	
	Cherry Pt	128		128	7	128	7
	JAX	26		26	7	26	7
	Key West				7		7
	Gulf Range Complex	6		6	7	6	7
	Other AFTT Areas						
	Total	422		566	39	566	39
Missile Exercise Surface-to-Surface	Northeast						
	VACAPES	12		15		15	
	Cherry Pt						
	JAX	16		19		19	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	28		34		34	
Small Boat Attack	Northeast						
	VACAPES	25		30		30	
	Cherry Pt						
	JAX	25		15		15	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	50		45		45	
Gunnery Exercise Air-to-Surface Small Caliber	Northeast						
	VACAPES	560		300		300	
	Cherry Pt	130		71		71	
	JAX	200		108		108	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	890		479		479	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Gunnery Exercise Air-to-Surface Medium Caliber	Northeast				25		25
	VACAPES	720		720	10	720	10
	Cherry Pt	395		395	10	395	10
	JAX	495		490	30	490	30
	Key West						
	Gulf Range Complex	30		30	10	30	10
	Other AFTT Areas						
	Total	1,640		1,635	85	1,635	85
Missile Exercise Air-to-Surface Rocket	Northeast						
	VACAPES	92		100		100	
	Cherry Pt	10		15		15	
	JAX	102		115		115	
	Key West						
	Gulf Range Complex	10		10		10	
	Other AFTT Areas						
	Total	214		240		240	
Missile Exercise Air-to-Surface	Northeast						
	VACAPES	88		83		83	
	Cherry Pt	52		72		72	
	JAX	102		81		81	
	Key West			8		8	
	Gulf Range Complex						
	Other AFTT Areas						
	Total	242		244		244	
Bombing Exercise Air-to-Surface	Northeast						
	VACAPES	329		272			
	Cherry Pt	108		73		272	
	JAX	434		260		73	
	Key West					260	
	Gulf Range Complex	67		47			
	Other AFTT Areas					47	
	Total	938		652		652	
Integrated Live Fire Exercise	Northeast						
	VACAPES	2		2		2	
	Cherry Pt						
	JAX	2		2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	4		4		4	
Laser Targeting - Aircraft	Northeast						
	VACAPES	272		286	4	286	4
	Cherry Pt						
	JAX	315		330	4	330	4
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	587		616	8	616	8
Laser Targeting - Ship	Northeast						
	VACAPES	4		4		4	
	Cherry Pt						
	JAX	4		4		4	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	8		8		8	
Long Range Unmanned Surface Vessel Training	Northeast						
	VACAPES			10		10	
	Cherry Pt						
	JAX			10		10	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			20		20	
Sinking Exercise	Northeast						
	VACAPES						
	Cherry Pt						
	SINKEX Box	1		1		1	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	1		1		1	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Anti-Submarine Warfare							
Anti-Submarine Warfare Torpedo Exercise – Submarine	Northeast	6		6		6	
	VACAPES	2		2		2	
	JAX	12		12		12	
	Total	20		20		20	
Anti-Submarine Warfare Tracking Exercise – Submarine + Anti-Submarine Warfare Torpedo Exercise – Submarine	Northeast	18		18		18	
	VACAPES	6		6		6	
	Cherry Pt	1		1		1	
	SINKEX Box			2		2	
	JAX	13		13		13	
	Other AFTT Areas	44		44		44	
	Total	82		84		84	
Anti-Submarine Warfare Torpedo Exercise – Ship	Northeast						
	VACAPES	5		5		5	
	Cherry Pt						
	JAX	16		16		16	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	21		21		21	
Anti-Submarine Warfare Tracking Exercise – Ship	Northeast	5		5		5	
	VACAPES	220		120		220	
	Cherry Pt	55		33		55	
	JAX	440		290		440	
	Key West						
	Gulf Range Complex	5		5		5	
	Other AFTT Areas	110		55		110	
	Total	835		508		835	
Anti-Submarine Warfare Torpedo Exercise – Helicopter	Northeast						
	VACAPES	4		4		4	
	Cherry Pt						
	JAX	14		14		14	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	18		18		18	
Anti-Submarine Warfare Tracking Exercise – Helicopter	Northeast						
	VACAPES	8		8		8	
	Cherry Pt	12		12		12	
	JAX	370		370		370	
	Key West						
	Gulf Range Complex			3		3	
	Other AFTT Areas	24		24		24	
	Total	414		417		417	
Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft	Northeast						
	VACAPES	4		4		4	
	Cherry Pt						
	JAX	14		14		14	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	18		18		18	
Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft	Northeast	90		90		90	
	VACAPES	176		176		176	
	Cherry Pt	46		46		46	
	JAX	525		525		525	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	837		837		837	
Electronic Warfare							
Electronic Warfare Operations	Northeast						
	VACAPES	302		32		32	
	Cherry Pt	2,620		370		370	
	JAX	181		21		21	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	3,103		423		423	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Counter Targeting Flare Exercise	Northeast						
	VACAPES	50		50		50	
	Cherry Pt	1,115		1,115		1,115	
	JAX	1,900		1,900		1,900	
	Key West	1,550		1,550		1,550	
	Gulf Range Complex	92		92		92	
	Other AFTT Areas						
	Total	4,707		4,707		4,707	
Counter Targeting Chaff Exercise - Ship	Northeast						
	VACAPES	50		10	5	10	5
	Cherry Pt	5		5	3	5	3
	JAX	5		5	3	5	3
	Key West						
	Gulf Range Complex	5		5	3	5	3
	Other AFTT Areas						
	Total	65		25	14	25	14
Counter Targeting Chaff Exercise - Aircraft	Northeast						
	VACAPES	130		130		130	
	Cherry Pt	1,610		1,610		1,610	
	JAX	2,990		2,990		2,990	
	Key West	3,000		3,000		3,000	
	Gulf Range Complex	18		18		18	
	Other AFTT Areas						
	Total	7,748		7,748		7,748	
High-Speed Anti-Radiation Missile Exercise	Northeast						
	VACAPES	11		3		3	
	Cherry Pt	10		2		2	
	JAX	4		1		1	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	25		6		6	
Expeditionary Warfare							
Dive and Salvage Operations	Northeast						
	VACAPES	30		145		145	
	Cherry Pt	16		16		16	
	NS Mayport	60		60		60	
	JAX						
	Key West	8		8		8	
	Gulf Range Complex	16		16		16	
	Other AFTT Areas						
	Total	130		245		245	
Maritime Security Operations – Anti-Swimmer Grenades	Northeast	4					
	VACAPES	5					
	Cherry Pt	2					
	JAX	2					
	Key West						
	Gulf Range Complex	2					
	Other AFTT Areas						
	Total	15					
Personnel Insertion/ Extraction – Air	Northeast						
	VACAPES RC Inshore			104		104	
	VACAPES	2,164		74		74	
	Cherry Pt						
	JAX	10		10		10	
	Key West	10					
	Gulf Range Complex			50		50	
	Other AFTT Areas						
	Total	2,184		238		238	
Personnel Insertion/ Extraction – Surface and Subsurface	Northeast RC Inshore			48		48	
	Northeast	2					
	VACAPES RC Inshore			216		216	
	VACAPES	360		175		175	
	Cherry Pt						
	JAX	1		2		2	
	Key West						
	Gulf Range Complex	5		12		12	
	Other AFTT Areas						
	Total	368		453		453	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Personnel Insertion/ Extraction – Swimmer/Diver	Northeast						
	VACAPES RC Inshore	42		42		42	
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	42		42		42	
Port Damage Repair	Northeast						
	VACAPES						
	Cherry Pt						
	NS Mayport			4		4	
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			4		4	
Underwater Construction Team Training	Northeast						
	VACAPES RC Inshore			100		100	
	VACAPES	8					
	Cherry Pt						
	JAX	4		8		8	
	Key West	4		16		16	
	Gulfport MS			16		16	
	Gulf Range Complex	8		16		16	
	Other AFTT Areas						
	Total	24		156		156	
Mine Warfare							
Mine Countermeasures - Ship Sonar	Northeast						
	VACAPES	53		53		53	
	Cherry Pt						
	JAX	53		53		53	
	Key West						
	Gulf Range Complex	22		22		22	
	Other AFTT Areas						
	Total	128		128		128	
Mine Neutralization Explosive Ordnance Disposal	Northeast						
	VACAPES RC Inshore	6		96		96	
	VACAPES	524		325		325	
	Cherry Pt	16		86		86	
	JAX	20		100		100	
	Key West RC Inshore	60		176		176	
	Key West	17		30		30	
	Gulf Range Complex	16		96		96	
	Other AFTT Areas						
	Total	659		909		909	
Submarine Mobile Mine and Mine Laying Exercise	Northeast						
	VACAPES						
	Cherry Pt						
	JAX			2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			2		2	
Surface Ship Object Detection	Northeast						
	VACAPES	162		162		162	
	Cherry Pt						
	JAX	76		76		76	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	238		238		238	
Underwater Mine Countermeasure Raise, Tow, Beach, and Exploitation Operations	Northeast						
	VACAPES RC Inshore			100		100	
	VACAPES	446		20		20	
	Cherry Pt	24		16		16	
	JAX RC Inshore			4		4	
	JAX	78		20		20	
	Key West	8		40		40	
	Gulf Range Complex	56		24		24	
	Other AFTT Areas			4		4	
	Total	612		228		228	

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Airborne Mine Countermeasures Towed Mine Neutralization	Northeast						
	VACAPES	510		375		375	
	Cherry Pt	108		96		96	
	JAX	100		70		70	
	Key West			15		15	
	Gulf Range Complex	50		30		30	
	Other AFTT Areas						
	Total	768		586		586	
Airborne Mine Countermeasures - Mine Detection	Northeast						
	VACAPES	1,540		1,420		1,420	
	Cherry Pt	371		321		321	
	JAX	317		275		275	
	Key West			187		187	
	Gulf Range Complex	310		290		290	
	Other AFTT Areas						
	Total	2,538		2,493		2,493	
Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicles	Northeast						
	VACAPES	630		315		315	
	Cherry Pt	71		36		36	
	JAX	71		36		36	
	Key West			10		10	
	Gulf Range Complex	132		66		66	
	Other AFTT Areas						
	Total	904		463		463	
Airborne Mine Laying	Northeast						
	VACAPES	4		4		4	
	Cherry Pt	2		2		2	
	JAX	1		1		1	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	7		7		7	
Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercise	Boston, MA	1				1	
	Earle, NJ	1				1	
	Delaware Bay, DE	1				1	
	Hampton Roads, VA	1				1	
	Morehead City, NC	1				1	
	Wilmington, NC	1				1	
	Savannah, GA	1				1	
	Kings Bay, GA	1				1	
	Mayport, FL	1				1	
	Tampa, FL	1				1	
	Port Canaveral, FL	1				1	
	Beaumont, TX	1				1	
	Corpus Christi, TX	1				1	
	Total	13				13	
Coordinated Unit Level Helicopter Airborne Mine Countermeasures Exercise	Northeast	4		4		4	
	VACAPES						
	Cherry Pt	2		2		2	
	JAX	1		1		1	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	7		7		7	
Installation and Maintenance of Mine Training Areas	Northeast						
	VACAPES RC Inshore			1		1	
	VACAPES			1		1	
	Cherry Pt			1		1	
	JAX			1		1	
	Key West			1		1	
	Gulf Range Complex						
	Other AFTT Areas						
	Total			5		5	
Other Training							
Search and Rescue	Northeast						
	VACAPES RC Inshore			760		760	
	VACAPES	1,176		598	100	598	100
	Cherry Pt				100		100
	JAX RC Inshore			30		30	
	JAX	776		704	100	704	100
	Key West						
	Gulf Range Complex				100		100
	Other AFTT Areas				100		100
	Total	1,952		2,092	500	2,092	500

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Ship-to-Shore Fuel Transfer System Training	Northeast						
	VACAPES			1		1	
	Cherry Pt			1		1	
	JAX			1		1	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			3		3	
Precision Anchoring	Northeast						
	VACAPES	710		710	500	710	500
	Cherry Pt						
	JAX	231		231	200	231	200
	Key West						
	Gulf Range Complex	9		9	100	9	100
	Other AFTT Areas						
	Total	950		950	800	950	800
Elevated Causeway System	Northeast						
	VACAPES	1					
	Cherry Pt	1					
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	2					
Submarine Navigation	Northeast	169		169		169	
	VACAPES	84		84		84	
	Cherry Pt						
	JAX	29		29		29	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	282		282		282	
Submarine Under Ice Certification	Northeast	9		9		9	
	VACAPES	9		9		9	
	Cherry Pt	3		3		3	
	JAX	3		3		3	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	24		24		24	
Surface Ship Sonar Maintenance and Systems Checks	Northeast						
	NS Norfolk	235		175		175	
	VACAPES	120		175		175	
	Cherry Pt	120		120		120	
	NS Mayport	50		50		50	
	JAX	18		50		50	
	Key West						
	Gulf Range Complex	50		50		50	
	Other AFTT Areas	18		18		18	
	Total	611		638		638	
Submarine Sonar Maintenance and Systems Checks	Northeast	86		66		66	
	NSB New London	66		66		66	
	VACAPES	47		34		34	
	Cherry Pt	13					
	JAX	9		4		4	
	NS Norfolk	34		34		34	
	NSB Kings Bay			2		2	
	Key West						
	Gulf Range Complex						
	Port Canaveral, FL			2		2	
	Other AFTT Areas	12		12		12	
	Total	267		220		220	
Unmanned Aerial System Training and Certification - Submarine	Northeast						
	VACAPES			51	250	51	250
	Cherry Pt			100	200	100	200
	JAX			50	200	50	200
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			201	650	201	650

Table H-1: Current and Proposed Navy, Marine Corps, and U.S. Coast Guard Training Activities (continued)

Activity/OPAREA		Annual Training Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		Fleet Training	USCG Training	Fleet Training	USCG Training	Fleet Training	USCG Training
Unmanned Underwater Vehicle Training – Certification and Development	Northeast			12		12	
	VACAPES RC Inshore			21	20	21	20
	VACAPES			32	20	32	20
	Cherry Pt			10	10	10	10
	JAX			22	10	22	10
	Key West						
	Gulf Range Complex			10	10	10	10
	Other AFTT Areas						
	Total			107	70	107	70
Waterborne Training	Northeast RC Inshore	141		185	93	185	102
	Northeast				92	-	102
	VACAPES RC Inshore	110		182	182	182	200
	VACAPES						
	Cherry Pt						
	JAX RC Inshore	55		69	69	69	76
	JAX						
	Key West				69		76
	Gulf Range Complex	42		42	69	42	76
	Gulf Range Complex Inshore				69		76
	Other AFTT Areas						
	Total	348		478	643	478	708

Note: Summation of values might not exactly match each totals row due to minor rounding errors.

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Air Warfare – NAVAIR							
Air Combat Maneuvers Test	Northeast						
	VACAPES		550		550		550
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		550		550		550
Air Platform Vehicle Test	Northeast						
	VACAPES		190		190		190
	Cherry Pt		9		9		9
	JAX		9		9		9
	Key West		9		9		9
	Gulf Range Complex		12		12		12
	Other AFTT Areas						
	Total		229		229		229
Air Platform Weapons Integration Test	Northeast						
	VACAPES		40		40		40
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex				2		2
	Other AFTT Areas						
	Total		40		42		42
Air-to-Air Gunnery Test – Medium-Caliber	Northeast						
	VACAPES		55		55		55
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		55		55		55
Air-to-Air Missile Test	Northeast						
	VACAPES		83		83		83
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		83		83		83

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Air-to-Air Weapons System Test	Northeast						
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex		10		2		2
	Other AFTT Areas						
	Total		10		2		2
Intelligence, Surveillance, and Reconnaissance Test	Northeast						
	VACAPES		406		233		233
	Cherry Pt		9		10		10
	JAX		7		8		8
	Key West						
	Gulf Range Complex				5		5
	Other AFTT Areas						
	Total		422		256		256
Anti-Submarine Warfare - NAVAIR							
Anti-Submarine Tracking Test – Fixed-Wing	Northeast		40		45		45
	VACAPES		25		25		25
	Cherry Pt		14		15		15
	SINKEX Box				25		25
	JAX		19		19		19
	Key West		11		12		12
	Gulf Range Complex		12		15		15
	Other AFTT Areas						
	Total		121		156		156
Anti-Submarine Warfare Torpedo Test	Northeast						
	VACAPES		80		80		121
	Cherry Pt						
	JAX		31		31		43
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		111		111		164
Anti-Submarine Warfare Tracking Test – Rotary Wing	Northeast		69		110		110
	VACAPES		209		280		280
	Cherry Pt						
	JAX		6		23		23
	Key West		14		27		27
	Gulf Range Complex		5		6		6
	Other AFTT Areas						
	Total		303		446		446
Kilo Dip Test	Northeast		2		4		4
	VACAPES		30		40		40
	Cherry Pt						
	JAX		3		6		6
	Key West		3		6		6
	Gulf Range Complex		4		6		6
	Other AFTT Areas						
	Total		42		62		62
Sonobuoy Lot Acceptance Test	Northeast						
	VACAPES						
	Cherry Pt						
	JAX						
	Key West		160		186		186
	Gulf Range Complex						
	Other AFTT Areas						
	Total		160		186		186
Electronic Warfare - NAVAIR							
Chaff Test	Northeast						
	VACAPES		24		24		24
	Cherry Pt						
	JAX		4		4		4
	Key West						
	Gulf Range Complex		20		20		20
	Other AFTT Areas						
	Total		48		48		48
Electronic Systems Test	Northeast						
	VACAPES		61		61		61
	Cherry Pt						
	JAX		2		2		2
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		63		63		63

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Flare Test	Northeast						
	VACAPES		20		20		20
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex		10		20		20
	Other AFTT Areas						
	Total		30		40		40
Mine Warfare - NAVAIR							
Airborne Dipping Sonar Minehunting Test	Northeast						
	VACAPES		12		40		40
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	NSWC Panama City Testing Range		24		32		32
	Other AFTT Areas						
	Total		36		72		72
Airborne Laser Mine Detection System Test	Northeast						
	VACAPES		50		50		50
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	NSWC Panama City Testing Range		40		40		40
	Other AFTT Areas						
	Total		90		90		90
Airborne Mine Neutralization System Test	Northeast						
	VACAPES		35		25		25
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	NSWC Panama City Testing Range		23		27		27
	Other AFTT Areas						
	Total		58		52		52
Airborne Sonobuoy Minehunting Test	Northeast						
	VACAPES		24		12		12
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	NSWC Panama City Testing Range		52		26		26
	Other AFTT Areas						
	Total		76		38		38
Mine Laying Test	Northeast						
	VACAPES		2		2		2
	Cherry Pt						
	JAX		1		1		1
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		3		3		3
Surface Warfare - NAVAIR							
Air-to-Surface Bombing Test	Northeast						
	VACAPES		20		20		20
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		20		20		20
Air-to-Surface Gunnery Test	Northeast						
	VACAPES		125		140		140
	Cherry Pt						
	JAX		40		55		55
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		165		195		195

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Air-to-Surface Missile Test	Northeast						
	VACAPES		132		117		117
	Cherry Pt						
	JAX		34		29		29
	Key West						
	Gulf Range Complex		5		5		5
	Other AFTT Areas						
	Total		171		151		151
Air-to-Surface High-Energy Laser Test	Northeast						
	VACAPES		108		108		108
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		108		108		108
Laser Targeting Test	Northeast						
	VACAPES		5		5		5
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		5		5		5
Maritime Security Operations - NAVAIR	Northeast						
	VACAPES		20		20		20
	Cherry Pt		12		12		12
	JAX		12		12		12
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		44		44		44
Rocket Test	Northeast						
	VACAPES		33		35		35
	Cherry Pt						
	JAX		17		19		19
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		50		54		54
Other Testing Activities - NAVAIR							
Acoustic and Oceanographic Research	Northeast		1		1		1
	VACAPES		1		1		1
	Cherry Pt						
	JAX		1		1		1
	Key West		1		1		1
	Gulf Range Complex		1		1		1
	Other AFTT Areas						
	Total		5		5		5
Air Platform Shipboard Integration Test	Northeast						
	VACAPES		126		152		152
	Cherry Pt						
	JAX				30		30
	Key West				30		30
	Gulf Range Complex				30		30
	Other AFTT Areas						
	Total		126		242		242
Shipboard Electronics Systems Evaluation	Northeast						
	VACAPES		26				
	Cherry Pt						
	JAX		24				
	Key West		24				
	Gulf Range Complex		24				
	Other AFTT Areas						
	Total		98				
Undersea Range System Test	Northeast						
	VACAPES						
	Cherry Pt						
	JAX		12		12		20
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total		12		12		20

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Amphibious Warfare - NAVSEA							
Amphibious Vessel Testing	Northeast						
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex					1	
	Other AFTT Areas						
	Total					1	
Anti-Submarine Warfare - NAVSEA							
Anti-Submarine Warfare Mission Package Testing	Northeast			0.05		0.10	
	NUWC Newport Testing Range	0.20					
	Newport, RI	0.20					
	VACAPES	1.30					
	Cherry Pt						
	JAX	2.10		0.10		0.10	
	Key West						
	Gulf Range Complex			0.05		0.10	
	Other AFTT Areas						
	Total	3.80		0.20		0.30	
At-Sea Sonar Testing	Northeast			0.55		0.75	
	NUWC Newport Testing Range	0.40					
	VACAPES	0.60		0.95		1.10	
	Cherry Pt	0.10		0.10		0.10	
	JAX	0.20		0.20		0.20	
	SFOMF			0.10		0.10	
	Key West						
	Gulf Range Complex			0.50		0.70	
	Other AFTT Areas						
	Total	1.30		2.40		2.95	
Pierside Sonar Testing	Northeast						
	Bath, ME	0.00		0.00		0.00	
	Portsmouth Naval Shipyard	0.00		0.00		0.00	
	Newport, RI	0.00					
	VACAPES						
	NS Norfolk	0.00		0.00		0.00	
	Cherry Pt						
	JAX						
	NS Mayport			0.00		0.00	
	Key West						
	Gulf Range Complex						
	Pascagoula, MS	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Submarine Sonar Testing/ Maintenance	Northeast						
	Portsmouth Naval Shipyard	0.00					
	VACAPES						
	NS Norfolk	0.00					
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	0.00					
Surface Ship Sonar Testing/ Maintenance	Northeast						
	VACAPES	3		4		4	
	NS Norfolk	3					
	Cherry Pt						
	JAX	1		1		1	
	Key West						
	NS Mayport	1					
	Gulf Range Complex						
	Other AFTT Areas						
	Total	8		5		5	
Torpedo (Explosive) Testing	Northeast	0.00				0.00	
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00				0.00	
	JAX	0.00		0.00		0.00	
	Key West	0.00					
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Torpedo (Non-Explosive) Testing	Northeast						
	NUWC Newport Testing Range	30.00		30.00		30.00	
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00		0.00		0.00	
	JAX	0.00		0.00		0.00	
	JAX RC Inshore	0.00					
	SFOMF	0.00		0.00		0.00	
	Key West			0.00		0.00	
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	30.00		30.00		30.00	
Electronic Warfare - NAVSEA							
Radar and Other Systems Testing	Northeast	0.10					
	NSB New London	0.20					
	VACAPES	1.65		2.45		3.25	
	VACAPES RC Inshore					0.05	
	NS Norfolk	0.10		0.35		0.50	
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex			1.25		1.70	
	Other AFTT Areas						
	Total	2.05		4.05		5.50	
Mine Warfare - NAVSEA							
Mine Countermeasure and Neutralization Testing	Northeast						
	VACAPES	0.00		0.00		0.00	
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Mine Countermeasure Mission Package Testing	Northeast						
	VACAPES	5		3		3	
	Cherry Pt						
	JAX	10		8		8	
	SFOMF	2		2		2	
	Key West						
	Gulf Range Complex	19		15		15	
	NSWC Panama City Testing Range	11		11		11	
	Other AFTT Areas						
	Total	47		39		39	
Mine Detection and Classification Testing	Northeast						
	VACAPES						
	Cherry Pt	4.00					
	JAX					0.40	
	JAX RC Inshore	3.60					
	Key West						
	Gulf Range Complex	2.40					
	NSWC Panama City Testing Range	20.40		114.40		114.80	
	Other AFTT Areas						
	Total	30.40		114.40		115.20	
Other Testing Activities - NAVSEA							
Acoustic and Oceanographic Research	Northeast			3		3	
	VACAPES						
	Cherry Pt						
	JAX					1	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas					1	
	Total			3		5	
Acoustic Component Testing	Northeast						
	VACAPES						
	Cherry Pt						
	JAX			1		1	
	SFOMF	33		33		33	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	33		34		34	

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Simulant Testing	Northeast	40.00					
	VACAPES	40.00		1.00		2.50	
	Cherry Pt	40.00					
	JAX	40.00					
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	160.00		1.00		2.50	
Countermeasure Testing	Northeast						
	NUWC Newport Testing Range			6.00		6.00	
	VACAPES			0.00		0.00	
	JEB Little Creek Fort Story			5.00		5.00	
	Cherry Pt			0.00		0.00	
	JAX	0.00		0.00		0.00	
	Key West	0.00		0.00		0.00	
	Gulf Range Complex			0.00		0.00	
	Other AFTT Areas						
	Total	0.00		11.00		11.00	
Insertion/ Extraction	Northeast						
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	NSWC Panama City Testing Range	134.00		250.50		251.00	
	Other AFTT Areas						
	Total	134.00		250.50		251.00	
Intelligence, Surveillance, Reconnaissance	Northeast						
	VACAPES			1		1	
	Cherry Pt						
	JAX			2		2	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total			3		3	
Line Charge Testing	Northeast						
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	NSWC Panama City Testing Range	4		4		4	
	Other AFTT Areas						
	Total	4		4		4	
Non-Acoustic Component Testing	Northeast						
	VACAPES	2.00				0.50	
	Hampton Roads, VA					0.50	
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex	2.00		0.50		1.50	
	Other AFTT Areas						
	Total	4.00		0.50		2.50	
Payload Deployer Testing	Northeast	0.00		0.00		0.00	
	NUWC Newport Testing Range	39.00		39.00		39.00	
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	39.00		39.00		39.00	

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Semi-Stationary Equipment Testing	Northeast						
	NUWC Newport Testing Range	190.00		164.00		173.00	
	Newport, RI	2.00		2.00		2.00	
	VACAPES						
	NS Norfolk			5.50		7.00	
	Cherry Pt						
	JAX						
	Port Canaveral, FL			5.50		7.00	
	Key West						
	Key West RC Inshore			5.50		7.00	
	Gulf Range Complex	5.50					
	NSWC Panama City Testing Range			15.00		15.00	
	Other AFTT Areas						
	Total	197.50		197.50		211.00	
Towed Equipment Testing	Northeast						
	NUWC Newport Testing Range	36		46		49	
	VACAPES						
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	36		46		49	
Surface Warfare – NAVSEA							
Gun Testing - Large-Caliber	Northeast	0.00		0.00		0.00	
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00					
	JAX	0.00		0.00		0.00	
	Key West	0.00					
	Gulf Range Complex	0.00		0.00		0.00	
	NSWC Panama City Testing Range	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Gun Testing - Medium-Caliber	Northeast			0.00		0.00	
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00					
	JAX						
	Key West	0.00					
	Gulf Range Complex			0.00		0.00	
	NSWC Panama City Testing Range	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Gun Testing - Small-Caliber	Northeast	0.00		0.00		0.00	
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00		0.00		0.00	
	JAX	0.00		0.00		0.00	
	Key West	0.00		0.00		0.00	
	Gulf Range Complex	0.00				0.00	
	NSWC Panama City Testing Range	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Kinetic Energy Weapons Testing	Northeast	0.00					
	VACAPES	0.00					
	Cherry Pt	0.00					
	JAX	0.00					
	Key West	0.00					
	Gulf Range Complex	0.00					
	Other AFTT Areas						
	Total	0.00					
Missile and Rocket Testing	Northeast	0.00					
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00		0.00		0.00	
	JAX	0.00		0.00		0.00	
	Key West	0.00					
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Unmanned Systems - NAVSEA							
Underwater Search, Deployment, and Recovery	Northeast						
	VACAPES			2		5	
	Cherry Pt						
	JAX						
	SFOMF	33		33		33	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	33		35		38	
Unmanned Aerial System Testing	Northeast	15					
	NUWC Newport Testing Range	17		17		17	
	VACAPES	7.50					
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	39.50		17		17	
Unmanned Surface Vehicle System Testing	Northeast						
	NUWC Newport Testing Range	132		4		4	
	VACAPES			0.00		0.00	
	Cherry Pt			0.00		0.00	
	JAX			0.00		0.00	
	Key West			0.00		0.00	
	Gulf Range Complex			0.00		0.00	
	Other AFTT Areas			0.00		0.00	
	Total	132		4.00		4.00	
Unmanned Underwater Vehicle Testing	Northeast						
	NUWC Newport Testing Range	308		138		138	
	VACAPES						
	Cherry Pt						
	JAX	12.50					
	JAX RC Inshore	4.50					
	SFOMF	21.00		0.50		0.50	
	Key West						
	Gulf Range Complex	20.50					
	NSWC Panama City Testing Range	72.50		104.00		104.50	
	Other AFTT Areas						
	Total	439.00		242.50		243.00	
Vessel Evaluation - NAVSEA							
Air Defense Testing	Northeast	0.00					
	VACAPES	0.00		0.00		0.00	
	Cherry Pt						
	JAX	0.00		0.00		0.00	
	Key West						
	Gulf Range Complex	0.00					
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Aircraft Carrier Sea Trials – Propulsion Testing	Northeast						
	VACAPES	2					
	Cherry Pt						
	JAX						
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	2					
Hydrodynamic and Maneuverability Testing	Northeast						
	VACAPES	1					
	Cherry Pt						
	JAX	1					
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	2					

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
In-Port Maintenance Testing	Northeast						
	VACAPES						
	NS Norfolk	0.00		0.00		0.00	
	Cherry Pt						
	JAX						
	NS Mayport, FL	0.00		0.00		0.00	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Large Ship Shock Trials	Northeast						
	VACAPES						
	Cherry Pt						
	JAX	1					
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	1					
Propulsion Testing	Northeast	5		1		2	
	VACAPES	7		44		74	
	Cherry Pt	10		11		18	
	JAX	11		11		18	
	Key West	10		11		18	
	Gulf Range Complex	86		44		58	
	Gulf Range Complex Inshore	11		11		19	
	NSWC Panama City Testing Range			1		2	
	Other AFTT Areas						
	Total	140		134		209	
Signature Analysis Operations	Northeast						
	VACAPES						
	Hampton Roads, VA					0.00	
	Cherry Pt						
	JAX	0.00					
	SFOMF	0.00		0.00		0.00	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Small Ship Shock Trial	Northeast						
	VACAPES					1	
	Cherry Pt						
	JAX	1		1		1	
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	1		1		2	
Submarine Sea Trials – Propulsion Testing	Northeast	1		3		4	
	VACAPES	1		3		4	
	Cherry Pt						
	JAX	1					
	Key West						
	Gulf Range Complex						
	Other AFTT Areas						
	Total	3		6		8	
Submarine Sea Trials – Weapons System Testing	Northeast	4		3		4	
	NE RC Inshore			1		1	
	VACAPES	4		3		4	
	Cherry Pt						
	JAX	2		2		2	
	JAX RC Inshore	2					
	NSB Kings Bay			1		2	
	Port Canaveral, FL			1		2	
	SFOMF	1					
	Key West						
	Gulf Range Complex	1		1		1	
	Other AFTT Areas						
	Total	14		12		16	

Table H-2: Current and Proposed NAVAIR, NAVSEA, and ONR Testing Activities (continued)

Activity/OPAREA		Annual Testing Activity Events by Project Scenario					
		Current Conditions (Phase III)		Alternative 1 (Phase IV)		Alternative 2 (Phase IV)	
		NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing	NAVSEA Testing	NAVAIR Testing
Surface Warfare Testing	Northeast	0.00					
	VACAPES	0.00		0.00		0.00	
	Cherry Pt						
	JAX	0.00		0.00		0.00	
	Key West	0.00					
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Undersea Warfare Testing	Northeast			0.00		0.00	
	VACAPES	0.00		0.00		0.00	
	Cherry Pt	0.00		0.00		0.00	
	JAX	0.00		0.00		0.00	
	SFOMF	0.00		0.00		0.00	
	Key West					0.00	
	Gulf Range Complex	0.00					
	Other AFTT Areas						
	Total	0.00		0.00		0.00	
Vessel Signature Evaluation	Northeast						
	NUWC Newport Testing Range			0.00		1	
	VACAPES	0.00		0.00		0.00	
	Hampton Roads, VA			0.00		0.00	
	JEB Little Creek Fort Story	5					
	Cherry Pt						
	JAX	0.00		0.00		0.00	
	SFOMF			0.00		0.00	
	Key West						
	Gulf Range Complex	0.00		0.00		0.00	
	Other AFTT Areas						
	Total	5.00		0.00		1.00	
Acoustic and Oceanographic Science and Technology - ONR							
Acoustic and Oceanographic Research	Northeast	9		4		4	
	VACAPES	2		3		4	
	Cherry Pt						
	JAX			3		3	
	Key West						
	Gulf Range Complex	5		3		4	
	Other AFTT Areas	2					
	Total	18		13		15	
Large Displacement Unmanned Undersea Vehicle Testing	Northeast	16		1		2	
	VACAPES	8		1		1	
	Cherry Pt	4					
	JAX	12		1		1	
	Key West						
	Gulf Range Complex	4		1		1	
	Other AFTT Areas						
	Total	44		4		5	
Mine Countermeasure Technology Research	Northeast	2		1		2	
	VACAPES	1		1		1	
	Cherry Pt						
	JAX	1		1		1	
	Key West						
	Gulf Range Complex			1		1	
	Other AFTT Areas						
	Total	4		4		5	

Notes: Some testing activities for Current Conditions (Phase III) and Alternative 1 (Phase IV) with ranges of annual events identified in Final Supplement EIS/OEIS Tables 2.2-3 through 2.2-5 were evaluated based on the median of the events range. In addition, some NAVSEA testing activities events (represented by number of events in 2 decimal places) were lowered from those presented in Final Supplement EIS/OEIS Table 2.2-4, as they would occur simultaneously with like kind training activities. The summation of values might not exactly match each totals row due to minor rounding errors.

Table H-3: Vessel Emissions by OPAREA – Outside State Waters – Phase III

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	7.20	47.18	169.86	35.51	2.37	2.18	17,295
VACAPES	72.04	889.14	1,968.14	330.28	33.26	30.60	407,842
Cherry Pt	67.52	741.64	1,583.20	266.09	26.56	24.44	318,662
JAX	63.53	748.89	1,626.56	266.77	27.53	25.32	336,998
SFOMF	0.13	1.87	5.02	0.30	0.07	0.06	513
Key West	5.90	18.58	122.39	6.42	1.68	1.55	9,675
Gulf Range Complex	39.28	184.81	830.50	61.13	11.31	10.41	84,235
Other AFTT Areas	2.56	33.21	70.51	15.06	1.34	1.23	15,725

Table H-4: Vessel Emissions by OPAREA – Inside State Waters – Phase III

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	9.70	74.00	411.57	154.98	6.14	5.65	64,039
VACAPES	38.24	288.14	1,505.83	710.31	38.39	35.32	200,822
Cherry Pt	5.62	24.58	163.48	60.16	3.26	3.00	22,765
JAX	4.39	37.73	215.96	116.60	4.42	4.06	37,226
SFOMF	0.73	5.63	33.29	10.31	0.41	0.38	4,642
Key West	0.08	1.18	2.54	4.06	0.05	0.05	239
Gulf Range Complex	3.80	36.47	197.25	97.86	3.04	2.79	32,805
Other AFTT Areas	0.16	1.76	19.48	7.20	0.46	0.42	4,149

Table H-5: Aircraft Emissions by OPAREA – Outside State Waters – Phase III

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	0.36	7.35	16.57	0.63	3.26	3.00	14,917
VACAPES	5.49	50.81	291.74	9.06	117.35	107.96	339,932
Cherry Pt	3.60	30.16	211.65	6.01	92.18	84.81	294,108
JAX	5.19	47.76	253.90	7.65	103.76	95.46	351,607
SFOMF	0.00	0.04	0.04	0.00	0.03	0.02	35
Key West	1.09	12.39	12.69	0.73	8.33	7.66	332,263
Gulf Range Complex	0.39	4.10	8.21	0.33	4.18	3.85	14,143
Other AFTT Areas	0.03	0.39	0.44	0.02	0.28	0.26	420

Table H-6: Aircraft Emissions by OPAREA – Inside State Waters – Phase III

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	0.04	0.47	0.67	0.03	0.30	0.28	-
VACAPES	5.04	56.97	74.25	4.03	40.68	37.43	-
Cherry Pt	0.43	5.01	5.43	0.31	3.36	3.09	-
JAX	1.18	13.41	14.93	0.83	8.92	8.21	-
SFOMF	0.00	0.04	0.04	0.00	0.03	0.02	-
Key West	0.01	0.10	0.17	0.01	0.08	0.07	-
Gulf Range Complex	0.49	5.57	5.70	0.33	3.74	3.44	-
Other AFTT Areas	-	-	-	-	-	-	-

Note: CO_2e emissions within state waters included in emissions by OPAREA - see Table H-5.

Table H-7: Munitions Emissions by OPAREA – Phase III

	Phase III Alternative 1 (Tons per Year of Emissions)							
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***Pb***	***CO_2e (MT)***
Northeast	0.001	0.74	0.02	0.001	1.13	0.83	0.002	1
VACAPES	0.025	49.24	0.86	0.005	33.74	25.76	0.209	35
Cherry Pt	0.004	16.02	0.29	0.001	5.78	4.26	0.027	9
JAX	0.012	34.78	0.62	0.002	19.10	14.29	0.183	28
Key West	0.000	2.85	0.07	0.001	0.76	0.51	0.003	3
Gulf Range Complex	0.001	3.38	0.07	0.001	1.16	0.82	0.015	4
Other AFTT Areas	0.000	1.37	0.02	0.001	0.41	0.31	0.001	1

Note: From Draft SEIS Appendix H Table H-16. All emissions would occur greater than 3 nm from shore.

Table H-8: Emissions by OPAREA – Inside State Water Boundaries – Phase III

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	9.74	74.46	412.25	155.02	6.44	5.93	64,039
VACAPES	43.29	354.11	1,580.08	714.34	79.07	72.75	200,822
Cherry Pt	6.05	29.59	168.91	60.47	6.62	6.09	22,765
JAX	5.56	51.15	230.89	117.43	13.34	12.27	37,226
SFOMF	0.73	5.66	33.32	10.31	0.44	0.40	4,642
Key West	0.09	1.28	2.71	4.07	0.13	0.12	239
Gulf Range Complex	4.29	42.04	202.96	98.19	6.78	6.24	32,805
Other AFTT Areas	0.16	1.76	19.48	7.20	0.46	0.42	4,149

Table H-9: Grand Total Emissions Summary by OPAREA – Phase III

Area	Alternative 1 (Tons per Year of Emissions)						
	VOCs	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2e (MT)
Northeast	17.29	129.73	598.70	191.16	13.20	11.93	96,252
VACAPES	120.84	1,334.30	3,840.82	1,564.95	263.42	237.06	948,631
Cherry Pt	77.17	817.41	1,964.05	707.70	131.15	119.59	635,545
JAX	74.30	882.58	2,111.97	800.31	163.72	147.34	725,860
SFOMF	0.87	7.57	38.38	14.64	0.53	0.49	5,191
Key West	7.08	35.10	137.85	21.10	10.90	9.84	342,180
Gulf Range Complex	43.96	234.33	1,041.75	277.06	23.44	21.31	131,187
Other AFTT Areas	2.75	36.73	90.45	38.59	2.49	2.22	20,294
Total - Phase III Alternative 1	**344.26**	**3,477.74**	**9,823.98**	**3,615.51**	**608.84**	**549.79**	**2,905,140**

Note: Includes emissions inside and outside state waters.

Table H-10: Vessel Emissions by OPAREA – Outside State Waters – Phase IV Alternative 1

Area	Alternative 1 (Tons per Year of Emissions)						
	VOCs	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2e (MT)
Northeast	5.09	39.96	153.27	8.14	2.35	2.16	14,127
VACAPES	76.33	790.16	2,469.97	245.22	43.42	39.95	374,740
Cherry Pt	31.91	308.63	908.92	93.62	15.55	14.30	146,390
JAX	41.99	458.10	1,349.15	146.33	24.44	22.48	219,436
SFOMF	0.17	2.57	7.41	0.05	0.14	0.13	662
Key West	6.78	25.05	170.86	7.36	2.58	2.37	13,484
Gulf Range Complex	28.43	197.70	880.96	38.13	12.14	11.17	85,461
Other AFTT Areas	1.79	22.98	69.37	7.52	1.14	1.05	10,585

Table H-11: Vessel Emissions by OPAREA – Inside State Waters – Phase IV Alternative 1

Area	Alternative 1 (Tons per Year of Emissions)						
	VOCs	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2e (MT)
Northeast	6.91	58.62	285.25	4.75	5.87	5.40	35,547
VACAPES	35.63	267.70	1,428.42	241.65	29.36	27.02	171,789
Cherry Pt	10.35	36.14	224.85	16.54	4.23	3.89	28,655
JAX	6.01	45.01	215.88	16.85	4.90	4.51	29,154
SFOMF	0.29	3.14	11.61	0.02	0.17	0.16	631
Key West	0.74	3.90	18.46	0.23	0.42	0.39	1,088
Gulf Range Complex	8.41	85.81	414.22	1.50	7.79	7.16	54,677
Other AFTT Areas	0.76	3.04	25.40	1.85	0.63	0.58	2,907

Table H-12: Aircraft Emissions by OPAREA – Outside State Waters – Phase IV Alternative 1

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	0.40	6.96	16.78	0.65	3.19	2.94	14,616
VACAPES	5.06	45.13	305.24	9.38	120.38	110.75	301,964
Cherry Pt	2.05	19.17	86.22	2.72	36.36	33.46	201,679
JAX	3.66	37.64	131.20	4.61	47.69	43.88	280,184
SFOMF	0.00	0.04	0.04	0.00	0.03	0.02	35
Key West	1.33	14.33	37.74	1.53	17.35	15.96	341,845
Gulf Range Complex	0.67	7.51	11.69	0.55	6.66	6.13	19,117
Other AFTT Areas	0.07	0.86	1.04	0.06	0.72	0.66	2,785

Table H-13: Aircraft Emissions by OPAREA – Inside State Waters – Phase IV Alternative 1

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	0.04	0.50	0.70	0.04	0.33	0.30	-
VACAPES	3.10	35.29	37.87	2.16	24.00	22.08	-
Cherry Pt	0.37	4.36	4.75	0.27	2.97	2.73	-
JAX	1.13	12.92	14.47	0.81	8.65	7.96	-
SFOMF	0.00	0.04	0.04	0.00	0.03	0.02	-
Key West	0.15	1.71	1.76	0.10	1.16	1.07	-
Gulf Range Complex	0.71	8.13	8.70	0.50	5.57	5.12	-
Other AFTT Areas	0.01	0.18	0.20	0.01	0.15	0.14	-

Note: CO_2e emissions within state waters included in emissions by OPAREA – see Table H-12.

Table H-14: Munitions Emissions by OPAREA – Phase IV Alternative 1

	Alternative 1 (Tons per Year of Emissions)							
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***Pb***	***CO_2e (MT)***
Northeast	0.001	0.71	0.02	0.001	1.08	0.79	0.002	1
VACAPES	0.024	47.27	0.82	0.004	32.39	24.73	0.201	34
Cherry Pt	0.004	15.38	0.28	0.001	5.55	4.09	0.026	9
JAX	0.012	33.39	0.60	0.002	18.33	13.72	0.175	27
Key West	0.000	2.74	0.06	0.001	0.73	0.49	0.003	3
Gulf Range Complex	0.001	3.25	0.07	0.001	1.12	0.79	0.015	4
Other AFTT Areas	0.000	1.32	0.02	0.001	0.40	0.29	0.001	1

Note: Phase IV Alternative 1 emissions = 0.96 * Phase III emissions. All emissions would occur greater than 3 nm from shore.

Table H-15: Emissions by OPAREA – Inside State Water Boundaries – Phase IV Alternative 1

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	6.95	59.13	285.96	4.78	6.20	5.70	35,547
VACAPES	38.73	303.00	1,466.29	243.81	53.37	49.10	171,789
Cherry Pt	10.72	40.50	229.60	16.81	7.20	6.62	28,655
JAX	7.14	57.92	230.35	17.66	13.55	12.47	29,154
SFOMF	0.29	3.18	11.65	0.02	0.20	0.18	631
Key West	0.89	5.62	20.23	0.33	1.58	1.46	1,088
Gulf Range Complex	9.12	93.93	422.92	2.00	13.36	12.29	54,677
Other AFTT Areas	0.77	3.22	25.61	1.87	0.78	0.72	2,907

Table H-16: Grand Total Emissions Summary by OPAREA – Phase IV Alternative 1

	Alternative 1 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	12.43	106.76	456.03	13.58	12.82	11.59	64,292
VACAPES	120.15	1,185.56	4,242.32	498.42	249.56	224.52	848,527
Cherry Pt	44.68	383.68	1,225.01	113.16	64.66	58.47	376,732
JAX	52.79	587.05	1,711.30	168.60	104.02	92.55	528,802
SFOMF	0.46	5.79	19.10	0.08	0.36	0.34	1,327
Key West	9.00	47.73	228.89	9.22	22.24	20.28	356,420
Gulf Range Complex	38.22	302.38	1,315.65	40.68	33.27	30.37	159,258
Other AFTT Areas	2.62	28.38	96.03	9.45	3.04	2.73	16,278
Total - Phase IV Alternative 1	**280.36**	**2,647.33**	**9,294.33**	**853.17**	**489.98**	**440.85**	**2,351,637**
Total - Phase III Alternative 1	**344.26**	**3,477.74**	**9,823.98**	**3,615.51**	**608.84**	**549.79**	**2,905,140**
Net Change - Phase IV - Phase III	**(63.91)**	**(830.41)**	**(529.65)**	**(2,762.34)**	**(118.86)**	**(108.94)**	**(553,503)**

Notes: Includes emissions inside and outside state waters. Totals might vary slightly from the summation of individual values due to minor rounding errors.

Table H-17: Vessel Emissions by OPAREA – Outside State Waters – Phase IV Alternative 2

	Alternative 2 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	5.57	42.38	166.98	8.76	2.53	2.33	15,275
VACAPES	90.10	877.61	2,828.79	277.50	49.37	45.42	419,192
Cherry Pt	36.43	346.74	1,031.18	105.98	17.59	16.18	164,704
JAX	48.31	519.78	1,531.00	170.38	27.78	25.56	248,649
SFOMF	0.17	2.57	7.41	0.05	0.14	0.13	662
Key West	9.14	35.02	228.32	11.08	3.48	3.20	19,141
Gulf Range Complex	36.19	230.72	1,069.54	50.55	15.09	13.88	104,252
Other AFTT Areas	2.47	32.86	92.59	12.54	1.67	1.54	15,157

Table H-18: Vessel Emissions by OPAREA – Inside State Waters – Phase IV Alternative 2

	Alternative 2 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	7.42	60.60	297.79	5.47	6.12	5.63	36,623
VACAPES	36.01	270.64	1,448.84	244.73	29.90	27.51	175,086
Cherry Pt	10.39	36.66	228.28	17.20	4.32	3.98	29,320
JAX	6.37	48.88	241.51	21.34	5.61	5.16	33,870
SFOMF	0.29	3.14	11.61	0.02	0.17	0.16	631
Key West	0.80	4.06	19.98	0.25	0.46	0.42	1,160
Gulf Range Complex	8.54	86.30	418.14	1.54	7.87	7.24	55,003
Other AFTT Areas	0.86	4.36	33.98	3.49	0.87	0.80	4,570

Table H-19: Aircraft Emissions by OPAREA – Outside State Waters – Phase IV Alternative 2

	Alternative 2 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	0.40	7.00	16.82	0.65	3.22	2.96	14,758
VACAPES	4.51	38.96	297.16	8.98	115.65	106.40	300,091
Cherry Pt	2.13	19.87	88.60	2.80	37.30	34.32	207,238
JAX	3.70	38.25	130.30	4.62	47.71	43.89	280,902
SFOMF	0.00	0.04	0.04	0.00	0.03	0.02	35
Key West	1.36	14.48	40.05	1.58	18.05	16.60	345,552
Gulf Range Complex	0.67	7.57	11.37	0.55	6.61	6.08	18,386
Other AFTT Areas	0.07	0.86	1.04	0.06	0.72	0.66	2,785

Table H-20: Aircraft Emissions by OPAREA – Inside State Waters – Phase IV Alternative 2

	Alternative 2 (Tons per Year of Emissions)						
Area	***VOCs***	***CO***	***NO_x***	***SO_x***	***PM_{10}***	***$PM_{2.5}$***	***CO_2e (MT)***
Northeast	0.06	0.57	0.88	0.04	0.43	0.39	-
VACAPES	3.09	35.24	37.83	2.16	23.96	22.04	-
Cherry Pt	0.37	4.37	4.76	0.27	2.98	2.74	-
JAX	1.13	12.95	14.50	0.81	8.67	7.98	-
SFOMF	0.00	0.04	0.04	0.00	0.03	0.02	-
Key West	0.15	1.72	1.77	0.10	1.16	1.07	-
Gulf Range Complex	0.71	8.15	8.73	0.50	5.58	5.13	-
Other AFTT Areas	0.01	0.18	0.20	0.01	0.15	0.14	-

Note: CO_2e emissions within state waters included in emissions by OPAREA - see Table H-19.

Table H-21: Munitions Emissions by OPAREA – Phase IV Alternative 2

Area	Alternative 2 (Tons per Year of Emissions)							
	VOCs	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	Pb	CO_2e (MT)
Northeast	0.001	0.71	0.02	0.001	1.09	0.80	0.002	1
VACAPES	0.025	47.77	0.83	0.004	32.73	24.98	0.201	34
Cherry Pt	0.004	15.54	0.28	0.001	5.61	4.13	0.026	9
JAX	0.012	33.74	0.60	0.002	18.52	13.86	0.175	27
Key West	0.000	2.77	0.06	0.001	0.73	0.49	0.003	3
Gulf of America	0.001	3.28	0.07	0.001	1.13	0.80	0.015	4
Other AFTT Areas	0.000	1.33	0.02	0.001	0.40	0.30	0.001	1

Note: Phase IV Alternative 2 emissions = 0.97 * Phase III emissions. All emissions would occur greater than 3 nm from shore.

Table H-22: Emissions by OPAREA – Inside State Water Boundaries – Phase IV Alternative 2

Area	Alternative 2 (Tons per Year of Emissions)						
	VOCs	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2e (MT)
Northeast	7.48	61.18	298.67	5.51	6.55	6.02	36,623
VACAPES	39.10	305.88	1,486.66	246.89	53.86	49.55	175,086
Cherry Pt	10.76	41.03	233.04	17.47	7.30	6.72	29,320
JAX	7.50	61.83	256.01	22.15	14.28	13.14	33,870
SFOMF	0.29	3.18	11.65	0.02	0.20	0.18	631
Key West	0.95	5.78	21.74	0.35	1.62	1.49	1,160
Gulf Range Complex	9.26	94.45	426.87	2.04	13.46	12.38	55,003
Other AFTT Areas	0.88	4.54	34.19	3.51	1.03	0.94	4,570

Table H-23: Grand Total Emissions Summary by OPAREA – Phase IV Alternative 2

Area	Alternative 2 (Tons per Year of Emissions)						
	VOCs	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2e (MT)
Northeast	13.44	111.27	482.49	14.93	13.39	12.12	66,658
VACAPES	133.74	1,270.21	4,613.45	533.37	251.62	226.36	894,403
Cherry Pt	49.33	423.19	1,353.11	126.25	67.80	61.35	401,271
JAX	59.53	653.61	1,917.92	197.15	108.29	96.44	563,448
SFOMF	0.46	5.79	19.10	0.08	0.36	0.34	1,327
Key West	11.45	58.04	290.17	13.01	23.88	21.79	365,855
Gulf Range Complex	46.12	336.02	1,507.85	53.14	36.28	33.14	177,645
Other AFTT Areas	3.42	39.59	127.83	16.11	3.82	3.44	22,513
Total - Phase IV Alternative 2	**317.49**	**2,897.72**	**10,311.91**	**954.04**	**505.44**	**454.97**	**2,493,120**
Total - Phase III Alternative 1	**344.26**	**3,477.74**	**9,823.98**	**3,615.51**	**608.84**	**549.79**	**2,905,140**
Net Change - Phase IV - Phase III	**(26.77)**	**(580.02)**	**487.94**	**(2,661.48)**	**(103.40)**	**(94.82)**	**(412,020)**

Notes: Includes emissions inside and outside state waters. Totals might vary slightly from the summation of individual values due to minor rounding errors.

Table H-24: Conformity Applicability Analyses – Phase IV minus Phase III Emissions

Nonattainment/ Maintenance Area	*Alternative 1 (tons/yr)*					*Alternative 2 (tons/yr)*				
	VOCs	*CO*	*NO_x*	*SO_x*	*PM*	*VOCs*	*CO*	*NO_x*	*SO_x*	*PM*
Rhode Island - Metropolitan Providence Interstate Ozone Nonattainment[1]										
Phase IV	5.91	50.26	243.06	4.07	5.27	6.35	52.00	253.87	4.68	5.57
Phase III	8.28	63.29	350.41	131.76	5.47	8.28	63.29	350.41	131.76	5.47
Net Change	**(2.37)**	**(13.03)**	**(107.35)**	**(127.70)**	**(0.21)**	**(1.93)**	**(11.29)**	**(96.54)**	**(127.08)**	**0.09**
Metropolitan Portland/Cumberland County Ozone Maintenance[2]										
Phase IV	0.69	5.91	28.60	0.48	0.62	0.75	6.12	29.87	0.55	0.65
Phase III	0.97	7.45	41.22	15.50	0.64	0.97	7.45	41.22	15.50	0.64
Net Change	**(0.28)**	**(1.53)**	**(12.63)**	**(15.02)**	**(0.02)**	**(0.23)**	**(1.33)**	**(11.36)**	**(14.95)**	**0.01**
Eastern Connecticut Intrastate Ozone Nonattainment[3]										
Phase IV	0.35	2.96	14.30	0.24	0.31	0.37	3.06	14.93	0.28	0.33
Phase III	0.49	3.72	20.61	7.75	0.32	0.49	3.72	20.61	7.75	0.32
Net Change	**(0.14)**	**(0.77)**	**(6.31)**	**(7.51)**	**(0.01)**	**(0.11)**	**(0.66)**	**(5.68)**	**(7.48)**	**0.01**
Virginia - Hampton Roads Intrastate Ozone Maintenance[4]										
VACAPES - Phase IV	38.73	303.00	1,466.29	243.81	53.37	39.10	305.88	1,486.66	246.89	53.86
VACAPES - Phase III	43.29	345.11	1,580.08	714.34	79.07	43.29	345.11	1,580.08	714.34	79.07
Net Change	**(4.56)**	**(42.11)**	**(113.79)**	**(470.53)**	**(25.71)**	**(4.18)**	**(39.22)**	**(93.42)**	**(467.45)**	**(25.21)**
Jacksonville, Florida Sulfur Dioxide Maintenance[5]										
Phase IV	7.14	57.92	230.35	17.66	13.55	7.50	61.83	256.01	22.15	14.28
Phase III	5.56	51.15	230.89	117.43	13.34	5.56	51.15	230.89	117.43	13.34
Net Change	**1.57**	**6.78**	**(0.54)**	**(99.78)**	**0.22**	**1.94**	**10.68**	**25.12**	**(95.28)**	**0.95**

Notes: All emissions would occur in state waters. Totals might vary slightly from the summation of individual values due to minor rounding errors.

[1] Equates to 85% of the emissions that occur within the Northeast Area state waters.

[2] Equates to 10% of the emissions that occur within the Northeast Area state waters.

[3] Equates to 5% of the emissions that occur within the Northeast Area state waters.

[4] Equates to 100% of the emissions that occur within the VACAPES and Virginia Capes Range Complex Inshore state waters.

[5] Equates to 100% of the emissions that occur within the JAX and JAX Range Complex Inshore state waters.

Table H-25: Data Organization by Geographic Areas

Designation [(1)]	*Relationship to EPA Region (Coastal States)*	
Northeast OPAREA	Region 1:	Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut
	Region 2:	New York and New Jersey
VACAPES OPAREA	Region 3:	Delaware and Virginia
Cherry Pt OPAREA	Region 4:	North Carolina, South Carolina, Georgia
JAX OPAREA	Region 4:	Florida
Key West OPAREA	Region 4:	Florida
Gulf Range Complex OPAREA	Region 4:	Florida and Alabama
	Region 6:	Louisiana and Texas
Outside Range Complexes	Other locations within the Study Area that are not in the OPAREA boundaries.	

Note:

[1] The OPAREA designation includes adjacent state waters. Emissions in state waters separately delineated in the calculations.

Table H-26: Vessel and Boat Engine Specifics and Emission Factors

Ship/Boat Type	*Acronym*	*Emissions Factors (lb/hr)[1] Propulsion Engines + Generators*							*Vessel Mode*	*Engine model (# of Engines)*	*Use[1]*
		HC	*CO*	*NOx*	*SO_x Phase 4*	*SO_x Phase 3*	*$PM_{10}/_{2.5}$*	*CO_2*			
Ships											
Logistics/Support	A0E-6	10.6	109.6	310.6	0.4	103.0	3.5	67,802	Underway	3608 (5) LM2500 (4)	Service Diesel Generator Main Gas Turbine
		5.9	35.0	444.4	0.7	154.4	5.3	81,308	Restricted Waters		
Nuclear Aircraft Carrier - Nimitz Class	CVN-1	0.3	1.2	16.7	1.4	1.4	0.1	684		16-645E5 (4)	Emergency Diesel Generator
	CVN-R	0.0	0.1	1.7	0.1	0.1	0.0	68			
Guided Missile Cruiser - Ticonderoga	CG-68	4.3	61.5	79.6	54.5	54.5	2.3	24,191	Underway	501-K17 (3) LM2500 (4)	Service Gas Turbine Generator Main Gas Turbine
		2.5	27.7	285.5	110.0	110.0	10.0	69,839	Restricted Waters		
Guided Missile Destroyer – Jack H Lucas	DDG-125	4.0	59.6	114.4	0.2	51.5	1.3	27,522	Underway	501-K34 (3) LM2500 (4)	Service Gas Turbine Generator Main Gas Turbine
		2.4	30.6	374.0	0.7	110.0	5.3	84,962	Restricted Waters		
Guided Missile Frigate	FFG-61	3.1	32.8	47.1	11.0	11.0	1.1	10,404	Underway	3512B Tier 1 (4) LM2500 (2)	Service Diesel Generator Main Gas Turbine
		1.8	13.9	143.2	22.0	22.0	2.4	31,926	Restricted Waters		
Littoral Combat Ship - Replaces FFG in Phase 4	LCS	3.1	46.0	186.3	0.2	51.5	4.2	25,458	Underway	V1078 (2) 16PA6B-STC (2) MT30 (2)	Service Diesel Generator Main Diesel Engine Main Gas Turbine
		6.2	79.0	152.2	0.1	23.2	6.2	11,092	Restricted Waters		
Amphibious Assault Ship - America Class	LHA-8	14.5	8.4	277.2	10.2	10.2	4.8	35,847	Underway	12PA6B (6) LM2500+ (2)	Service Diesel Generator Main Gas Turbine
		15.2	18.7	199.5	10.2	10.2	3.3	27,999	Restricted Waters		
Amphibious Assault Ship – Wasp Class	LHD-8	14.5	8.4	277.2	10.2	10.2	4.8	35,847	Underway	12PA6B (6) LM2500+ (2)	Service Diesel Generator Main Gas Turbine
		15.2	18.7	199.5	10.2	10.2	3.3	27,999	Restricted Waters		
Landing Transport Dock - San Antonio Class	LPD-17	16.9	31.6	272.3	37.5	37.5	3.3	16,767	Underway	3608 (Tier 1) (5) PC2.5STC (4)	Service Diesel Generator Main Diesel Engine
		15.0	28.1	263.8	33.0	33.0	2.8	15,026	Restricted Waters		
Dock Landing Ship	LSD	10.8	21.3	334.5	0.01	2.6	2.2	16,264	Underway	38D8-1/8 (4) PC2.5V (4)	Service Diesel Generator Main Diesel Engine
		20.4	40.0	604.3	0.2	51.5	2.2	21,126	Restricted Waters		
Patrol Coastal	PC	5.9	37.2	73.9	0.01	1.5	1.3	7,660	Underway	16RP200 (2) 3306B (4)	Service Diesel Generator Main Diesel Engine
		7.3	43.1	78.1	0.01	1.5	1.5	8,037	Restricted Waters		
USNS Vadm K. R. Wheeler	T-AG 5001	6.8	13.7	103.9	0.1	20.6	20.3	35,774	Underway	3406 (1) 3508 (2)	Service Diesel Generator Service Diesel Generator
		6.8	13.7	101.6	0.1	20.6	20.1	35,663	Restricted Waters		

Table H-26: Vessel and Boat Engine Specifics and Emission Factors (continued)

Ship/Boat Type	*Acronym*	*Emissions Factors (lb/hr)[1] Propulsion Engines + Generators*							*Vessel Mode*	*Engine model (# of Engines)*	*Use[1]*
		HC	*CO*	*NOx*	*SO_x Phase 4*	*SO_x Phase 3*	*$PM_{10}/_{2.5}$*	*CO_2*			
										3512 (2) 12 M 32C (2)	Service Diesel Generator Main Diesel Engine
Ocean Surveillance Vessel - Offshore	T-AGOS 19	2.9	4.8	66.7	0.02	5.1	0.9	2,895	Underway	3408C TA (1) 3512 (4)	Service Diesel Generator Main Diesel Engine
		2.9	4.8	66.4	0.02	5.1	0.9	2,886	Restricted Waters		
Maritime Prepositioning Force Ship	T-AKR 312	3.7	76.8	419.5	0.4	103.0	2.4	52,666	Underway	3516B TA (1) 3608 Tier 1 (5) LM2500 (2)	Service Diesel Generator Service Diesel Generator Main Gas Turbine
		5.7	40.3	193.8	0.2	51.5	2.4	27,056	Restricted Waters		
Rescue and Salvage Ship	T-ARS 52	1.3	3.1	32.1	0.02	5.1	0.4	3,403	Underway	D399(S) (3) D399(M) (4)	Service Diesel Generator Main Diesel Engine
		0.9	3.3	38.1	0.04	5.1	0.2	3,967	Restricted Waters		
Support Vessel	T-ATF-168	2.2	16.3	104.1	0.04	10.3	0.4	3,586	Underway	16V-71T 7163-7305 (3) 20-645E7 (2)	Service Diesel Generator Main Diesel Engine
		2.6	13.4	139.5	0.04	10.3	0.4	4,836	Restricted Waters		
USCG Cutter - Resilient Class - 210'	WMEC-210	1.5	11.2	71.3	0.03	7.1	0.3	2,456	Underway	None ALCO 251B (2)	Service Diesel Generator Main Diesel Engine
		1.8	9.2	95.5	0.03	7.1	0.3	3,312	Restricted Waters		
USCG Cutter - Famous Class - 270'	WMEC-270	2.2	16.3	104.1	0.04	10.3	0.4	3,586	Underway	3512B (2) ALCO V-18 (2)	Service Diesel Generator Main Diesel Engine
		2.6	13.4	139.5	0.04	10.3	0.4	4,836	Restricted Waters		
USCG Cutter - Legend Class - 418'	WMSL	9.4	215.2	433.0	0.4	83.2	16.0	37,391	Underway	3512B (3) MTU 20V 1163 (2) LM2500 (1)	Service Diesel Generator Main Diesel Engine Main Gas Turbine
		2.4	56.7	104.8	0.1	28.1	4.0	7,158	Restricted Waters		
Boats											
Amphibious Assault Vehicle – Phase 3 Only	AAV-P7/A1	0.8	0.8	6.2	1.3	1.3	0.3	647	All	None VT 400 903 (P-7A1), 525 Hp (1)	Service Diesel Generator Main Diesel Engine
Amphibious Combat Vehicle – Phase 4 Only	ACV	1.1	1.0	8.3	1.7	1.7	0.3	863	All	None Iveco Cursor 16, 700 Hp (1)	Service Diesel Generator Main Diesel Engine
Landing Craft Air Cushion	LCAC – Phase 3 Only	3.5	18.3	114.5	9.3	9.3	2.3	20,693	All	T-62-T-40-7 (2) TF-40B, 3,955 Hp (4)	APU Engine Main Diesel Engine
	LCAC-SSC – Phase 4 only	4.6	24.2	151.1	12.2	12.2	3.0	27,315	All	68 kW (2) 6,100 Hp (4)	APU Engine Main Diesel Engine

Table H-26: Vessel and Boat Engine Specifics and Emission Factors (continued)

Ship/Boat Type	*Acronym*	*Emissions Factors (lb/hr)[1] Propulsion Engines + Generators*							*Vessel Mode*	*Engine model (# of Engines)*	*Use[1]*
		HC	*CO*	*NOx*	*SO_x Phase 4*	*SO_x Phase 3*	*$PM_{10}/_{2.5}$*	*CO_2*			
Landing Craft Utility	LCU/LCM	0.5	36.2	45.0	0.1	25.7	1.6	1,683.9	All	None 12V-71 7122-7000 (2)	Service Diesel Generator Main Diesel Engine
Combat Rubber Raiding Craft	CRRC	1.3	6.4	0.4	0.0001	0.0001	0.02	87	All	55 Hp 2-stroke engine Tier 0 (1)	Main Gasoline Engine
Patrol Boat – 40' Defiant Emissions Factors	40 FT PB	0.2	9.0	10.1	0.01	2.6	0.0	1,294	All	Twin Cummins QSB 6.7 inboards Tier 3 (2)	Main Diesel Engine
Patrol Boat – 33' Riverine Assault Boat	RA	0.7	1.5	14.1	0.01	2.1	0.2	836	All	Yanmar 6LY2A-STP 440 hp (2)	Main Diesel Engine
Patrol Boat - Sea Ark 34' (Dauntless Class)	34 FT PB	0.6	1.4	13.5	0.2	46.8	0.3	739	All	Cummins 380 Hp (2)	Main Diesel Engine
Rigid Inflatable Boat (zodiac)	7M RHIB	0.1	2.0	2.6	0.02	5.1	0.1	267	All	230 Hp (1)	Main Diesel Engine
	11M RHIB	0.2	6.2	8.8	0.1	25.7	0.2	903	All	Caterpillar 3126, 470 Hp (2)	Main Diesel Engine

[1] Data from Navy and MSC Marine Engine Fuel Consumption & Emissions Calculator, U.S. Navy, February 2025

Table H-27: Aircraft Engine Specifics and Emission Factors

Aircraft	*Engine Model*	*# Engines*	*Aircraft Mode*	*Fuel Flow per engine lb/hr*	*Emissions Indices (Lb/1,000 Lb Fuel)*						*Emission Rates (Lb/hr)*					
					VOC	*CO*	*NO_x*	*SO_2*	*$PM_{10/2.5}$*	*CO_2*	*VOC*	*CO*	*NO_x*	*SO_2*	*$PM_{10/2.5}$*	*CO_2e*
AH-1W	T700-GE-401C	2	Circle	406	0.57	11.21	5.44	0.37	4.20	3,221	0.46	9.10	4.42	0.30	3.41	2,616
C-130 F/R/T	T56-A-16 Turboprop	4	Circle	1,125	0.54	2.07	8.16	0.37	3.97	3,213	2.43	9.32	36.72	1.67	17.87	14,459
CH-53	T64-GE-415	3	Cruise	1,488	0.17	2.13	8.08	0.37	2.21	3,221	0.76	9.51	36.07	1.65	9.87	14,380
E-2 / E-2C	T56-A-425, -427	2	Approach	1,133	0.36	2.54	10.04	0.37	0.94	3,252	0.82	5.76	22.75	0.84	2.13	7,369
EA-18G	F414-GE-400	2	Circle	3,318	0.51	2.44	6.74	0.37	6.56	3,154	3.38	16.19	44.73	2.46	43.53	20,930
F-15E	F100-PW-229	2	Military	5,745	0.31	0.33	29.29	0.37	1.33	3,200	3.56	3.79	336.54	4.25	15.28	36,768
FA-18E/F	F414-GE-400	2	Approach	5,169	0.14	0.72	14.75	0.37	6.56	3,191	1.43	7.44	152.49	3.83	67.82	32,992
F-35A	F135-PW-100	1	55% Engine Thrust Request								0.18	9.80	150.61	11.73	0.99	38,265
HH-60	T700-GE-401C	2	Circle	600	0.55	6.25	6.40	0.37	4.20	3,221	0.76	7.50	7.68	0.44	5.04	3,866
Learjet	TFE731-2-2B	2	Approach	266	4.90	22.38	5.90	0.37	0.09	3,200	0.05	11.91	3.14	0.20	6.00	12,259
MH-60R/S	T700-GE-401C	2	Cruise	600	0.55	6.25	6.40	0.37	4.20	3,221	0.66	7.50	7.68	0.44	5.04	3,866
MV-22	T406-AD-400	2	Fixed Wing Cruise	1,910	0.01	0.52	14.09	0.37	1.57	3,209	0.05	1.99	53.82	1.41	6.00	12,259
P-8 MMA	737-800, CFM56-7B26	2	Approach	2,770	0.12	1.41	11.00	0.37	0.09	3,161	0.64	7.81	60.94	2.05	0.49	17,512
S-3B	TF34-GE-400	2	Approach	1,145	2.14	14.10	4.07	0.37	3.62	3,200	4.90	32.29	9.32	0.85	8.29	7,328
UH-1N	T400-CP-400	2	Circle	270	0.17	3.34	4.72	0.37	4.20	3,221	0.09	1.80	2.55	0.20	2.27	1,740

Table H-28: Aircraft Engine Emission Factors References

Aircraft	Source of Emissions Indices Information
AH-1W	AESO Memorandum Report No. 9961, Revision A, November 2009 – Circle mode.
C-130 F/R/T	AESO Memorandum Report No. 2000-09D, December 2015 – Circle mode.
CH-53	AESO Memorandum Report No. 9822, Revision D, November 2009 – Cruise mode.
E-2 / E-2C	AESO Memorandum Report No. 9943E, September 2015 – Approach mode.
EA-18G	AESO Memorandum Report No. 9933, Revision D, March 2011 – Circle mode.
F-15E	Air Emissions Guide for Air Force Mobile Source, July 2016. Assumed fuel flow rate is total for each mode, not per engine – Military mode.
FA-18E/F	AESO Memorandum Report No. 9815 I, June 2017, Table 5 – Approach mode.
F-35A	Karnes 3 profile 21 - power rating = 55% ETR.
HH-60	AESO Memorandum Report No. 9929 Revision D December 2019, Table ES-2 – Cruise mode.
Learjet	Air Emissions Guide for Air Force Mobile Source, July 2024. Assumed fuel flow rate is total for each mode, not per engine – Approach mode.
MH-60R/S	AESO Memorandum Report No. 9929, Revision B, January 2014 – Cruise mode.
MV-22	AESO Memorandum Report No. 9946 Revision G, May 2017, Table ES-2 – Fixed Cruise Mode.
P-8 MMA	AESO Memorandum Report No. 2017-09, April 2017 – Approach mode.
S-3B	AESO Memorandum Report No. 9915B, May 2010 – Approach mode.
UH-1N	AESO Memorandum Report No. 9962, Revision A, November 2009 – Circle mode.

Notes:

$PM_{2.5}$ = PM_{10} emissions, in accordance with AESO Memorandum Report No. 2013-04 Revision A, January 2014. *$PM_{2.5}$ to PM_{10} Ratio for Aircraft Emitted Particles*.

U.S. Department of the Navy Aircraft Environmental Support Office Report 2012-01D, December 2014. *Sulfur Dioxide Emission Index Using JP-5 and JP-8 Fuel.*

VOC correction from U.S. Environmental Protection Agency, Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet and Turboprop Engines - Version 1.0, Report No. EPA-420-R-09-901, May 2009.

Table H-29: Assumptions Used in the Estimation of Emissions for the AFTT Final Supplemental EIS/OEIS - Phase IV

Vessel and Aircraft Activity Data and Emissions	Vessel and aircraft operational data were developed for each project activity and were based on current Phases III operations and expected changes to current operations for Phase IV. Operational data were developed based on project operating areas and distances from shore delineated by less than 3 nautical miles (NM), 3 to 12 NM, and greater than NM oceanward. Aircraft operations took into consideration the amount of time flown within 3,000 feet of ground or ocean surfaces, commonly known as the mixing layer. Helicopters were evaluated as flying entirely within this mixing layer. The analysis only estimated criteria pollutant emissions for aircraft flown within the mixing layer. The analysis estimated greenhouse gas emissions for aircraft based on total flight times within the project operating areas.
NAVSEA Testing Activities	Some testing activities for Current Conditions (Phase III) and Alternative 1 (Phase IV) with ranges of annual events identified in Final Supplemental EIS/OEIS Tables 2.2-3 through 2.2-5 were evaluated based on the median of the events range. This approach is more efficient than and as meaningful as evaluating all scenario ranges.
NAVSEA Testing Activities	The analysis reduced the number of events for most NAVSEA testing activities compared to those presented in the Final Supplemental EIS/OEIS Table 2.2-4, as these activities were determined to simultaneously occur with like kind training activities. This was done to prevent the double counting of emissions from these testing activities. The following NAVSEA testing activities were not affected by this reduction process: • Amphibious Vessel Testing, • Surface Ship Sonar Testing/Maintenance, • Mine Countermeasure Mission Package Testing, • Acoustic and Oceanographic Research, • Acoustic Component Testing, • Intelligence, Surveillance, Reconnaissance, • Line Charge Testing, • Towed Equipment Testing, • Underwater Search, Deployment, and Recovery, • Aircraft Carrier Sea Trials – Propulsion Testing, • Hydrodynamic and Maneuverability Testing, • Large Ship Shock Trials, • Propulsion Testing, • Small Ship Shock Trials, • Submarine Sea Trials – Propulsion Testing, and • Submarine Sea Trials – Weapons System Testing.
Munitions Emissions	New munitions activity data were not included in for this update and therefore munitions emissions were not included in the air emissions analysis. Munitions emissions are de minimis in comparison to emissions from other project sources and mainly occur greater than 12 NM offshore. Recommend using the munitions emissions estimates presented in the Final Supplemental EIS/OEIS which show Phase IV emissions are slightly lower (95%) than those estimated for Phase III.

H.2 Navy Record Of Non-Applicability (RONA) For Clean Air Act Conformity

H.2.1 Rhode Island Ozone Nonattainment Area

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action

Action Proponent: United States (U.S.) Navy, Fleet Forces Command

Location: Rhode Island State Waters

Proposed Action Name: Atlantic Fleet Training and Testing (AFTT)

Proposed Action and Emissions Summary: The Proposed Action (Preferred Alternative, Alternative 1) involves operation of military vessels, small boats, and aircraft and munition usages to achieve requisite training and testing requirements. Small boats and vessels would operate within the nearshore and state waters of Rhode Island. These activities generate emissions primarily through fossil fuel combustion from engine operations. Emissions from the Proposed Action would replace those associated with the Phase III (Alternative 1) training and testing activities approved in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS). The entire state of Rhode Island and its state waters are an orphan nonattainment area for the 1997 ozone national ambient air quality standard. As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* thresholds for ozone precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_X]). Table H-30 provides a summary of the evaluation.

Table H-30: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year)

Activity	*VOC*	*NO_x*
Alternative 1	5.91	243.06
Phase III	8.28	350.41
Net Change Alternative 1 minus Phase III	**-2.37**	**-107.35**
***De Minimis* Thresholds**	**100**	**100**
Exceed Threshold?	**No**	**No**

Affected Air Basin: Metropolitan Providence Interstate

Date RONA Prepared: July 16, 2025

RONA Prepared by: Navy Facilities Engineering Command Atlantic

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that *de minimis* thresholds for ozone precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is

shown in Table H-30 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix H of the AFTT Supplemental EIS/OEIS. Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval

Signature: COFFIN.DAVID.E.1504719800 Digitally signed by COFFIN.DAVID.E.1504719800 Date: 2025.08.04 13:49:12 -04'00'

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Office of the Deputy Assistant Secretary of the Navy (Environment and Mission Readiness)

H.2.2 METROPOLITAN PORTLAND/CUMBERLAND COUNTY, MAINE, OZONE MAINTENANCE AREA

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action

Action Proponent: United States (U.S.) Navy, Fleet Forces Command

Location: Portland/Cumberland County, Maine, State Waters

Proposed Action Name: Atlantic Fleet Training and Testing (AFTT)

Proposed Action and Emissions Summary: The Proposed Action (Preferred Alternative, Alternative 1) involves operation of military vessels, small boats, and aircraft and munition usages to achieve requisite training and testing requirements. Small boats and vessels would operate within the nearshore and state waters of Cumberland County, Maine. These activities generate emissions primarily through fossil fuel combustion from engine operations. Emissions from the Proposed Action would replace those associated with the Phase III (Alternative 1) training and testing activities approved in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS). The Metropolitan Portland/Cumberland County region and its state waters are an orphan maintenance area for the 1997 ozone national ambient air quality standard. As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* thresholds for ozone precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_X]). Table H-31 provides a summary of the evaluation.

Table H-31: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year)

Activity	*VOC*	*NO_x*
Alternative 1	0.69	28.60
Phase III	0.97	41.22
Net Change Alternative 1 minus Phase III	**-0.28**	**-12.63**
***De Minimis* Thresholds**	**100**	**100**
Exceed Threshold?	**No**	**No**

Affected Air Basin: Metropolitan Portland Intrastate

Date RONA Prepared: July 16, 2025

RONA Prepared by: Navy Facilities Engineering Command Atlantic

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that *de minimis* thresholds for ozone precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table H-31 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix H of the AFTT Supplemental EIS/OEIS. Therefore, the Navy

concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval

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H.2.3 Eastern Connecticut Intrastate (New London County), Ozone Nonattainment Area

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action

Action Proponent: United States (U.S.) Navy, Fleet Forces Command

Location: Eastern Connecticut/New London County, State Waters

Proposed Action Name: Atlantic Fleet Training and Testing (AFTT)

Proposed Action and Emissions Summary: The Proposed Action (Preferred Alternative, Alternative 1) involves operation of military vessels, small boats, and aircraft and munition usages to achieve requisite training and testing requirements. Small boats and vessels would operate within the nearshore and state waters of New London County, Connecticut. These activities generate emissions primarily through fossil fuel combustion from engine operations. Emissions from the Proposed Action would replace those associated with the Phase III (Alternative 1) training and testing activities approved in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS). The Eastern Connecticut Intrastate region and its state waters are serious nonattainment area for the 2015 ozone national ambient air quality standard. As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* thresholds for ozone precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_X]). Table H-32 provides a summary of the evaluation.

Table H-32: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year)

Activity	*VOC*	*NO_x*
Alternative 1	0.35	14.30
Phase III	0.49	20.61
Net Change Alternative 1 minus Phase III	**-0.14**	**-6.31**
***De Minimis* Thresholds**	**50**	**50**
Exceed Threshold?	**No**	**No**

Affected Air Basin: Metropolitan Portland Intrastate

Date RONA Prepared: July 16, 2025

RONA Prepared by: Navy Facilities Engineering Command Atlantic

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that *de minimis* thresholds for ozone precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table H-32 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix H of the AFTT Supplemental EIS/OEIS. Therefore, the Navy

concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval

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H.2.4 HAMPTON ROADS, VIRGINIA, OZONE MAINTENANCE AREA

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action

Action Proponent: United States (U.S.) Navy, Fleet Forces Command

Location: Chesapeake Bay, Virginia, State Waters

Proposed Action Name: Atlantic Fleet Training and Testing (AFTT)

Proposed Action and Emissions Summary: The Proposed Action (Preferred Alternative, Alternative 1) involves operation of military vessels, small boats, and aircraft and munition usages to achieve requisite training and testing requirements. Small boats, vessels, and aircraft would operate within the Chesapeake Bay and adjacent state waters of Virginia. These activities generate emissions primarily through fossil fuel combustion from engine operations. Emissions from the Proposed Action would replace those associated with the Phase III (Alternative 1) training and testing activities approved in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS). The Hampton Roads Area and its state waters are an orphan maintenance area for the 1997 ozone national ambient air quality standard. As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* thresholds for ozone precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_X]). Table H-33 provides a summary of the evaluation.

Table H-33: Proposed Action Ozone Precursor Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year)

Activity	*VOC*	*NO_x*
Alternative 1	38.73	1,466.29
Phase III	43.29	1,508.08
Net Change Alternative 1 minus Phase III	**-4.56**	**-113.79**
***De Minimis* Thresholds**	**100**	**100**
Exceed Threshold?	**No**	**No**

Affected Air Basin: Hampton Roads Intrastate

Date RONA Prepared: July 16, 2025

RONA Prepared by: Navy Facilities Engineering Command Atlantic

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below all *de minimis* thresholds.

Emissions Evaluation Conclusion

The U.S. Navy concludes that *de minimis* thresholds for ozone precursors would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table H-33 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix H of the AFTT Supplemental EIS/OEIS. Therefore, the Navy

concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval

Signature: COFFIN.DAVID.E.1504719800 Digitally signed by COFFIN.DAVID.E.1504719800 Date: 2025.08.04 13:48:35 -04'00'

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H.2.5 JACKSONVILLE, FLORIDA, SULFUR DIOXIDE MAINTENANCE AREA

The Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Proposed Action

Action Proponent: United States (U.S.) Navy, Fleet Forces Command

Location: Jacksonville, Florida, and surrounding State Waters

Proposed Action Name: Atlantic Fleet Training and Testing (AFTT)

Proposed Action and Emissions Summary: The Proposed Action (Preferred Alternative, Alternative 1) involves operation of military vessels, small boats, and aircraft and munition usages to achieve requisite training and testing requirements. Small boats and vessels would operate within the riverine environment in the Jacksonville, Florida, locality. These nearshore activities generate emissions primarily through fossil fuel combustion from engine operations. Emissions from the Proposed Action would replace those associated with the Phase III (Alternative 1) training and testing activities approved in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS). Part of Nassau County, which is adjacent to Jacksonville, is a maintenance area for the sulfur dioxide (SO_2) national ambient air quality standard. As a result, Proposed Action emissions were evaluated to assess compliance with the General Conformity Rule *de minimis* threshold for this pollutant. Table H-34 provides a summary of the evaluation.

Table H-34: Proposed Action Sulfur Dioxide Emissions Compared to General Conformity Rule *de Minimis* Thresholds (tons/year)

Activity	*SO_2*
Alternative 1	17.66
Phase III	117.43
Net Change Alternative 1 minus Phase III	**-99.78**
***De Minimis* Thresholds**	**100**
Exceed Threshold?	**No**

Affected Air Basin: Jacksonville (Florida)-Brunswick (Georgia) Interstate Air Quality Control Region

Date RONA Prepared: June 2, 2025

RONA Prepared by: Navy Facilities Engineering Command Atlantic

Proposed Action Exemptions

The Proposed Action is exempt from General Conformity Rule requirements, based on the determination that emissions associated with the Proposed Action are below the *de minimis* threshold for SO_2.

Emissions Evaluation Conclusion

The U.S. Navy concludes that *de minimis* thresholds for sulfur dioxide would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting this conclusion is shown in Table H-34 above. The calculations, methodology, data, and references are contained in Section 3.1 (Air Quality) and Appendix H of the AFTT Supplemental EIS/OEIS. Therefore, the Navy concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

RONA Approval

Signature: COFFIN.DAVID.E.1504719800 Digitally signed by COFFIN.DAVID.E.1504719800 Date: 2025.08.04 13:53:35 -04'00'

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APPENDIX I
MILITARY EXPENDED MATERIALS AND DIRECT STRIKE IMPACT ANALYSIS

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

I MILITARY EXPENDED MATERIALS AND DIRECT STRIKE IMPACT ANALYSIS I-1

I.1 Estimating the Impact of Military Expended Materials and In-Water Explosions on Seafloor Habitats I-1

I.2 Statistical and Probability Analysis for Estimating Direct Strike Impact and Number of Potential Exposures from Military Expended Materials I-7

I.2.1 Direct Impact Analysis I-8

I.2.2 Parameters for Analysis I-10

I.2.3 Output Data I-11

List of Figures

This appendix does not contain figures.

List of Tables

Table I-1: Potential Impact from Explosive Charges on or near the Bottom for Military Readiness Activities under Alternatives 1 and 2 in a Single Year I-3

Table I-2: Potential Impact to Bottom Habitat from Military Expended Materials for Training Activities under Alternative 1 in a Single Year I-4

Table I-3: Potential Impact to Bottom Habitat from Military Expended Materials for Testing Activities under Alternative 1 in a Single Year I-5

Table I-4: Potential Impact to Bottom Habitat from Military Expended Materials for Military Readiness Activities Combined under Alternative 1 in a Single Year I-6

Table I-5: A List of Symbols and Their Brief Descriptions as They Are Used in the Analysis I-7

Table I-6: Estimated Representative Marine Mammal Exposures from Direct Strike of a High-Energy Laser by Area and Alternative in a Single Year I-12

Table I-7: Estimated Representative Sea Turtle Exposures from Direct Strike of a High-Energy Laser by Area and Alternative in a Single Year I-12

Table I-8: Estimated Representative Marine Mammal Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year I-12

Table I-9: Estimated Representative Sea Turtle Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year I-13

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I MILITARY EXPENDED MATERIALS AND DIRECT STRIKE IMPACT ANALYSIS

I.1 ESTIMATING THE IMPACT OF MILITARY EXPENDED MATERIALS AND IN-WATER EXPLOSIONS ON SEAFLOOR HABITATS

This section discusses the methods and results for quantifying the seafloor disturbance of military expended materials and in-water explosions (associated with explosive ordnance disposal activities) under Alternatives 1 and 2 of the Proposed Action. Because military readiness activities would not be conducted under the No Action Alternative, it will not be discussed in this appendix.

The calculation of the initial disturbance footprint of military expended materials or explosions on or near the substrate is based on the number and location of military expended materials expended and not recovered. The locations described and mapped in Chapter 2 (Description of Proposed Action and Alternatives) are used for this analysis, with a few exceptions. For example, specific sub-locations of "Other AFTT Areas" are used in the analysis of seafloor disturbance to avoid the appearance of impacts to sensitive habitats that would not actually be impacted.

The analysis requires two data elements: (1) a tabular summary of the military expended material and crater (in-water explosions) footprints expected in training and testing locations, and (2) a tabular summary of analysis dimensions for those training and testing locations (e.g., seafloor habitat types).

- The data for (1) comes from the Atlantic Fleet Training and Testing (AFTT) Action Proponents and represents the most locational flexibility regarding expenditure of military expended materials and in-water explosions. The data for the number of military expended materials and in-water explosions are then multiplied by an estimate of the footprint size. The footprints listed for various expended materials in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (EIS/OEIS) (hereinafter referred to as the 2018 Final EIS/OEIS) were rough estimates compared to the more accurate estimates used for the current analysis.
    - The footprint sizes for military expended material are estimated to be twice the size of its material footprint, to account for some disturbed sediment around the object. Items with a casing have two separate entries in the data for their impact footprints. One incorporates that size of the unrecovered casing itself and the other is for the size of the projectile. A percentage of the casings are assumed to be recovered and are not included in the footprints, which is an improvement over the analysis in the 2018 Final EIS/OEIS.
    - The footprint sizes for in-water explosive effects on the bottom are based on equations and empirical data reported in Gorodilov and Sukhotin (1996) and O'Keeffe and Young (1984). The crater footprint was then doubled to account for an area of ejected substrate.
- The data for (2) comes from a compilation of seafloor habitat mapping presented in Section 3.3 (Habitats).

The analysis also considers geographic mitigation areas for seafloor resources that provides some localized protection from certain stressors (refer to Chapter 5, Mitigation). For example, explosive mines will not be placed near mapped areas of submerged aquatic vegetation, shipwrecks, artificial reefs, or

live hard bottom (includes shallow-water coral reefs). The analysis also accounts for the bottom-disturbing activities the Action Proponents have agreed not to conduct in National Marine Sanctuaries (refer to Chapter 6, Regulatory Considerations, for more information). However, the qualitative analysis in Section 3.3 (Habitats) considers the possibility of lighter materials drifting into these areas based on ocean currents.

Other assumptions used in the habitat analysis included:

- Omission of seafloor habitat types in water greater than 2,500 meters (m) deep due to the nature of the affected environment (refer to Appendix F, Biological Resources Supplemental Information, for supporting details).
- Restriction of explosive mine craters to relatively shallow waters (less than 95 meters deep) of the Study Area based on where the associated activities typically occur.

Important side notes about the analysis of military expended materials include:

- Mitigation measures that pertain to a subset of military expended materials were not accounted for quantitatively. For example, shallow-water coral reefs would not be targeted with heavy munitions against a surface target; the impact on shallow-water coral reefs therefore does not account for over 50 percent of the footprint that would be distributed compared to other habitats.
- Distance from shore for some activities provided in Appendix A (Activity Descriptions) was not accounted for. So, the impact on a relatively small portion of shallow-water habitats would shift to more offshore locations. The direct impact on habitats in the coastal ocean environment (e.g., coastal wetlands and seagrass beds around Key West) is therefore overestimated.

The likelihood of significant impacts from relatively heavy military expended materials (e.g., mine shapes, anchor blocks) beyond a single year on soft and intermediate bottom types is negligible, based on the updated analysis in Section 3.3 (Habitats). However, the impact of lighter materials and impacts on hard substrate could be longer term. Within a given training or testing location, the proportion of a habitat type determines the fraction of military expended material or crater footprints that would impact it.

The analysis results for single-year impacts are provided in Table I-1 through Table I-4 for habitats referenced in multiple resource sections (e.g., submerged aquatic vegetation in Section 3.4, Vegetation; shallow-water coral reefs in Section 3.5, Invertebrates). Seven-year totals are not provided based on the analysis presented Section 3.3 (Habitats).

The total impact area for temporary seafloor devices (anchors, bottom-placed instruments, metal plates, and mine shapes) is approximate 13 acres per year for both Alternatives 1 and 2 across all the range complexes and testing ranges, some inshore areas (Virginia Capes, Jacksonville, and Key West Range Complexes) and various port/pier locations.

Table I-1: Potential Impact from Explosive Charges on or near the Bottom for Military Readiness Activities under Alternatives 1 and 2 in a Single Year

EIS Locations	*Crater Footprint (Acres)*			*Percent of Shallow Soft and Intermediate Bottom Area*
	Training	*Testing*	*Combined*	
RC/Testing Range				
Northeast RC[1]	0.000	2.411	2.411	<0.001%
VACAPES RC	1.700	18.189	19.889	<0.001%
Navy Cherry Point RC	0.391	0.068	0.460	<0.001%
JAX RC	0.318	2.552	2.871	<0.001%
Key West RC	1.275	0.738	2.013	<0.001%
Gulf RC[1]	0.404	14.634	15.039	<0.001%
NUWC Newport Testing Range[1]	0.000	0.019	0.019	<0.001%
NSWC Panama City Testing Range[1]	0.000	2.666	2.666	<0.001%
Other Locations				
Northeast RC Inshore[1]	0.000	0.002	0.002	<0.001%
VACAPES RC Inshore	0.018	0.002	0.021	<0.001%
JAX RC Inshore	0.000	0.005	0.005	<0.001%
Key West RC Inshore[2]	1.600	0.000	1.600	16.187%
Grand Total	***5.709***	***45.401***	***51.110***	***N/A[1]***

[1] Overlaps with other locations. Also affects the grand total percentage.
[2] Does not account for efforts to direct explosive energy up and away from the seafloor
Notes: % = percent; < = less than; EIS = Environmental Impact Statement; Gulf RC = Gulf Range Complex; JAX = Jacksonville; N/A = not applicable; NSWC = Naval Surface Warfare Center; NUWC = Naval Undersea Warfare Center; RC = Range Complex; VACAPES = Virginia Capes

Table I-2: Potential Impact to Bottom Habitat from Military Expended Materials for Training Activities under Alternative 1 in a Single Year

EIS Locations	*Shallow Seafloor (0 to 95 m depths)*						*Deep Seafloor (95 to 2,500 m depths)*			*Bathyal/ Abyssal Zone (>2,500 m depths)*	*Total Impact (Acres)*
	Coastal Wetland[1]	*Seagrass Bed*[1]	*Mud/ Sand*	*Gravel/ Shell*	*Hard Bottom*[2]	*Coral Reef*[2]	*Mud/ Sand*	*Gravel/ Shell*	*Hard Bottom*[2]		
Range Complex/Testing Range											
Northeast RC	<0.001	<0.001	0.708	0.357	0.058	0.000	0.904	0.229	0.094	1.216	3.566
VACAPES RC	0.000	0.000	3.196	1.744	0.040	0.000	3.324	0.052	0.183	6.883	15.421
Navy Cherry Point RC	0.000	0.000	1.351	0.023	0.124	0.000	1.643	0.103	0.172	1.422	4.839
Jacksonville RC	0.000	0.000	13.110	0.156	0.426	0.000	8.778	4.570	7.492	0.141	34.674
Key West RC	0.000	0.000	0.057	0.023	0.059	0.011	0.184	0.013	0.063	0.051	0.460
Gulf RC	<0.001	0.000	0.655	0.191	0.036	0.000	0.744	0.037	0.058	0.083	1.804
Other Locations											
Other AFTT Areas	0.000	0.000	0.000	0.000	0.000	0.000	<0.001	0.000	<0.001	0.486	0.486
SINKEX Box	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.264	7.264
VACAPES RC Inshore	<0.001	<0.001	0.019	0.001	<0.001	0.000	0.000	0.000	0.000	0.000	0.020
Jacksonville RC Inshore	<0.001	0.000	<0.001	<0.001	<0.001	0.000	0.000	0.000	0.000	0.000	<0.001
Key West RC Inshore	<0.001	<0.001	<0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	<0.001
Gulf RC Inshore	<0.001	<0.001	<0.001	<0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Total Impact	***<0.001***	*0.001*	*19.096*	*2.495*	*0.743*	*0.011*	*15.577*	*5.006*	*8.061*	*17.546*	***68.536***

[1] A habitat comprising "Submerged Aquatic Vegetation" (includes seagrass or benthic macroalgae habitat).
[2] A habitat comprising "Live Hard Bottom."
Notes: % = percent; < = less than; > = greater than; AFTT = Atlantic Fleet Training and Testing; EIS = Environmental Impact Statement; Gulf RC = Gulf Range Complex; JAX = Jacksonville; m = meters; N/A = not applicable; RC = Range Complex; SINKEX = Sinking Exercise; VACAPES = Virginia Capes

Table I-3: Potential Impact to Bottom Habitat from Military Expended Materials for Testing Activities under Alternative 1 in a Single Year

EIS Locations	*Shallow Seafloor (0 to 95 m depths)*						*Deep Seafloor (95 to 2,500 m depths)*			*Bathyal/ Abyssal Zone (>2,500 m depths)*	*Total Impact (Acres)*
	Coastal Wetland[1]	*Seagrass Bed[1]*	*Mud/ Sand*	*Gravel/ Shell*	*Hard Bottom[2]*	*Coral Reef[2]*	*Mud/ Sand*	*Gravel/ Shell*	*Hard Bottom[2]*		
Range Complex/Testing Range											
Northeast RC[3]	<0.001	0.001	2.271	1.147	0.186	0.000	2.903	0.736	0.301	3.902	11.447
VACAPES RC	0.000	0.000	6.806	3.714	0.084	0.000	7.078	0.111	0.390	14.659	32.842
Navy Cherry Point RC	0.000	0.000	1.067	0.018	0.098	0.000	1.297	0.082	0.136	1.122	3.819
Jacksonville RC	0.000	0.000	3.090	0.037	0.100	0.000	2.069	1.077	1.766	0.033	8.172
Key West RC	0.000	0.000	0.702	0.286	0.728	0.133	2.276	0.161	0.779	0.634	5.700
Gulf RC	<0.001	0.000	2.051	0.596	0.112	0.000	2.330	0.117	0.181	0.259	5.648
NUWC Newport Testing Range[3]	<0.001	0.003	1.473	0.317	0.055	0.000	0.171	0.004	0.018	0.000	2.043
SFOMF	<0.001	0.000	0.019	<0.001	<0.001	0.015	0.084	0.030	0.341	0.022	0.512
NSWC Panama City Testing Range	<0.001	0.000	1.133	0.669	0.081	0.000	1.385	0.087	0.013	0.000	3.369
Other Locations											
Other AFTT Areas	0.000	0.000	0.000	0.000	0.000	0.000	<0.001	0.000	0.003	3.369	3.372
Total Impact	***<0.001***	*0.004*	*18.613*	*6.784*	*1.446*	*0.148*	*19.593*	*2.406*	*3.927*	*24.001*	***76.923***

[1] A habitat comprising "Submerged Aquatic Vegetation" (includes seagrass or benthic macroalgae habitat).
[2] A habitat comprising "Live Hard Bottom."
[3] Includes some overlap with other locations.
Notes: % = percent; < = less than; > = greater than; AFTT = Atlantic Fleet Training and Testing; EIS = Environmental Impact Statement; Gulf RC = Gulf Range Complex; JAX = Jacksonville; m = meters; N/A = not applicable; NSWC = Naval Surface Warfare; NUWC = Naval Undersea Warfare; RC = Range Complex; SFOMF = South Florida Ocean Measurement Facility Testing Range; SINKEX = Sinking Exercise; VACAPES = Virginia Capes

Table I-4: Potential Impact to Bottom Habitat from Military Expended Materials for Military Readiness Activities Combined under Alternative 1 in a Single Year

EIS Locations	Shallow Seafloor (0 to 95 m depths)						Deep Seafloor (95 to 2,500 m depths)			Bathyal/ Abyssal Zone (>2,500 m depths)	Total Impact (Acres)
	Coastal Wetland[1]	Seagrass Bed[1]	Mud/ Sand	Gravel/ Shell	Hard Bottom[2]	Coral Reef[2]	Mud/ Sand	Gravel/ Shell	Hard Bottom[2]		
Range Complex/Testing Range											
Northeast RC[3]	<0.001	0.001	2.978	1.504	0.245	0.000	3.807	0.966	0.394	5.117	15.013
VACAPES RC	0.000	0.000	10.002	5.457	0.124	0.000	10.401	0.163	0.573	21.543	48.264
Navy Cherry Point RC	0.000	0.000	2.418	0.041	0.223	0.000	2.939	0.185	0.307	2.545	8.658
Jacksonville RC	0.000	0.000	16.199	0.193	0.527	0.000	10.847	5.648	9.257	0.174	42.846
Key West RC	0.000	0.000	0.759	0.309	0.787	0.144	2.460	0.174	0.842	0.686	6.160
Gulf RC[3]	<0.001	0.000	2.706	0.787	0.148	0.000	3.075	0.154	0.239	0.342	7.452
NUWC Newport Testing Range[3]	<0.001	0.003	1.473	0.317	0.055	0.000	0.171	0.004	0.018	0.000	2.043
SFOMF	<0.001	0.000	0.019	<0.001	<0.001	0.015	0.084	0.030	0.341	0.022	0.512
NSWC Panama City Testing Range[3]	<0.001	0.000	1.133	0.669	0.081	0.000	1.385	0.087	0.013	0.000	3.369
Other Locations											
Other AFTT Areas	0.000	0.000	0.000	0.000	0.000	0.000	<0.001	0.000	0.003	3.855	3.858
SINKEX Box	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.264	7.264
VACAPES RC Inshore	<0.001	<0.001	0.019	0.001	<0.001	0.000	0.000	0.000	0.000	0.000	0.020
Jacksonville RC Inshore	<0.001	0.000	<0.001	<0.001	<0.001	0.000	0.000	0.000	0.000	0.000	<0.001
Key West RC Inshore	<0.001	<0.001	<0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	<0.001
Gulf RC Inshore	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Total Impact	*0.000*	*0.005*	*37.709*	*9.279*	*2.189*	*0.159*	*35.170*	*7.412*	*11.989*	*41.548*	***145.459***

[1] A habitat comprising "Submerged Aquatic Vegetation" (includes seagrass or benthic macroalgae habitat).
[2] A habitat comprising "Live Hard Bottom."
[3] Includes some overlap with other locations.
Notes: % = percent; < = less than; > = greater than; AFTT = Atlantic Fleet Training and Testing; EIS = Environmental Impact Statement; Gulf RC = Gulf Range Complex; JAX = Jacksonville; m = meters; N/A = not applicable; NSWC = Naval Surface Warfare; NUWC = Naval Undersea Warfare; RC = Range Complex; SFOMF = South Florida Ocean Measurement Facility Testing Range; SINKEX = Sinking Exercise; VACAPES = Virginia Capes

I.2 Statistical and Probability Analysis for Estimating Direct Strike Impact and Number of Potential Exposures from Military Expended Materials

This section discusses the methods and results for calculating the probability of a direct strike of a marine animal from any military items resulting from the proposed training and testing activities falling toward (or directed at) the sea surface. For the purposes of this section, military materials include a variety of items including acoustic countermeasures, high-energy lasers, non-explosive practice munitions, sonobuoys, targets, and torpedoes. Only marine mammals and sea turtles will be analyzed using the methods presented in this section because animal densities are necessary to complete the calculations and density estimates are only available for these two species groups in the Study Area. The probability analysis included in this section does not consider that the high-energy laser systems used in military readiness activities that automatically shut down when the locked target is lost. This means that if a high-energy laser beam aimed at a small boat on the water's surface, either from an aircraft or surface vessel moves off the target, the system ceases projecting laser light, preventing any energy from striking the water or a nearby animal. The analysis conducted here also does not account for explosive munitions because impacts from explosives are analyzed within the Navy Acoustic Effects Model as described in the report, *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing* (U.S. Department of the Navy, 2024). Table I-5 provides a list of symbols used in the equations located in the preceding sections.

Table I-5: A List of Symbols and Their Brief Descriptions as They Are Used in the Analysis

Symbol	*Explanation*
A_S	Area of an individual marine animal
L_S	Length of an individual marine animal
W_S	Width of an individual marine animal
N_S	Number of individual animals within a single marine species
D_S	Density of animals within a single marine species
A_{TotS}	The total footprint area of a single marine species
A_{RC}	The area of a single testing/training range
L_{mun}	The length of an individual piece of military expended material
W_{mun}	The width of an individual piece of military expended material
A_{mun}	The area of an individual piece of military expended material
N_{mun}	The total number of military expended materials used of a single type (e.g., non-explosive bomb)
A_I	The total area of military expended materials used of a single type (e.g., non-explosive bomb)
A_{TotI}	The area of impact for all types of military expended materials; the impact footprint
A_{BZ}	The area of the buffer zone around the impact footprint
A_{Final}	The total area of concern, including the buffer zone (A_{BZ}), the impact footprint (A_{TotI}), and the total animal footprint of a single marine species (A_{TotS})
R_{TotS}	The total footprint radius of a single marine species
R_{TotI}	The total footprint radius of the impact footprint for all types of military expended materials
R_{BZ}	The buffer zone radius of the impact footprint for all types of military expended materials
P	The probability of impacting a marine animal through a military expended material direct exposure impact
T	Total number of possible surface animal exposures associated with a direct impact from military expended materials

I.2.1 DIRECT IMPACT ANALYSIS

A probability was calculated to estimate the impact probability (*P*) and number of exposures (*T*) associated with direct impact of military items on marine mammals and sea turtles on the sea surface in the specified training or testing area (A_{RC}) in which the activities are occurring. The statistical probability analysis is based on probability theory with "footprint" areas for marine animals and total impact inscribed inside the training or testing area. The analysis is over-predictive and conservative, in that it assumes: (1) that all animals would be at or near the surface 100 percent of the time, when in fact, marine mammals spend the majority of their time underwater (e.g., Fonseca et al., 2022; Hochscheid, 2014; Irvine et al., 2017; Lagerquist et al., 2000; Mate et al., 1995), and (2) that the animals are stationary, which does not account for any movement or any potential avoidance of the training or testing activity area. There is some research that suggests marine mammals will avoid areas where there is sonar activity but not areas where there is just vessel traffic noise; so, avoidance behavior in marine mammals is situationally dependent (for review see (Ellison et al., 2012)). For sea turtles, research has demonstrated changes in behavior of sea turtles in response to anthropogenic sounds (O'Hara & Wilcox, 1990; Samuel et al., 2005), but more research is needed to determine if they portray avoidance behavior to any form of anthropogenic activity.

There are three types of areas incorporated into the analyses: species area (A_S), total impact footprint area (A_{Totl}), and the buffer zone of the impact area (A_{BZ}). For each calculation, a basic area is assessed using either the area calculation for a rectangle ($A = length * width$) or a circle ($A = \pi R^2$, where R is the radius of a circle). These area calculations were used in four different scenarios that make assumptions about the type of interaction between the marine animal and the military expended materials. For the initial three scenarios, all areas are calculated using the rectangular method. For the fourth scenario, all areas are calculated using the circular method.

- Scenario 1: Purely static, rectangular scenario. Impact is assumed to be static (i.e., direct impact effects only; non-dynamic; no explosions or scattering of military items after the initial impact) with a military expended material directly hitting a marine animal. This scenario assumes the marine animal is fully inside the impact area when contact with the military expended material is made.
- Scenario 2: Dynamic scenario with end-on collision. It is assumed that the military expended material is moving through the water, in the same direction as the length of the impact zone, for a distance of six times the initial length of the impact area. This scenario assumes that the military expended material has forward momentum along the length of the impact area and can make contact with the marine animal at any point inside of this new impact footprint area.
- Scenario 3: Dynamic scenario with broadside collision. It is assumed that the military expended material is moving through the water, in the same direction as the width of the impact zone, for a distance of six times the initial width of the impact area. This scenario assumes that the military expended material has forward momentum along the width of the impact area and can make contact with the marine animal at any point inside of this new impact footprint area.
- Scenario 4: Purely static, radial scenario, in which the rectangular animal, buffer zone, and impact footprints are replaced with circular footprints. The assumption is that the animal and the military expended materials are moving in circular patterns, rather than straight paths. This scenario assumes the marine animal is fully inside the impact area when contact with the military expended materials is made.

Static impacts (Scenarios 1 and 4) assume no additional aerial coverage effects of scattered military items beyond the initial impact. For dynamic impacts (Scenarios 2 and 3), the distance of any scattered military items must be considered by increasing the length (Scenario 2) or width (Scenario 3), depending on orientation (broadside versus end-on collision), of the impact footprint to account for the forward horizontal momentum of the falling object. Forward momentum typically accounts for six times the impact area's length or width. Significantly different values may result from the static and dynamic orientation scenarios. Both types of collision conditions can be calculated each with 50 percent likelihood (i.e., equal weighting between Scenarios 2 and 3, to average these potentially different values).

The method of area (A_S, A_{TotI}, and A_{BZ}) calculation will vary slightly with each scenario. First, the basic concepts behind the area calculations are addressed below.

- The individual animal area (A_S) was calculated by multiplying the length and the width of the animal ($A_S = L_S * W_S$), where width was 20 percent of the length for marine mammals and 84 percent of the length for sea turtles. Then, the species density and the range complex (A_{RC}) size were incorporated to produce the species total area (A_{TotS}). A_S was multiplied by the number of animals (N_S) in the specified training or testing area, where N_S was the product of the highest average monthly animal density (D_S) and the area of the range complex ($A_{TotS} = A_S * N_S = A_S * D_S * A_{RC}$). As a conservative scenario, the total animal footprint area was calculated for the species with the highest average monthly density in the training or testing area with the highest use of military items in the entire Study Area. For the remainder of the calculations, A_{TotS} was used to represent the presence of the species in the area.
- To assess the impact footprint area (A_I) for a single type of munition used in the range complex, the area of the munition (A_{mun}) was calculated by multiplying the length and width of the munition ($A_{mun} = L_{mun} * W_{mun}$). Then, A_{mun} was multiplied by the total number of that munition type used in a year (N_{mun}). Thus, $A_I = N_{mun} * A_{mun}$ is the impact footprint for a single type of munition in a single range complex over a year.
- The A_I for each munition type used in the range complex was then summed across all munition types to get a total impact footprint (A_{TotI}) for a year within a single range complex. As a conservative scenario, the total impact footprint area was calculated for the training or testing area with the highest use of military items in the entire Study Area. This total impact footprint area was then converted back into the length-width assessment, with the ratio of the impact area mirroring the animal $\frac{W_S}{L_S} = \frac{W_{TotI}}{L_{TotI}}$.
- In addition to the impact footprint and the species footprint, a buffer zone around the impact area footprint was included in the analysis. The purpose of this buffer zone was to be overly protective of the species to ensure that any species just outside of the impact area were also included in the analysis. The buffer zone was simply calculated by taking half of the area of the total impact footprint ($A_{BZ} = A_{TotI} * 0.5$) for the rectangular scenarios. For the circular scenarios, an additional buffer zone radius (R_{BZ}) was calculated.

These calculations were then fed into the final calculation area (A_{Final}) for the three rectangular scenarios (Scenarios 1–3). So, $A_{Final1} = A_{BZ1} + A_{TotI1} + A_{TotS}$, where 1 designates Scenario 1. The same concept was applied for Scenarios 2 and 3, except the L_{TotI} for Scenario 2 was multiplied by 6 and the W_{TotI} for Scenario 3 was multiplied by 6, which influence both A_{TotI} and A_{BZ} for each of the scenarios. In each case, the buffer zone could also be calculated by simple subtraction $A_{BZ} = A_{Final} - A_{TotI} - A_S$, for each respective scenario.

For Scenario 4, the radial scenario, the area calculation was based on a circle.

$$A_{Final4} = \pi * (R_{TotS} + R_{TotI} + R_{BZ})^2.$$

To calculate the buffer zone from the final area, the following equation could also be used:

$$A_{BZ4} = \sqrt{(\frac{A_{Final4}}{\pi})} - R_{TotI} - R_{TotS}.$$

Impact probability (*P*) is the probability of impacting one animal at its species peak density, with the given number, type, and dimensions of all military items used in training or testing activities occurring in the area per year. Therefore, *P* is the ratio of the final area for each scenario, which includes the species area, the impact footprint, and the buffer zone of the impact footprint, and the range complex area ($P = \frac{A_{Final}}{A_{RC}}$, where A_{Final} is based on the value calculated in each scenario). The total number of possible exposures (*T*) within a given year is a product of the species density, the area of the range complex, and the impact probability ($T = (D_S * A_{RC})$*P*). Using this procedure, *P* and *T* were calculated for each of the four scenarios, for the Endangered Species Act (ESA)-listed marine mammals and the non-ESA marine mammal and ESA-listed sea turtle species with the highest average month density (used as the annual density value). The scenario-specific *P* and *T* values were averaged over the four scenarios (using equal weighting) to obtain a single scenario, averaged-annual estimate of *P* and *T*.

The analysis is expected to provide an overestimation of the probability of a strike for the following reasons: (1) it calculates the probability of a single military item (of all the items expended over the course of the year) hitting a single animal at its species' highest seasonal density; (2) it does not take into account the possibility that an animal may avoid military activities; (3) it does not take into account the possibility that an animal may not be at the water surface; (4) it does not take into account that most projectiles fired during training and testing activities are fired at targets, and so only a very small portion of those projectiles that miss the target would hit the water with their maximum velocity and force; and (5) it does not quantitatively take into account the Navy avoiding animals that are sighted through the implementation of mitigation measures (for consideration of mitigation during analysis, see Section 3.7.3.4, Marine Mammals, Physical Disturbance and Strike Stressors; and Section 3.8.3.4, Reptiles, Physical Disturbance and Strike Stressors).

I.2.2 PARAMETERS FOR ANALYSIS

Impact probabilities (*P*) and number of exposures (*T*) were estimated by the analysis for the following parameters:

- Two action alternatives: Alternatives 1 and 2. Animal densities, animal dimensions, and military item dimensions are the same for the two action alternatives.
- Two training or testing areas: Virginia Capes and Jacksonville Range Complexes. Areas are approximately 102,536 square kilometers (km^2) and 180,279 km^2, respectively. These two training and testing areas were chosen because they constitute the areas with the highest estimated numbers and concentrations of military expended materials for both alternatives, and would, thus, provide a reasonable comparison for all other areas with fewer expended materials.
    - To include Rice's whales in the analysis, the Gulf Range Complex, Key West Range Complex, and the Naval Surface Warfare Center Panama City Testing Range were included in the analysis. The combined total area for these three locations is approximately 144,351 km^2.

- For high-energy lasers, two sites will be considered: Navy Cherry Point and Virginia Capes Range Complexes. Navy Cherry Point Range Complex has the highest number of high-energy lasers planned for training while Virginia Capes Range Complex has the highest number of high-energy lasers planned during testing. The area of the Navy Cherry Point Range is approximately 69,111 km^2.
- The following types of non-explosive munitions or other items were included in the analysis:
    - **Acoustic countermeasures:** includes aircraft deployed acoustic countermeasures
    - **Anchors:** includes blocks used to anchor mine shapes to the seafloor
    - **Bombs:** Non-explosive practice bombs and mine shapes, ranging from 10 to 2,000 pounds
    - **Expended bathythermographs**: small sensor deployed from ships
    - **High-energy lasers**: includes high-energy laser weapons that are directed at a surface target
    - **Large-caliber projectiles:** includes projectiles greater than or equal to a 57-millimeter projectile
    - **Lightweight torpedo accessories:** includes all accessories that are dropped along with the torpedo (nose cap, air stabilizer, etc.)
    - **Medium-caliber projectiles:** larger than 0.50-caliber rounds but smaller than 57-millimeters projectiles
    - **Small-caliber projectiles**: up to and including 0.50-caliber rounds
    - **Missiles:** includes rockets and jet-propelled munitions
    - **Sonobuoys:** includes all sonobuoys
    - **Targets:** includes expended airborne and surface targets, mine shapes, and aerial drones
    - **Torpedoes:** includes all lightweight torpedoes
- Animal species of interest: The five species of ESA-listed marine mammals expected in Virginia Capes, Jacksonville, or Cherry Point Range Complexes and the non-ESA-listed marine mammal and sea turtle species with the highest average month density in the training and testing areas of interest.
- Rice's whales were also considered in the analysis by including the following areas: Gulf Range Complex, Key West Range Complex, and Naval Surface Warfare Center Panama City Testing Range. The analysis used the same method as previously described by incorporating the highest average monthly density in the training the testing areas of interest.

I.2.3 OUTPUT DATA

Estimates of impact probability (*P*) and number of exposures (*T*) for a given species of interest were made for the specified training or testing area with the highest annual number of military items used for each of the two-action alternatives. The calculations derived *P* and *T* from the highest annual number of military items used in the Study Area for the given alternative. Differences in *P* and *T* between the alternatives arise from different numbers of events (and therefore military items) for the two alternatives.

Results for marine mammals and sea turtles are presented in Table I-6 through Table I-9.

Table I-6: Estimated Representative Marine Mammal Exposures from Direct Strike of a High-Energy Laser by Area and Alternative in a Single Year

Species	*Training*		*Testing*	
	Alternative 1	*Alternative 2*	*Alternative 1*	*Alternative 2*
VACAPES RC				
Blue whale	0.000000011	0.000000011	0.000000028	0.000000028
Fin whale	0.000048736	0.000048736	0.000051917	0.000051917
North Atlantic right whale	0.000000495	0.000000495	0.000000717	0.000000717
Sei whale	0.000001259	0.000001259	0.000001647	0.000001647
Short beaked common dolphin	0.010210021	0.010210021	0.010692757	0.010692757
Sperm whale	0.000686559	0.000686559	0.000709483	0.000709483
Cherry Point RC				
Blue whale	0.000000001	0.000000001	0.000000001	0.000000001
Bottlenose dolphin	0.002028441	0.002028441	0.001978733	0.001978733
Fin whale	0.000000226	0.000000226	0.000000201	0.000000201
North Atlantic right whale	0.000000008	0.000000008	0.000000005	0.000000005
Sei whale	0.000000080	0.000000080	0.000000065	0.000000065
Sperm whale	0.000157765	0.000157765	0.000154860	0.000154860
Gulf RC, Key West RC, and Naval Surface Warfare Center Panama City Testing Range				
Rice's whale	0.000012165	0.000012165	0.000012448	0.000004000

Notes: Gulf RC = Gulf Range Complex; RC = Range Complex; VACAPES = Virginia Capes

Table I-7: Estimated Representative Sea Turtle Exposures from Direct Strike of a High-Energy Laser by Area and Alternative in a Single Year

Species	*Training*		*Testing*	
	Alternative 1	*Alternative 2*	*Alternative 1*	*Alternative 2*
VACAPES RC				
Green sea turtle	0.025458068	0.025458068	0.026529168	0.026529168
Cherry Point RC				
Loggerhead sea turtle	0.008734298	0.008734298	0.008558060	0.008558060

Notes: RC = Range Complex; VACAPES = Virginia Capes

Table I-8: Estimated Representative Marine Mammal Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year

Species	*Training*		*Testing*	
	Alternative 1	*Alternative 2*	*Alternative 1*	*Alternative 2*
VACAPES RC				
Blue whale	0.0000022	0.0000022	0.0000013	0.0000013
Fin whale	0.0002577	0.0002577	0.0001765	0.0001815

Table I-8: Estimated Representative Marine Mammal Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year (continued)

Species	*Training*		*Testing*	
	Alternative 1	*Alternative 2*	*Alternative 1*	*Alternative 2*
North Atlantic right whale	0.0000246	0.0000246	0.0000148	0.0000154
Sei whale	0.0000406	0.0000406	0.0000247	0.0000256
Short beaked common dolphin	0.0383024	0.0383024	0.0275588	0.0282200
Sperm whale	0.0018468	0.0018468	0.0014124	0.0014393
JAX RC				
Blue whale	0.0000006	0.0000006	0.0000001	0.0000001
Bottlenose dolphin	0.0106540	0.0106540	0.0045509	0.0047142
Fin whale	0.0000036	0.0000036	0.0000007	0.0000008
North Atlantic right whale	0.0000117	0.0000117	0.0000025	0.0000028
Sei whale	0.0000086	0.0000086	0.0000018	0.0000020
Sperm whale	0.0001394	0.0001394	0.0000489	0.0000513
Gulf RC, Key West RC, and Naval Surface Warfare Center Panama City Testing Range				
Rice's whale	0.0000306	0.0000332	0.0000967	0.0000998

Notes: Gulf RC = Gulf Range Complex; JAX = Jacksonville; RC = Range Complex; VACAPES = Virginia Capes

Table I-9: Estimated Representative Sea Turtle Exposures from Direct Strike of Military Expended Materials by Area and Alternative in a Single Year

Species	*Training*		*Testing*	
	Alternative 1	*Alternative 2*	*Alternative 1*	*Alternative 2*
VACAPES RC				
Green sea turtle	0.0849936	0.0849936	0.0623745	0.0637685
JAX RC				
Loggerhead sea turtle	0.1508685	0.1508685	0.0968295	0.0983556

Notes: JAX = Jacksonville; RC = Range Complex; VACAPES = Virginia Capes

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APPENDIX J
CUMULATIVE IMPACTS SUPPORTING INFORMATION

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

J CUMULATIVE IMPACTS SUPPORTING INFORMATION J-1

J.1 Reasonably Foreseeable Future Activities J-1

J.1.1 Military Mission, Training, and Testing Activities J-1

J.1.2 U.S. Outer Continental Shelf Energy Development J-5

J.1.3 Other Commercial Industries J-9

J.1.4 Research J-13

List of Figures

This appendix does not contain figures.

List of Tables

Table J.1-1: Atlantic Fleet Training and Testing J-1

Table J.1-2: Eglin Gulf Test and Training Range J-2

Table J.1-3: Undersea Warfare Training Range J-3

Table J.1-4: Joint Logistics Over-the-Shore Training J-3

Table J.1-5: Army-Langley Eustis J-3

Table J.1-6: United States Coast Guard J-4

Table J.1-7: National Aeronautics and Space Administration J-4

Table J.1-8: Oil and Gas Lease J-5

Table J.1-9: Floating Systems J-6

Table J.1-10: Liquefied Natural Gas Terminals J-7

Table J.1-11: Oil and Gas Structure Removal Operations J-7

Table J.1-12: Wind Energy Development J-8

Table J.1-13: Marine Hydrokinetic Power Generation J-9

Table J.1-14: Undersea Communication Cables J-9

Table J.1-15: Marine Mineral Extraction J-10

Table J.1-16: Commercial Fishing J-10

Table J.1-17: Recreational Fishing J-11

Table J.1-18: Aquaculture J-11

Table J.1-20: Maritime Traffic J-12
Table J.1-21: Geological and Geophysical Oil and Gas Survey Activities J-13
Table J.1-22: Academic Research J-13
Table J.1-23: Field Operations at National Marine Sanctuaries and Marine National Monuments J-14

J CUMULATIVE IMPACTS SUPPORTING INFORMATION

J.1 REASONABLY FORESEEABLE FUTURE ACTIVITIES

Table J.1-1 through Table J.1-23 present detailed information on the reasonably foreseeable future activities discussed in Chapter 4 (Cumulative Impacts).

J.1.1 MILITARY MISSION, TRAINING, AND TESTING ACTIVITIES

Table J.1-1: Atlantic Fleet Training and Testing

RFFA	*Atlantic Fleet Training and Testing*		
Location	Approximately 2.6 million NM^2 over the air and seaspace in the Atlantic Ocean along the eastern coast of the United States, in the Gulf of America, and in portions of the Caribbean Sea – at existing at-sea Range Complexes and testing ranges, in high-seas areas, and at Navy pierside locations, within port transit channels, near civilian ports, and in bays, harbors, and inland waterways (see Figure 2.1-1).		
Project Description	The Navy At Sea Policy directs the Navy to develop a comprehensive, programmatic approach to environmental compliance for exercises and training at sea (U.S. Department of the Navy, 2000). The Action Proponents have evaluated impacts from past activities as well as present military readiness activities based on changing operational requirements, new platforms, and new systems. The Action Proponents use these analyses to support incidental take authorizations under the MMPA. Prior to this Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (hereinafter referred to as the 2018 Final EIS/OEIS) provided the most recent comprehensive analysis of the full geographic scope of areas where Action Proponent military readiness activities have historically occurred as well as those projected for the reasonably foreseeable future (U.S. Department of the Navy, 2018). The full breadth of activities, and their potential impacts, were similar in nature to those analyzed in this Supplemental EIS/OEIS, and 49,225 hours of hull-mounted mid-frequency sonar use were estimated to occur between 2013 and 2018; although, the actual hours of sonar use were significantly lower (refer to Figure 2.5-1 through Figure 2.5-3 in the 2018 Final EIS/OEIS). Likewise, the detonation of a maximum of 177,749 explosives was evaluated over a 5-year period, 85% of which were Explosive Class 1 (0.1 to 0.25 lb.) (2018 Final EIS/OEIS Section 2.5.4, Comparison of Proposed Sonar and Explosive Use in the Action Alternatives to the 2013 – 2018 MMPA Permit Allotment). In August 2018, the MMPA was amended to allow for 7-year authorizations for military readiness activities, increasing the previous authorization timeframe from 5 years. As such, NMFS extended the MMPA incidental take permit for AFTT from November 2023 to November 2025 (National Marine Fisheries Service, 2018).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	• Mitigation measures established for most in-water activities, including marine and cultural resource mitigation areas, and visual observations for specific marine species. • A scientific advisory group of leading marine mammal scientists assisted in the development of an Integrated Comprehensive Monitoring Program, which coordinated monitoring efforts across all regions where the Navy trains. • Monitoring occurred during training and testing events and generally through the Integrated Comprehensive Monitoring Program.		

Notes: % = percent; AFTT = Atlantic Fleet Training and Testing; EIS = Environmental Impact Statement; lb. = pound; MMPA = Marine Mammal Protection Act; NM^2 = square nautical miles; NMFS = National Marine Fisheries Service; OEIS = Overseas Environmental Impact Statement; RFFA = reasonably foreseeable future action

Table J.1-2: Eglin Gulf Test and Training Range

RFFA	*Eglin Gulf Test and Training Range*		
Location	Warning Areas (W-151, W-168, and W-470) and Eglin Water Test Areas WTA-1 through WTA-6, Undersea, Surface, Airspace, Valparaiso, Florida.		
Project Description	The Air Force has consulted with the National Marine Fisheries Service regarding effects to marine mammals and sea turtles through a Letter of Authorization that provides authorization for takes of marine mammals by Level A and Level B harassment for the period 2023 to 2030. This request for authorization includes takes of three species of marine mammals, Rice's whale, common bottlenose dolphins, and Atlantic spotted dolphins (National Oceanic and Atmospheric Administration, 2022). Eglin Air Force Base is proposing to create and use a new, separate area within Eglin Gulf Test and Training Range that would be used for live missions in addition to the existing live impact area, referred to as the east live impact area. The east live impact area is located approximately 40 NM southeast of the existing live impact area: The new Letter of Authorization covers activities at the current Eglin Gulf Test and Training Range and the new east live impact area, for taking of marine mammals incidental to the following activities (National Oceanic and Atmospheric Administration, 2022). • 52nd Weapons Evaluation Group missions that involves an air-to-ground Weapon System Evaluation Program known as Combat Hammer, which tests various types of munitions against small target boats and air-to-air missile testing known as Combat Archer. • The Air Force Special Operations Command proposes to continue training missions in Eglin Gulf Test and Training Range primarily involving air-to-surface gunnery, bomb, and missile exercises including AC-130 gunnery training, CV-22 training, and bomb and missile training. • 96th Operations Group missions including AC-130 gunnery testing against floating marker targets on the water surface and MQ-9 air-to-surface testing. • 780th Test Squadron Precision Strike Weapons testing including air-launched cruise missile tests, air-to-air missile tests, Longbow and Joint air-to-Ground Missile testing; Spike Non-Line of Sight air-to-surface missile testing, Patriot missile testing, Hypersonic Weapon Testing, sink at sea live-fire training exercises, and testing using live and inert munitions against targets on the water surface. • Naval School Explosive Ordnance Disposal training missions that involve students diving and placing small explosive charges adjacent to inert mines.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Pre- and post-event monitoring; visual and acoustic observation for marine mammals and turtles (including indicators such as *Sargassum* rafts and large schools of fish, jellyfish, and diving birds); ceasing of activities in response to sightings.		

Notes: NM = nautical miles; RFFA = reasonably foreseeable future action

Table J.1-3: Undersea Warfare Training Range

RFFA	*Undersea Warfare Training Range*		
Location	500 NM^2 east of Naval Air Station Jacksonville, Florida, operating area Undersea (120 to 900 ft. deep)		
Project Description	The use of the range for anti-submarine warfare military readiness activities is analyzed in this Supplemental EIS/OEIS as part of the Proposed Action (Chapter 2, Description of Proposed Action and Alternatives). Construction began in fiscal year 2014, and initial operational capability was achieved in fiscal year 2019. In 2022, the Navy achieved full operational capability on critical underwater training range.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C	O	O
Summary of Impact Minimization and Mitigation Measures	Construction was not to occur during calving months to avoid disturbance to the North Atlantic right whale.		

Notes: EIS = Environmental Impact Statement; ft. = feet; NM^2 = square nautical miles; OEIS = Overseas Environmental Impact Statement; RFFA = reasonably foreseeable future action

Table J.1-4: Joint Logistics Over-the-Shore Training

RFFA	*Joint Logistics Over-the-Shore Training*		
Location	Joint Expeditionary Base Little Creek-Fort Story, Virginia, or Marine Corps Base Camp Lejeune, North Carolina		
Project Description	Joint Logistics Over-the-Shore Training may be conducted jointly by the Navy, Marine Corps, and Army and consists of loading/unloading (ship to shore movement) of cargo and personnel without fixed port facilities and in undeveloped/unimproved nearshore environments.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Dune and seabeach amaranth avoidance; observation for marine mammals and turtles; ceasing of activities in response to sightings.		

Note: RFFA = reasonably foreseeable future action

Table J.1-5: Army-Langley Eustis

RFFA	*Army-Langley Eustis*		
Location	VACAPES Range Complex (Warning Area 50), Hampton, Virginia		
Project Description	The Army conducts approximately 10 surface-to-surface gunnery training events per year in the VACAPES Range Complex, which generally includes firing approximately 2,400 rounds (.50 caliber) from a Landing Craft Utility vessel at floating, plastic drum targets that are recovered after use.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Requires standard 200-yard safety zone.		

Notes: RFFA = reasonably foreseeable future action; VACAPES = Virginia Capes

Table J.1-6: United States Coast Guard

RFFA	*United States Coast Guard*		
Location	U.S. Coast Guard District 1 (Maine to New York), District 5 (New Jersey to North Carolina), District 7 (South Carolina to Florida, including the Caribbean), and District 8 (Alabama to New Mexico)		
Project Description	The U.S. Coast Guard performs law enforcement, maritime response, maritime prevention, maritime transportation system management, maritime security operations, and defense missions in river, lake, estuarine, coastal, and offshore waters. U.S. Coast Guard training and mission activities include boat and ship exercises; fixed-wing aircraft and helicopter activities; gunnery, including munitions and other expendables such as signal flares and marine markers; and the use of high-frequency and ultra-high-frequency sonar detection systems.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Observation for marine mammals and turtles; ceasing of activities in response to sightings.		

Notes: RFFA = reasonably foreseeable future action; U.S. = United States

Table J.1-7: National Aeronautics and Space Administration

RFFA	*National Aeronautics and Space Administration*		
Location	Offshore Wallops Flight Facility, Virginia and Kennedy Space Center at Cape Canaveral, Florida		
Project Description	The National Aeronautics and Space Administration has designated downrange danger zones and restricted areas that include hazard and debris areas from rocket tests, satellite launches, and other range mission activities.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	NMFS concluded that Wallops operations are infrequent enough not to warrant the need for an Incidental Take Statement for marine mammals or sea turtles from over-ocean rocket operations (National Aeronautics and Space Administration, 2018).		

Notes: NMFS = National Marine Fisheries Service; RFFA = reasonably foreseeable future action

J.1.2 U.S. Outer Continental Shelf Energy Development

Table J.1-8: Oil and Gas Lease

RFFA	*Oil and Gas Lease*		
Location	Federal Waters: Gulf of America Outer Continental Shelf, approximately 200 to 350 NM seaward from state (Texas, Louisiana, Alabama, Florida) jurisdictional boundaries		
Project Description	Oil and gas leasing activities may occur on a given lease tract for 40 to 70 years and include geophysical (sonar) surveys, drilling of exploration, development and production wells; installation and operation of platforms and pipelines and support facilities; transport of hydrocarbons using pipelines or tankers to processing locations; and decommissioning. The number of active leases and wells fluctuates regularly. Of the over 1,400 active platforms, as of September 2023, 319 are caisson structures, 1,144 are fixed platforms, and 6 are well protector structures (Bureau of Safety and Environmental Enforcement, 2023a). As of August 1, 2023, there were 2,193 active oil and gas leases over 11,748,568 acres in the Gulf of America Outer Continental Shelf Region (Western Area-Texas: 387 leases over 2,124,673 acres; Central Area-Alabama, Louisiana: 1,793 leases over 9,549,015 acres; and Eastern Area-Florida: 13 leases over 74,880 acres) (Bureau of Ocean Energy Management, 2023b). From 2018 through August 2023, 672 new permits for wells were approved (Bureau of Safety and Environmental Enforcement, 2023b). The National Outer Continental Shelf Program development process initially included Outer Continental Shelf lease sales beginning in late 2019, as published in the 2019-2024 National Outer Continental Shelf Oil and Gas Leasing Draft Proposed Program on January 4, 2018. However, the Secretary of the Interior adjusted the timing of the first sale. As a result, the program name has been changed from the 2019–2024 National Program to the 2023–2028 Program. The Draft 5-Year Program schedules an additional 10 potential lease sales in all three Gulf of America Planning Areas from 2023 through 2028 (Bureau of Ocean Energy Management, 2022). Exploratory activities are possible on the approximately 2,500 active leases in the Gulf of America (Bureau of Ocean Energy Management, 2022). Existing activities would continue in the Pacific and Atlantic Outer Continental Shelf. In January 2025, two new EOs were issued focusing on U.S. energy policy: EO 14154, *Unleashing American Energy,* and EO 14159, *Declaring a National Energy Emergency*. Specifically, EO 14154 declares that it is U.S. policy to encourage energy exploration and production on federal lands and waters, with particular attention to oil. The majority of oil and gas structures and the pipelines linking those structures with onshore processing and refining facilities are located off of Louisiana and do not overlap with Navy testing ranges and OPAREAs.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C/O	C/O	C/O
Summary of Impact Minimization and Mitigation Measures	Project specific mitigations are required for each project, as applicable.		

Notes: EO = Executive Order; NM = nautical miles; OPAREA = operating area; RFFA = reasonably foreseeable future action

Table J.1-9: Floating Systems

RFFA	*Floating Systems*		
Location	Gulf of America Outer Continental Shelf, Western and Central Planning Areas Deep water (greater than 650 ft.)		
Project Description	Floating oil and gas production systems occur in deep-water environments, storing crude oil in tanks in the hulls of vessels and periodically offloading the crude oil to shuttle tankers or ocean-going barges for transport to shore (66 *Federal Register* 67542). At this time, two systems occur in the Walker Ridge area of the Gulf of America: (1) Petrobras America, Inc., located 165 miles from Louisiana in approximately 2,500 m of water, produces oil and gas (gas is transported to shore by pipeline) (Bureau of Ocean Energy Management & Regulation and Enforcement, 2011) and (2) Royal Dutch Shell, located 200 miles southwest of New Orleans in 2,900 m of water (The Times-Picayune, 2015).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Production, Storage, and Offloading systems have similar mitigation measures as those expected for other oil development and production systems. Further site-specific, technical, and environmental evaluation is required for specific Floating, Production, Storage, and Offloading proposals. No Floating, Production, Storage, and Offloading systems permitted within 100 km of the Breton National Wildlife Refuge Class 1 Air Quality area; emission restrictions; security and safety controls for spill prevention and damage minimization.		

Notes: ft. = feet; km = kilometers; m = meters; RFFA = reasonably foreseeable future action

Table J.1-10: Liquefied Natural Gas Terminals

RFFA	*Liquefied Natural Gas Terminals*		
Location	Atlantic Ocean and Gulf of America, coast and nearshore		
Project Description	Liquefied Natural Gas terminals function to regasify liquid natural gas for distribution via pipeline networks. The following Liquefied Natural Gas terminals are within the Study Area: • Nine Existing Import: six Gulf of America, three Atlantic (Federal Energy Regulatory Commission, 2023b) • Seven Existing Export: five Gulf of America, two Atlantic (Federal Energy Regulatory Commission, 2023a) • Six Approved and under Construction Export: Gulf of America (Federal Energy Regulatory Commission, 2023a) • Eleven Approved Not Yet under Construction Export: Gulf of America (Federal Energy Regulatory Commission, 2023a) • Six Proposed Export: Gulf of America (Federal Energy Regulatory Commission, 2023a) • Three Projects in Pre-Filing Export: Gulf of America (Federal Energy Regulatory Commission, 2023a) In January 2025, EO 14154, *Unleashing American Energy,* was issued and encourages energy exploration and production on federal lands and waters, including on the Outer Continental Shelf, with particular attention to natural gas. In addition, in April 2025, the U.S. Department of Energy announced the removal of additional regulatory barriers hindering the utilization of U.S. liquefied natural gas exports.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C/O	C/O	C/O
Summary of Impact Minimization and Mitigation Measures	Liquid natural gas terminals have similar mitigation measures as those expected for other oil development and production systems.		

Notes: EO = Executive Order; RFFA = reasonably foreseeable future action; U.S. = United States

Table J.1-11: Oil and Gas Structure Removal Operations

RFFA	*Oil and Gas Structure Removal Operations*		
Location	Gulf of America Outer Continental Shelf, all water depths		
Project Description	Decommissioning seafloor obstructions (wellheads, caissons, casing strings, platforms, and mooring devices) includes the explosive and non-explosive severing of structures and subsequent salvage and site-clearance operations (Minerals Management Service, 2005). Decommissioning operations generally occur after lease expiration, when the well or facility is no longer deemed economically viable, or when the physical condition of the structure becomes unsafe or a navigation hindrance. Roughly 189 oil and gas structures are removed annually in the Gulf of America (U.S. Government Accountability Office, 2015). Of these, about half are removed using explosives, which are detonated inside pilings and well conductors at a depth of 15 ft. below the seafloor (National Marine Fisheries Service, 2021b).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C	C	X
Summary of Impact Minimization and Mitigation Measures	General blasting criteria and scenario-specific requirements such as avoidance of hard bottom habitats and anchor restrictions for support vessel and transport use; use of turtle exclusion devices and 30-minute limits for site-clearance trawling; and observation for marine mammals and turtles, pausing activities in response to sightings.		

Notes: ft. = feet; RFFA = reasonably foreseeable future action

Table J.1-12: Wind Energy Development

RFFA	*Wind Energy Development*
Location	Atlantic Ocean Outer Continental Shelf federal waters (approximately 200 to 350 NM seaward from state jurisdictional boundary) Atlantic Ocean state waters (0 to 3 NM from shoreline of Florida, Georgia, South Carolina, North Carolina, Virginia, Maryland, Delaware, New Jersey, Rhode Island, Maine, New York, and Massachusetts) Gulf of America state waters (0 to 9 NM from shoreline of Florida and Texas)
Project Description	Commercial-scale offshore wind facilities are similar to onshore wind facilities, and, depending on rotor size and spacing requirements, can include from 14 (110 m rotor diameter) to 40 (150 m rotor diameter) turbines in one Outer Continental Shelf block (3 statute miles by 3 statute miles) (Bureau of Ocean Energy Management, 2013). Average leaseholds are 8 blocks and current technology limits development to waters no deeper than 100 m. Development includes installing the substructure, which is typically a large steel tube (up to 20 ft. diameter) driven 80 to 100 ft. below the mudline in 15 to 100 ft. water depths, with the pole and turbine mounted on top (Minerals Management Service, 2007). Each turbine is connected by power cable to an electric service platform/substation, typically located somewhere within the turbine array, from which buried high-voltage cables transmit the power to an onshore substation for integration into the onshore grid. Five wind turbines are established and active at Block Island, Rhode Island. Twenty-nine commercial wind energy leases have been issued in federal waters on the Outer Continental Shelf, including those offshore Delaware, Massachusetts, Maryland, New Jersey, Rhode Island, Virginia, New York, and North Carolina (Bureau of Ocean Energy Management, 2023d). Various state offshore wind energy programs are also under development. Two offshore wind projects, Park City Wind and Commonwealth Wind, advanced in February of 2024; they would be located more than 20 miles off the coast of Massachusetts (Richards, 2024). NMFS has issued or is in the process of issuing multiple Incidental Harassment Authorizations for the take of marine mammal's incidental to marine site characterization surveys associated with planning for expanded offshore wind energy development in the Outer Continental Shelf. Specifically, Sunrise Wind has requested marine mammal take authorization that would be incidental to construction of offshore wind projects off the coast of New York from 2023 to 2028. Revolution Wind has requested a similar Incidental Harassment Authorization for 2023 to 2028 within the Rhode Island and Massachusetts wind energy area (National Oceanic and Atmospheric Administration, 2023). Additionally, a new array has been proposed off the coast of Virginia that would connect onshore via an infrastructure corridor (Kitty Hawk Wind, 2022b) from lease block OCS-A 0508 through R-6606 of the VACAPES Range Complex. The construction and operations plan for the project concludes that long-term displacement of national security maritime uses due to the presence of new fixed structures within the Wind Development Area, short-term disturbance of military aviation activities due to the presence and transfer of operations and maintenance vessels and personnel, occasional disturbance of national security maritime uses due to the presence of operations and maintenance project vessels and helicopters within the Wind Development Area, and occasional diversion of national security maritime vessel traffic due to intermittent inspection, repair, or replacement of export cables or inter-array cables could result from operation of the wind array (Kitty Hawk Wind, 2022a). In January 2025, a memorandum was issued (*Temporary Withdrawal of All Areas on the Outer Continental Shelf from Offshore Wind Leasing and Review of the Federal Government's Leasing and Permitting Practices for Wind Projects*) to withdraw all areas within the Outer Continental Shelf from wind energy leasing until further notice.

Table J.1-12: Wind Energy Development (continued)

RFFA	*Wind Energy Development*		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C	C/O	C/O
Summary of Impact Minimization and Mitigation Measures	Implementation of proper siting and mandatory design criteria; sonic pingers and/or turtle exclusion devices to minimize entanglement and entrainment potential; adherence to U.S. Coast Guard oil spill response plans; use of environmentally friendly chemicals.		

Notes: ft. = feet; m = meter; NM = nautical miles; NMFS = National Marine Fisheries Service; RFFA = reasonably foreseeable future action; U.S. = United States; VACAPES = Virginia Capes

Table J.1-13: Marine Hydrokinetic Power Generation

RFFA	*Marine Hydrokinetic Power Generation*		
Location	Atlantic and Gulf Coasts, especially coastal Maine		
Project Description	Hydrokinetic power is a type of hydropower that is derived from fast-moving marine or estuarine currents driven by waves, tides, or offshore ocean currents (U.S. Department of Energy, 2015b). There is one licensed hydrokinetic project on the Atlantic coast. The Bourne Tidal Test Site project is located in the Cape Cod Canal in Massachusetts state waters; the project license was issued on April 17, 2024 and expires March 31, 2032 (Federal Energy Regulatory Commission, 2025). Commercial developers are also testing scale models of Navy wave energy technology in the wave-making facility at the Naval Surface Warfare Center Carderock in Maryland (U.S. Department of Energy, 2015a). Research activities may include sea trials, small-scale prototype testing, and research that may use instruments such as Doppler profile current sensors, digital recording sonar, and underwater video and still photography taken from unmanned underwater vehicles. There are three approved research and development projects planned in the Gulf of America, Florida Straits, and North Carolina (U.S. Department of Energy, 2023).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
			C/O
Summary of Impact Minimization and Mitigation Measures	No industry-standard impact minimization measures yet developed as technologies are still being engineered.		

Note: RFFA = reasonably foreseeable future action

J.1.3 Other Commercial Industries

Table J.1-14: Undersea Communication Cables

RFFA	*Undersea Communication Cables*		
Location	Oceans worldwide		
Project Description	Over 550,000 miles of cables currently exist in the world's oceans.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C/O	C/O	C/O
Summary of Impact Minimization and Mitigation Measures	Vessels are restricted from anchoring near undersea cables.		

Note: RFFA = reasonably foreseeable future action

Table J.1-15: Marine Mineral Extraction

RFFA	*Marine Mineral Extraction*		
Location	U.S. Outer Continental Shelf and shoreline, including Florida, Louisiana, Mississippi, New Jersey, North Carolina, South Carolina, Maryland, and Virginia		
Project Description	Extraction of minerals involves primarily hard minerals (e.g., sand and gravel), although heavy minerals (e.g., titanium and zircon) are also potential offshore resources. Since 1995, 66 leases have been executed to extract minerals; there are currently 6 active leases and 3 proposed leases offshore of 7 states (Florida, Louisiana, Maryland, Mississippi, North Carolina, New Jersey, and Virginia) (Bureau of Ocean Energy Management, 2023c).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C/O	C/O	C/O
Summary of Impact Minimization and Mitigation Measures	Dredge timing and location constraints; lighting protocols; specialized equipment requirements; monitoring; buffer establishment surrounding cultural resources and hard bottom habitat (Bureau of Ocean Energy Management, 2017). Sand and gravel are dredged from leased marine areas and applied to coastal restoration projects, including beach nourishment and coastal habitat restoration (Bureau of Ocean Energy Management, 2016).		

Notes: RFFA = reasonably foreseeable future action; U.S. = United States

Table J.1-16: Commercial Fishing

RFFA	*Commercial Fishing*		
Location	Greater Atlantic region (Maine through Cape Hatteras, North Carolina) Southeast region (North Carolina to Texas)		
Project Description	There are more than 50 different fisheries in the Greater Atlantic region (National Oceanic and Atmospheric Administration, 2019). In the Southeast region, there are 21 separate fisheries. The National Oceanic and Atmospheric Administration provides bycatch data for 50% of the Greater Atlantic fisheries and 48% of those that occur in the Southeast. In the 2018 Final EIS/OEIS, Figure 3.11-5 illustrates the decline of total fish caught in the Atlantic since 1956, and Figure 3.11-6 shows a similar decline in the Gulf of America. NMFS issues fishing vessel, dealer, and commercial operator permits and fishing authorizations as required under the various Federal Fishery Regulations.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Various bycatch mitigation technologies, quotas, and seasonal restrictions required per the fishery-specific permit process.		

Notes: % = percent; EIS = Environmental Impact Statement; NMFS = National Marine Fisheries Service; OEIS = Overseas Environmental Impact Statement RFFA = reasonably foreseeable future action

Table J.1-17: Recreational Fishing

RFFA	*Recreational Fishing*		
Location	Greater Atlantic region (Maine through Cape Hatteras, North Carolina) Southeast Region (North Carolina to Texas)		
Project Description	In 2022, marine recreational fisherman made 201 million trips and caught 1.1 billion fish, 61% of which were released. Twenty-eight percent of trips and 35% of catch occur within the Gulf Coast (National Marine Fisheries Service, 2024). In 2019, approximately 9% of the recreational fishing catch came from federal waters, 54% from estuaries, and 36% from state terrestrial seas (National Marine Fisheries Service, 2021a).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Recreational saltwater fisheries in waters from 3 to 200 nautical miles from shore in the Greater Atlantic Region are managed by NOAA. Regulations are in place for specific species. Anglers aged 16 or older need a permit to fish in federal waters.		

Notes: % = percent; NOAA = National Oceanic and Atmospheric Administration; RFFA = reasonably foreseeable future action

Table J.1-18: Aquaculture

RFFA	*Aquaculture*		
Location	State waters bordering the Atlantic Ocean and Gulf of America		
Project Description	Although saltwater farms are present throughout the Study Area, Florida and Massachusetts have the greatest number with 178 and 161, respectively (U.S. Department of Agriculture, 2019).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C/O	C/O	C/O
Summary of Impact Minimization and Mitigation Measures	NOAA provides guidance for action agencies on how to request Section 7 consultation of the Endangered Species Act on aquaculture projects. This consultation determines that the project is Not Likely to Adversely Affect (NLAA) listed species and if critical habitat is present. Action agencies submit an informal consultation request to NOAA Fisheries for concurrence. NOAA Fisheries will provide a Letter of Concurrence to the action agency if it agrees with the action agency's NLAA determination.		

Notes: NOAA = National Oceanic and Atmospheric Administration; RFFA = reasonably foreseeable future action

Table J.1-19: Coastal Land Development and Tourism

RFFA	*Coastal Land Development and Tourism*		
Location	States bordering the Atlantic Ocean and Gulf of America		
Project Description	Coastal land development adjacent to the Study Area is both intensive and extensive, including development of homes, businesses, recreation, vacation, and ship traffic at port facilities and marinas. The Study Area coastline also includes extensive coastal tourism (hotels, resorts, restaurants, food industry, and vacation homes) and its supporting infrastructure (retail businesses, marinas, fishing tackle stores, dive shops, fishing piers, recreational boating harbors, beaches, and recreational fishing and whale watching). New development in the coastal zone requires a permit from the state or local government per the Coastal Zone Management Act (Chapter 6, Regulatory Considerations).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C	C	C
Summary of Impact Minimization and Mitigation Measures	Site-specific mitigation often determined during Coastal Consistency Review by the respective state's Coastal Zone Management Program.		

Note: RFFA = reasonably foreseeable future action

Table J.1-20: Maritime Traffic

RFFA	*Maritime Traffic*		
Location	U.S. East Coast (Figure 3.11-4 in the 2018 Final EIS/OEIS) Panama Canal Atlantic Coast Port Access		
Project Description	**U.S. East Coast:** The East Coast of the United States is heavily traveled by commercial, recreational, and government marine vessels with several commercial ports near Navy OPAREAs (see Figure 3.11-4 in the 2018 Final EIS/OEIS for commercially used waterways in the Study Area). The number of active ports (as listed in the Marine Mineral Leases) in the Atlantic Region Study Area increased, ship traffic increased, and ships are larger. In 2015, there were over 23,000 port calls at Atlantic ports (including Puerto Rico and the U.S. Virgin Islands) and over 34,000 at Gulf of America ports (U.S. Maritime Administration, 2015). In Norfolk, the Virginia International Gateway Expansion project was completed in 2019, which doubled port capacity, with additional capacity opening at Craney Island in 2025. **Panama Canal:** The Everglades Port has plans to purchase five post-Panamax cranes between 2019 and 2034, and in Gulfport an expansion project at the container terminal was completed in 2018 (Notteboom et al., 2022). **Atlantic Coast Port Access:** In 2023, the U.S. Coast Guard announced the availability of the Final Consolidated Port Approaches and International Entry and Departure Transit Areas Port Access Route Studies. This report summarizes the findings of four regional port access route studies along the Atlantic Coast (88 *Federal Register* 58591). The Coast Guard Office of Standards Evaluation and Development is preparing a new PEIS for its rulemaking that will establish and/or codify existing vessel traffic fairways and associated routing schemes in waters that fall under U.S. jurisdiction, specifically the Atlantic Coast Fairway.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	C/O	O	O
Summary of Impact Minimization and Mitigation Measures	Decreasing vessel speed limits in some areas and implementing Traffic Separation Schemes to avoid passage through areas of high whale densities.		

Notes: EIS = Environmental Impact Statement; OEIS = Overseas Environmental Impact Statement; OPAREA = operating area; PEIS = Programmatic Environmental Impact Statement; RFFA = reasonably foreseeable future action; U.S. = United States

J.1.4 RESEARCH

Table J.1-21: Geological and Geophysical Oil and Gas Survey Activities

RFFA	*Geological and Geophysical Oil and Gas Survey Activities*		
Location	Atlantic Ocean Outer Continental Shelf, Delaware Bay to south of Cape Canaveral, Florida, seaward from state jurisdictional boundary to 403 miles offshore		
Project Description	Offshore geological and geophysical activities includes seismic air gun surveys and high-resolution geophysical surveys supporting oil and gas, renewable energy, and marine minerals exploration (Bureau of Ocean Energy Management, 2014). Seismic surveys are accomplished by towing a sound source such as an air gun array that emits acoustic energy in timed intervals behind a research vessel. Seismic pulses are typically emitted at intervals of 5 to 60 seconds and source levels are 230.7 dB re 1 µPa for the large air gun array and 210.3 dB re 1 µPa for the small array (Bureau of Ocean Energy Management, 2014). Seismic air surveys are loud enough to penetrate hundreds of kilometers into the ocean floor, even after going through thousands of meters of ocean (Weilgart, 2013). The Bureau of Ocean Energy Management is reviewing one application from a single permittee for Atlantic Outer Continental Shelf seismic survey activities; the application area covers waters from Delaware to Florida (Bureau of Ocean Energy Management, 2023a).		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	Establishing and monitoring (visual, passive acoustic, and active acoustic) safety and acoustic exclusion zones and enforcing delay/suspension and spacing protocols. Seasonal management includes avoidance of North Atlantic right whale and sea turtle breeding season and critical habitat. Maximum sound level thresholds have been established and are enforced. All seismic surveys conducted by U.S. vessels are subject to required mitigation measures, the MMPA authorization process administered by NMFS, as well as the NEPA process associated with issuing MMPA authorizations.		

Notes: dB re 1 µPa = dB referenced to a pressure of 1 microPascal; MMPA = Marine Mammals Protection Act; NEPA = National Environmental Protection Agency; NMFS = National Marine Fisheries Service; RFFA = reasonably foreseeable future action; U.S. = United States

Table J.1-22: Academic Research

RFFA	*Academic Research*		
Location	Throughout the Study Area		
Project Description	Wide-scale academic research is conducted in the Study Area by federal entities, such as the Navy and the National Oceanic and Atmospheric Association/NMFS, as well as state and private entities and other partnerships. Academic geologists use seismic surveys/air gun arrays to study the ocean floor and beyond, including plate tectonics and volcanic activity.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	NMFS and states manage scientific research permits for certain activities.		

Notes: NMFS = National Marine Fisheries Service; RFFA = reasonably foreseeable future action

Table J.1-23: Field Operations at National Marine Sanctuaries and Marine National Monuments

RFFA	*Field Operations at National Marine Sanctuaries and Marine National Monuments*		
Location	Sanctuaries located in the Northeast/Great Lakes and Southeast/Gulf of America		
Project Description	The Programmatic Environmental Assessment of Field Operations in the Southeast and Gulf of America National Marine Sanctuaries (National Oceanic and Atmospheric Administration, 2018b) and the Programmatic Environmental Assessment of Field Operations in the Northeast and Great Lakes National Marine Sanctuaries (National Oceanic and Atmospheric Administration, 2018a) analyze the options of maintaining the status quo and existing level of operations in national marine sanctuaries and monuments for the next 5 years, or increasing the number of small boat operations and stopping the requirement for small boat best management practices in some locations.		
Project Timeframe	Past	Present	Future
	C = Construction, O = Operation, X = Other		
	O	O	O
Summary of Impact Minimization and Mitigation Measures	These management practices may include existing actions such as vessel speed restrictions, night operation prohibitions, on-board marine species observers (unless specified as required or recommended mitigation measures), restriction of navigation to within marked channels, and safe distance requirements from whales.		

Note: RFFA = reasonably foreseeable future action

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APPENDIX K
ACTIVITY IMPACT DETERMINATIONS

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

K ACTIVITY-LEVEL SIGNIFICANCE DETERMINATIONS K-1

K.1 Introduction K-1

K.2 Methodology K-1

K.2.1 Conversion of Impact Descriptor to Significance Determination K-1

K.3 Activity-Level Significance Determination K-9

K.3.1 Training Activity Significance Determinations K-10

K.3.1.1 Major Training Exercise – Large Integrated Anti-Submarine Warfare K-10

K.3.1.2 Major Training Exercise – Medium Integrated Anti-Submarine Warfare K-11

K.3.1.3 Small Integrated Anti-Submarine Warfare Training K-12

K.3.1.4 Medium Coordinated Anti-Submarine Warfare Training K-14

K.3.1.5 Small Coordinated Anti-Submarine Warfare Training K-15

K.3.1.6 Air Warfare K-17

K.3.1.7 Amphibious Warfare K-23

K.3.1.8 Anti-Submarine Warfare K-31

K.3.1.9 Electronic Warfare K-39

K.3.1.10 Expeditionary Warfare K-43

K.3.1.11 Mine Warfare K-49

K.3.1.12 Surface Warfare K-59

K.3.1.13 Other Training K-76

K.3.2 Testing Activity Significance Determinations K-85

K.3.2.1 Acoustic and Oceanographic Science and Technology K-85

K.3.2.2 Air Warfare K-88

K.3.2.3 Amphibious Warfare K-94

K.3.2.4 Anti-Submarine Warfare K-95

K.3.2.5 Electronic Warfare K-105

K.3.2.6 Mine Warfare K-109

K.3.2.7 Surface Warfare K-116
K.3.2.8 Unmanned Systems K-126
K.3.2.9 Vessel Evaluation K-130
K.3.2.10 Other Testing Activities K-139
K.4 Activity-Level Significance Determinations K-149

List of Figures

This appendix does not contain figures.

List of Tables

Table K-1: Air Quality Impact Descriptor Conversion K-1
Table K-2: Sediments and Water Quality Impact Descriptor Conversion K-2
Table K-3: Habitats Impact Descriptor Conversion K-2
Table K-4: Vegetation Impact Descriptor Conversion K-2
Table K-5: Invertebrates Impact Descriptor Conversion K-3
Table K-6: Fishes Impact Descriptor Conversion K-4
Table K-7: Marine Mammals Impact Descriptor Conversion K-5
Table K-8: Reptiles Impact Descriptor Conversion K-6
Table K-9: Birds and Bats Impact Descriptor Conversion K-7
Table K-10: Cultural Resources Impact Descriptor Conversion K-8
Table K-11: Socioeconomics Impact Descriptor Conversion K-8
Table K-12: Public Health and Safety Impact Descriptor Conversion K-9
Table K-13: Composite Training Unit Exercise – Significance Determination Summary K-10
Table K-14: Sustainment/Task Force Exercise – Significance Determination Summary K-11
Table K-15: Navy Undersea Warfare Training Assessment Course – Significance Determination Summary K-12
Table K-16: Surface Warfare Advanced Tactical Training – Significance Determination Summary K-13
Table K-17: Anti-Submarine Warfare Tactical Development Exercise – Significance Determination Summary K-14
Table K-18: Amphibious Ready Group Marine Expeditionary Unit Composite Training Unit Exercise – Significance Determination Summary K-15
Table K-19: Group Sail – Significance Determination Summary K-16
Table K-20: Air Combat Maneuvers – Significance Determination Summary K-17
Table K-21: Air Defense Exercise – Significance Determination Summary K-17
Table K-22: Gunnery Exercise Air-to-Air Medium-Caliber – Significance Determination Summary K-18
Table K-23: Gunnery Exercise Air-to-Air Small-Caliber – Significance Determination Summary K-18

Table K-24: Gunnery Exercise Surface-to-Air Large-Caliber – Significance Determination Summary K-19
Table K-25: Gunnery Exercise Surface-to-Air Medium-Caliber – Significance Determination Summary K-19
Table K-26: Missile Exercise – Man-Portable Air Defense System – Significance Determination Summary K-20
Table K-27: Missile Exercise Air-to-Air – Significance Determination Summary K-21
Table K-28: Missile Exercise Surface-to-Air – Significance Determination Summary K-22
Table K-29: Amphibious Assault – Significance Determination Summary K-23
Table K-30: Amphibious Operations in a Contested Environment – Significance Determination Summary K-24
Table K-31: Amphibious Raid – Significance Determination Summary K-25
Table K-32: Amphibious Ready Group Marine Expeditionary Unit Exercise – Significance Determination Summary K-26
Table K-33: Amphibious Squadron Marine Expeditionary Unit Integration Training – Significance Determination Summary K-27
Table K-34: Amphibious Vehicle Maneuvers – Significance Determination Summary K-27
Table K-35: Naval Surface Fire Support Exercise – At Sea – Significance Determination Summary K-28
Table K-36: Naval Surface Fire Support Exercise – Land-Based Target – Significance Determination Summary K-29
Table K-37: Non-Combat Evacuation Operation – Significance Determination Summary K-30
Table K-38: Anti-Submarine Warfare Torpedo Exercise – Helicopter – Significance Determination Summary K-31
Table K-39: Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft – Significance Determination Summary K-32
Table K-40: Anti-Submarine Warfare Torpedo Exercise – Ship – Significance Determination Summary K-33
Table K-41: Anti-Submarine Warfare Torpedo Exercise – Submarine – Significance Determination Summary K-34
Table K-42: Anti-Submarine Warfare Tracking Exercise – Helicopter – Significance Determination Summary K-35
Table K-43: Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft – Significance Determination Summary K-36
Table K-44: Anti-Submarine Warfare Tracking Exercise – Ship – Significance Determination Summary K-37
Table K-45: Anti-Submarine Warfare Tracking Exercise – Submarine – Significance Determination Summary K-38
Table K-46: Counter Targeting Chaff Exercise – Aircraft – Significance Determination Summary K-39
Table K-47: Counter Targeting Chaff Exercise – Ship – Significance Determination Summary K-40

Table K-48: Counter Targeting Flare Exercise – Significance Determination Summary K-41
Table K-49: Electronic Warfare Operations – Significance Determination Summary K-41
Table K-50: High-Speed Anti-Radiation Missile Exercise – Significance Determination Summary K-42
Table K-51: Dive and Salvage Operations – Significance Determination Summary K-43
Table K-52: Personnel Insertion/Extraction – Air – Significance Determination Summary K-44
Table K-53: Personnel Insertion/Extraction – Surface and Subsurface – Significance Determination Summary K-45
Table K-54: Personnel Insertion/Extraction – Swimmer/Diver – Significance Determination Summary K-46
Table K-55: Port Damage Repair – Significance Determination Summary K-47
Table K-56: Underwater Construction Team Training – Significance Determination Summary K-48
Table K-57: Airborne Mine Countermeasures – Mine Detection – Significance Determination Summary K-49
Table K-58: Airborne Mine Countermeasures – Towed Mine Neutralization – Significance Determination Summary K-50
Table K-59: Airborne Mine Laying – Significance Determination Summary K-51
Table K-60: Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises – Significance Determination Summary K-52
Table K-61: Coordinated Unit Level Helicopter Airborne Mine Countermeasures Exercise – Significance Determination Summary K-53
Table K-62: Installation and Maintenance of Mine Training Areas – Significance Determination Summary K-54
Table K-63: Mine Neutralization Explosive Ordnance Disposal – Significance Determination Summary K-55
Table K-64: Submarine Mine Laying – Significance Determination Summary K-56
Table K-65: Surface Ship Object Detection – Significance Determination Summary K-57
Table K-66: Underwater Mine Countermeasure Raise, Tow, Beach and Exploitation Operations – Significance Determination Summary K-58
Table K-67: Bombing Exercise Air-to-Surface – Significance Determination Summary K-59
Table K-68: Gunnery Exercise Air-to-Surface Medium-Caliber – Significance Determination Summary K-60
Table K-69: Gunnery Exercise Air-to-Surface Small-Caliber – Significance Determination Summary K-61
Table K-70: Gunnery Exercise Surface-to-Surface Boat Medium-Caliber – Significance Determination Summary K-62
Table K-71: Gunnery Exercise Surface-to-Surface Boat Small-Caliber – Significance Determination Summary K-63
Table K-72: Gunnery Exercise Surface-to-Surface Ship Large-Caliber – Significance Determination Summary K-64

Table K-73: Gunnery Exercise Surface-to-Surface Ship Medium-Caliber – Significance Determination Summary K-65
Table K-74: Gunnery Exercise Surface-to-Surface Ship Small-Caliber – Significance Determination Summary K-66
Table K-75: Integrated Live Fire Exercise – Significance Determination Summary K-67
Table K-76: Laser Targeting – Aircraft – Significance Determination Summary K-68
Table K-77: Laser Targeting – Ship – Significance Determination Summary K-68
Table K-78: Long Range Unmanned Surface Vessel Training – Significance Determination Summary K-69
Table K-79: Maritime Security Operations – Significance Determination Summary K-70
Table K-80: Missile Exercise Air-to-Surface – Significance Determination Summary K-71
Table K-81: Missile Exercise Air-to-Surface - Rocket – Significance Determination Summary K-72
Table K-82: Missile Exercise Surface-to-Surface – Significance Determination Summary K-73
Table K-83: Sinking Exercise – Significance Determination Summary K-74
Table K-84: Small Boat Attack – Significance Determination Summary K-75
Table K-85: Precision Anchoring – Significance Determination Summary K-76
Table K-86: Search and Rescue – Significance Determination Summary K-77
Table K-87: Submarine Navigation – Significance Determination Summary K-78
Table K-88: Submarine Sonar Maintenance and Systems Checks – Significance Determination Summary K-79
Table K-89: Submarine Under Ice Certification – Significance Determination Summary K-80
Table K-90: Surface Ship Sonar Maintenance and Systems Checks – Significance Determination Summary K-81
Table K-91: Unmanned Aerial System Training and Certification – Significance Determination Summary K-82
Table K-92: Unmanned Underwater Vehicle Training - Certification and Development – Significance Determination Summary K-83
Table K-93: Waterborne Training – Significance Determination Summary K-84
Table K-94: Acoustic and Oceanographic Research – Significance Determination Summary K-85
Table K-95: Large Displacement Unmanned Undersea Vehicle Testing – Significance Determination Summary K-86
Table K-96: Mine Countermeasure Technology Research Testing – Significance Determination Summary K-87
Table K-97: Air Combat Maneuvers Test – Significance Determination Summary K-88
Table K-98: Air Platform Vehicle Test – Significance Determination Summary K-89
Table K-99: Air Platform Weapons Integration Test – Significance Determination Summary K-90
Table K-100: Air-to-Air Gunnery Test – Medium-Caliber – Significance Determination Summary K-91
Table K-101: Air-to-Air Missile Test – Significance Determination Summary K-92

Table K-102: Air-to-Air Weapons System Test – Significance Determination Summary K-93
Table K-103: Intelligence, Surveillance, and Reconnaissance Test – Significance Determination Summary K-93
Table K-104: Amphibious Vessel Testing – Significance Determination Summary K-94
Table K-105: Anti-Submarine Warfare Mission Package Testing – Significance Determination Summary K-95
Table K-106: Anti-Submarine Warfare Torpedo Test – Significance Determination Summary K-96
Table K-107: Anti-Submarine Warfare Tracking Test (Fixed-Wing) – Significance Determination Summary K-97
Table K-108: Anti-Submarine Warfare Tracking Test (Rotary Wing) – Significance Determination Summary K-98
Table K-109: At-Sea Sonar Testing – Significance Determination Summary K-99
Table K-110: Kilo Dip Test – Significance Determination Summary K-100
Table K-111: Pierside Sonar Testing – Significance Determination Summary K-100
Table K-112: Sonobuoy Lot Acceptance Test – Significance Determination Summary K-101
Table K-113: Surface Ship Sonar Testing/Maintenance – Significance Determination Summary K-102
Table K-114: Torpedo (Explosive) Testing – Significance Determination Summary K-103
Table K-115: Torpedo (Non-Explosive) Testing – Significance Determination Summary K-104
Table K-116: Chaff Test – Significance Determination Summary K-105
Table K-117: Electronic Systems Test – Significance Determination Summary K-106
Table K-118: Flare Test – Significance Determination Summary K-107
Table K-119: Radar and Other Systems Testing – Significance Determination Summary K-108
Table K-120: Airborne Dipping Sonar Minehunting Test – Significance Determination Summary K-109
Table K-121: Airborne Laser Mine Detection System Test – Significance Determination Summary K-109
Table K-122: Airborne Mine Neutralization System Test – Significance Determination Summary K-110
Table K-123: Airborne Sonobuoy Minehunting Test – Significance Determination Summary K-111
Table K-124: Mine Countermeasure and Neutralization Testing – Significance Determination Summary K-112
Table K-125: Mine Countermeasure Mission Package Testing – Significance Determination Summary K-113
Table K-126: Mine Detection and Classification Testing – Significance Determination Summary K-114
Table K-127: Mine Laying Test – Significance Determination Summary K-115
Table K-128: Air-to-Surface Bombing Test – Significance Determination Summary K-116
Table K-129: Air-to-Surface Gunnery Test – Significance Determination Summary K-117
Table K-130: Air-to-Surface High-Energy Laser Test – Significance Determination Summary K-118
Table K-131: Air-to-Surface Missile Test – Significance Determination Summary K-119
Table K-132: Gun Testing - Large-Caliber – Significance Determination Summary K-120
Table K-133: Gun Testing - Medium-Caliber – Significance Determination Summary K-121

Table K-134: Gun Testing – Small-Caliber – Significance Determination Summary K-122
Table K-135: Laser Targeting Test – Significance Determination Summary K-123
Table K-136: Maritime Security Operations – Significance Determination Summary K-123
Table K-137: Missile and Rocket Testing – Significance Determination Summary K-124
Table K-138: Rocket Test – Significance Determination Summary K-125
Table K-139: Underwater Search, Deploy, and Recovery – Significance Determination Summary K-126
Table K-140: Unmanned Aerial System Testing – Significance Determination Summary K-127
Table K-141: Unmanned Surface Vehicle System Testing – Significance Determination Summary K-128
Table K-142: Unmanned Underwater Vehicle Testing – Significance Determination Summary K-129
Table K-143: Air Defense Testing – Significance Determination Summary K-130
Table K-144: In-Port Maintenance Testing – Significance Determination Summary K-131
Table K-145: Propulsion Testing – Significance Determination Summary K-132
Table K-146: Signature Analysis Operations – Propulsion Testing – Significance Determination Summary K-133
Table K-147: Small Ship Shock Trial – Significance Determination Summary K-134
Table K-148: Submarine Sea Trials – Propulsion Testing – Significance Determination Summary K-134
Table K-149: Submarine Sea Trials – Weapons System Testing – Significance Determination Summary K-135
Table K-150: Surface Warfare Testing – Significance Determination Summary K-136
Table K-151: Undersea Warfare Testing – Significance Determination Summary K-137
Table K-152: Vessel Signature Evaluation – Significance Determination Summary K-138
Table K-153: Acoustic and Oceanographic Research – Significance Determination Summary K-139
Table K-154: Acoustic Component Testing – Significance Determination Summary K-140
Table K-155: Air Platform Shipboard Integration Test – Significance Determination Summary K-141
Table K-156: Simulant Testing – Significance Determination Summary K-141
Table K-157: Countermeasure Testing – Significance Determination Summary K-142
Table K-158: Insertion/Extraction – Significance Determination Summary K-143
Table K-159: Intelligence, Surveillance, Reconnaissance – Significance Determination Summary K-144
Table K-160: Line Charge Testing – Significance Determination Summary K-145
Table K-161: Non-Acoustic Component Testing – Significance Determination Summary K-146
Table K-162: Payload Deployer Testing – Significance Determination Summary K-147
Table K-163: Semi-Stationary Equipment Testing – Significance Determination Summary K-148
Table K-164: Towed Equipment Testing – Significance Determination Summary K-149
Table K-165: Undersea Range System Test – Significance Determination Summary K-149
Table K-166: Training Activities with Less than Significant Impacts K-150
Table K-167: Testing Activities with Less than Significant Impacts K-152

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K ACTIVITY-LEVEL SIGNIFICANCE DETERMINATIONS

K.1 INTRODUCTION

The purpose of this appendix is to document impact significance determinations made under the National Environmental Policy Act (i.e., whether potential impacts are significant or not), for each military readiness activity in the Proposed Action. Conclusions under other applicable regulations, such as effects determinations under the Endangered Species Act, are separate and determined through their respective consultation processes.

K.2 METHODOLOGY

This section discusses the methodology used to make the significance determinations for each military readiness activity.

K.2.1 CONVERSION OF IMPACT DESCRIPTOR TO SIGNIFICANCE DETERMINATION

The stressor-based impact assessment included in Chapter 3 (Affected Environment and Environmental Consequences) for each resource area considered the context and intensity of stressor impacts. Four impact descriptors were used to categorize impacts: Negligible, Minor, Moderate, and Major. An impact descriptor was assigned to training and testing activities under Alternative 1 and Alternative 2, assuming implementation of mitigation measures described in Chapter 5 (Mitigation) when making the assignment. The impact descriptors were then converted to a corresponding impact significance determination of "less than significant" or "significant" for all stressors to each resource area. This conversion is shown below for each resource in Table K-1 through Table K-12.

Three resource areas were not analyzed in detail in the Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS), including Cultural Resources, Socioeconomics, and Public Health and Safety. The impact descriptors assigned to these three resource areas were based on the detailed analysis included in the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement*.

Table K-1: Air Quality Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Air Quality Stressors	Criteria Pollutants	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Hazardous Pollutants	Minor	Minor	Minor	Minor	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Minor	Minor	Minor	Minor	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant
Secondary stressors not applicable to this resource area.

Table K-2: Sediments and Water Quality Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Sediment and Water Quality Stressors	Explosives and Explosives Byproducts	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Metals	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Chemicals Other than Explosives	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Other Materials	Minor	Minor	Minor	Minor	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Minor	Minor	Minor	Minor	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-3: Habitats Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Explosive Stressor	Explosions in Water	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Military Expended Materials	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Seafloor Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Pile Driving	Minor	N/A	Minor	N/A	NS	N/A	NS	N/A
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-4: Vegetation Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Explosive Stressor	Explosions in Water	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Military Expended Materials	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Seafloor Devices	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Pile Driving	Moderate	N/A	Moderate	N/A	NS	N/A	NS	N/A
Secondary Stressors	Secondary Stressors	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-5: Invertebrates Impact Descriptor Conversion

Stressors		Impact Descriptor				Significance Determination			
		Alternative 1		Alternative 2		Alternative 1		Alternative 2	
		Training	Testing	Training	Testing	Training	Testing	Training	Testing
Acoustic Stressors	Sonar & Other Transducers	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Air Guns	N/A	Negligible	N/A	Negligible	N/A	NS	N/A	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
	Vessel Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Weapons Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Explosive Stressor	Explosions in Water	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
Energy Stressors	In-Water Electromagnetic Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Military Expended Materials	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Seafloor Devices	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Pile Driving	Moderate	N/A	Moderate	N/A	NS	N/A	NS	N/A
Entanglement Stressors	Wires & Cables	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Decelerators/ Parachutes	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Biodegradable Polymers	N/A	Minor	N/A	Minor	N/A	NS	N/A	NS
Ingestion Stressors	Military Expended Materials – Munitions	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Military Expended Materials – Other than Munitions	Minor	Minor	Minor	Minor	NS	NS	NS	NS
Secondary Stressors	Secondary Stressors	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-6: Fishes Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Acoustic Stressors	Sonar & Other Transducers	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Air Guns	N/A	Minor	N/A	Minor	N/A	NS	N/A	NS
	Pile Driving	Minor	N/A	Minor	N/A	NS	N/A	NS	N/A
	Vessel Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Weapons Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Explosive Stressor	Explosions in Water	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
Energy Stressors	In-Water Electromagnetic Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Military Expended Materials	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Seafloor Devices	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
Entanglement Stressors	Wires & Cables	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Decelerators/ Parachutes	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Biodegradable Polymers	N/A	Negligible	N/A	Negligible	N/A	NS	N/A	NS
Ingestion Stressors	Military Expended Materials – Munitions	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Military Expended Materials – Other than Munitions	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
Secondary Stressors	Secondary Stressors	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-7: Marine Mammals Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Acoustic Stressors	Sonar & Other Transducers	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Air Guns	N/A	Negligible to Moderate	N/A	Negligible to Moderate	N/A	NS	N/A	NS
	Pile Driving	Negligible to Minor	N/A	Negligible to Minor	N/A	NS	N/A	NS	N/A
	Vessel Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Weapons Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Explosive Stressor	Explosions in Water	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
Energy Stressors	In-Water Electromagnetic Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	High-Energy Lasers	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Military Expended Materials	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Seafloor Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Entanglement Stressors	Wires & Cables	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Decelerators/ Parachutes	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Biodegradable Polymers	N/A	Negligible	N/A	Negligible	N/A	NS	N/A	NS
Ingestion Stressors	Military Expended Materials – Munitions	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Military Expended Materials – Other than Munitions	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Secondary Stressors	Secondary Stressors	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-8: Reptiles Impact Descriptor Conversion

Stressors		Impact Descriptor				Significance Determination			
		Alternative 1		Alternative 2		Alternative 1		Alternative 2	
		Training	Testing	Training	Testing	Training	Testing	Training	Testing
Acoustic Stressors	Sonar & Other Transducers	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Air Guns	N/A	Minor	N/A	Minor	N/A	NS	N/A	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
	Vessel Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Weapons Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Explosive Stressor	Explosions in Water	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
Energy Stressors	In-Water Electromagnetic Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	High-Energy Lasers	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Military Expended Materials	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Seafloor Devices	Negligible to Minor	Negligible to Minor	Negligible to Minor	Negligible to Minor	NS	NS	NS	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
Entanglement Stressors	Wires & Cables	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Decelerators/ Parachutes	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Biodegradable Polymers	N/A	Negligible	N/A	Negligible	N/A	NS	N/A	NS
Ingestion Stressors	Military Expended Materials – Munitions	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
	Military Expended Materials – Other than Munitions	Minor to Moderate	Minor to Moderate	Minor to Moderate	Minor to Moderate	NS	NS	NS	NS
Secondary Stressors	Secondary Stressors	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-9: Birds and Bats Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Acoustic Stressors	Sonar & Other Transducers	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Air Guns	N/A	Negligible	N/A	Negligible	N/A	NS	N/A	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
	Vessel Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft Noise	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	Weapons Noise	Minor	Minor	Minor	Minor	NS	NS	NS	NS
Explosive Stressor	Explosions in Air	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Explosions in Water	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
Energy Stressors	In-Water Electromagnetic Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	In-Air Electromagnetic Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	High-Energy Lasers	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft and Aerial Targets	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS
	Military Expended Materials	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Entanglement Stressors	Wires & Cables	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Decelerators/ Parachutes	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Ingestion Stressors	Military Expended Materials – Other than Munitions	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Secondary Stressors	Secondary Stressors	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	Negligible to Moderate	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Moderate	Moderate	Moderate	Moderate	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant

Table K-10: Cultural Resources Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Explosive Stressor	Explosions in Water	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Supersonic Overflights (causing sonic booms)	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Vessel & In-Water Device Strike	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Military Expended Materials	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Seafloor Devices	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant
Secondary stressors not applicable to this resource area.

Table K-11: Socioeconomics Impact Descriptor Conversion

		Impact Descriptor				*Significance Determination*			
		Alternative 1		*Alternative 2*		*Alternative 1*		*Alternative 2*	
Stressors		**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**	**Training**	**Testing**
Accessibility Stressors	Access on the Ocean	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Access in the Air	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Airborne Acoustics Stressors	Weapons Firing	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Aircraft	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Pile Driving	Negligible	N/A	Negligible	N/A	NS	N/A	NS	N/A
	Vessel Noise	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Physical Disturbance & Strike Stressors	Aircraft Strike	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Vessel & In-Water Device Strike	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
	Military Expended Materials	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Negligible	Negligible	Negligible	Negligible	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant
Secondary stressors not applicable to this resource area.

Table K-12: Public Health and Safety Impact Descriptor Conversion

Stressors		Impact Descriptor				Significance Determination			
		Alternative 1		Alternative 2		Alternative 1		Alternative 2	
		Training	Testing	Training	Testing	Training	Testing	Training	Testing
Energy Stressors	In-Water Energy	Minor	Minor	Minor	Minor	NS	NS	NS	NS
	In-Air Energy	Minor	Negligible	Minor	Negligible	NS	NS	NS	NS
Physical Interaction Stressors	Physical Interactions	Minor	Minor	Minor	Minor	NS	NS	NS	NS
Combined Impacts of all Stressors	Combined Impacts of all Stressors	Minor	Minor	Minor	Minor	NS	NS	NS	NS

Notes: N/A = Not Applicable; NS = Less than Significant; S = Significant
Secondary stressors not applicable to this resource area.

K.3 Activity-Level Significance Determination

The significance determinations for stressors and their resource-specific impacts made in Section K.2.1 (Conversion and Impact Descriptor to Significance Determination) were then mapped to each military readiness activity to make activity-level significance determinations using the Appendix B (Activity Stressor Matrices) stressor tables that identify the stressors and the resources potentially impacted for each of the 158 military readiness activities.

Section K.3.1 (Training Activity Significance Determinations) and Section K.3.2 (Testing Activity Significance Determinations) below combine these two data elements into a significance determination summary table for each military readiness activity. Each table indicates (1) which stressors are associated with the activity, and (2) whether the stressor has a significant impact on each applicable resource.

The significance conclusions from Chapter 3 (Affected Environment and Environmental Consequences) represent the combined impacts to a resource from all the military readiness activities. If a significance conclusion is found to be less than significant for a resource from all military readiness activities analyzed collectively, then each individual activity associated with that stressor also has less than significant impacts to that resource. By mapping the stressors and their resource-specific significance conclusions back to each activity separately, an overall impact significance determination can be made for each military readiness activity.

A finding of no significant impact under the National Environmental Policy Act is applicable to any military readiness activity within 12 nautical miles of the coast of the United States with stressors that each have less than significant impacts to all applicable resource areas. When activities occur beyond 12 nautical miles, the "less than significant" impact determination is assumed to be more stringent than the threshold for a Finding of No Significant Harm under Executive Order 12114, *Environmental Effects Abroad of Major Federal Actions*. Therefore, all activities with a less than significant impact determination will also have no significant harm to the global commons within the Study Area under Executive Order 12114.

K.3.1 TRAINING ACTIVITY SIGNIFICANCE DETERMINATIONS

K.3.1.1 Major Training Exercise – Large Integrated Anti-Submarine Warfare

Table K-13: Composite Training Unit Exercise – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.2 Major Training Exercise – Medium Integrated Anti-Submarine Warfare

Table K-14: Sustainment/Task Force Exercise – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.3 Small Integrated Anti-Submarine Warfare Training

Table K-15: Navy Undersea Warfare Training Assessment Course – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-16: Surface Warfare Advanced Tactical Training – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.4 Medium Coordinated Anti-Submarine Warfare Training

Table K-17: Anti-Submarine Warfare Tactical Development Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.5 Small Coordinated Anti-Submarine Warfare Training

Table K-18: Amphibious Ready Group Marine Expeditionary Unit Composite Training Unit Exercise – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-19: Group Sail – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.6 Air Warfare

Table K-20: Air Combat Maneuvers – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-21: Air Defense Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-22: Gunnery Exercise Air-to-Air Medium-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-23: Gunnery Exercise Air-to-Air Small-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-24: Gunnery Exercise Surface-to-Air Large-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-25: Gunnery Exercise Surface-to-Air Medium-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-26: Missile Exercise – Man-Portable Air Defense System – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Air									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-27: Missile Exercise Air-to-Air – Significance Determination Summary

Stressor	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-28: Missile Exercise Surface-to-Air – Significance Determination Summary

Stressor	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.7 Amphibious Warfare

Table K-29: Amphibious Assault – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-30: Amphibious Operations in a Contested Environment – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-31: Amphibious Raid – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-32: Amphibious Ready Group Marine Expeditionary Unit Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-33: Amphibious Squadron Marine Expeditionary Unit Integration Training – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-34: Amphibious Vehicle Maneuvers – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-35: Naval Surface Fire Support Exercise – At Sea – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-36: Naval Surface Fire Support Exercise – Land-Based Target – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-37: Non-Combat Evacuation Operation – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.8 Anti-Submarine Warfare

Table K-38: Anti-Submarine Warfare Torpedo Exercise – Helicopter – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-39: Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-40: Anti-Submarine Warfare Torpedo Exercise – Ship – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-41: Anti-Submarine Warfare Torpedo Exercise – Submarine – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-42: Anti-Submarine Warfare Tracking Exercise – Helicopter – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-43: Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-44: Anti-Submarine Warfare Tracking Exercise – Ship – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-45: Anti-Submarine Warfare Tracking Exercise – Submarine – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.9 Electronic Warfare

Table K-46: Counter Targeting Chaff Exercise – Aircraft – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-47: Counter Targeting Chaff Exercise – Ship – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-48: Counter Targeting Flare Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-49: Electronic Warfare Operations – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-50: High-Speed Anti-Radiation Missile Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.10 Expeditionary Warfare

Table K-51: Dive and Salvage Operations – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-52: Personnel Insertion/Extraction – Air – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-53: Personnel Insertion/Extraction – Surface and Subsurface – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-54: Personnel Insertion/Extraction – Swimmer/Diver – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-55: Port Damage Repair – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Pile Driving Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Pile Driving			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-56: Underwater Construction Team Training – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.11 Mine Warfare

Table K-57: Airborne Mine Countermeasures – Mine Detection – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-58: Airborne Mine Countermeasures – Towed Mine Neutralization – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-59: Airborne Mine Laying – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-60: Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-61: Coordinated Unit Level Helicopter Airborne Mine Countermeasures Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-62: Installation and Maintenance of Mine Training Areas – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike												
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-63: Mine Neutralization Explosive Ordnance Disposal – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-64: Submarine Mine Laying – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-65: Surface Ship Object Detection – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-66: Underwater Mine Countermeasure Raise, Tow, Beach and Exploitation Operations – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.12 Surface Warfare

Table K-67: Bombing Exercise Air-to-Surface – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-68: Gunnery Exercise Air-to-Surface Medium-Caliber – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-69: Gunnery Exercise Air-to-Surface Small-Caliber – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-70: Gunnery Exercise Surface-to-Surface Boat Medium-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-71: Gunnery Exercise Surface-to-Surface Boat Small-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-72: Gunnery Exercise Surface-to-Surface Ship Large-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-73: Gunnery Exercise Surface-to-Surface Ship Medium-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-74: Gunnery Exercise Surface-to-Surface Ship Small-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-75: Integrated Live Fire Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-76: Laser Targeting – Aircraft – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-77: Laser Targeting – Ship – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-78: Long Range Unmanned Surface Vessel Training – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-79: Maritime Security Operations – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-80: Missile Exercise Air-to-Surface – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Vessels and In-Water Devices			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-81: Missile Exercise Air-to-Surface - Rocket – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Vessels and In-Water Devices			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-82: Missile Exercise Surface-to-Surface – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-83: Sinking Exercise – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-84: Small Boat Attack – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.1.13 Other Training

Table K-85: Precision Anchoring – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-86: Search and Rescue – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-87: Submarine Navigation – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-88: Submarine Sonar Maintenance and Systems Checks – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-89: Submarine Under Ice Certification – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-90: Surface Ship Sonar Maintenance and Systems Checks – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-91: Unmanned Aerial System Training and Certification – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-92: Unmanned Underwater Vehicle Training - Certification and Development – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-93: Waterborne Training – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2 TESTING ACTIVITY SIGNIFICANCE DETERMINATIONS

K.3.2.1 Acoustic and Oceanographic Science and Technology

Table K-94: Acoustic and Oceanographic Research – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Air Guns					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-95: Large Displacement Unmanned Undersea Vehicle Testing – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-96: Mine Countermeasure Technology Research Testing – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.2 Air Warfare

Table K-97: Air Combat Maneuvers Test – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Materials			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment and Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-98: Air Platform Vehicle Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-99: Air Platform Weapons Integration Test – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Vessels and In-Water Devices			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-100: Air-to-Air Gunnery Test – Medium-Caliber – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-101: Air-to-Air Missile Test – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-102: Air-to-Air Weapons System Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-103: Intelligence, Surveillance, and Reconnaissance Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance and Strikes										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health and Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.3 Amphibious Warfare

Table K-104: Amphibious Vessel Testing – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.4 Anti-Submarine Warfare

Table K-105: Anti-Submarine Warfare Mission Package Testing – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-106: Anti-Submarine Warfare Torpedo Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-107: Anti-Submarine Warfare Tracking Test (Fixed-Wing) – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-108: Anti-Submarine Warfare Tracking Test (Rotary Wing) – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-109: At-Sea Sonar Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Device			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-110: Kilo Dip Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-111: Pierside Sonar Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-112: Sonobuoy Lot Acceptance Test – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-113: Surface Ship Sonar Testing/Maintenance – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-114: Torpedo (Explosive) Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-115: Torpedo (Non-Explosive) Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.5 Electronic Warfare

Table K-116: Chaff Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-117: Electronic Systems Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-118: Flare Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-119: Radar and Other Systems Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Air									NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessels and In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Device			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials - Munitions					NS	NS	NS	NS				
Military Expended Materials - Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives and Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.6 Mine Warfare

Table K-120: Airborne Dipping Sonar Minehunting Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-121: Airborne Laser Mine Detection System Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-122: Airborne Mine Neutralization System Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-123: Airborne Sonobuoy Minehunting Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-124: Mine Countermeasure and Neutralization Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-125: Mine Countermeasure Mission Package Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-126: Mine Detection and Classification Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-127: Mine Laying Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.7 Surface Warfare

Table K-128: Air-to-Surface Bombing Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-129: Air-to-Surface Gunnery Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-130: Air-to-Surface High-Energy Laser Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other Than Munitions					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediments and Water Quality Stressors												
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-131: Air-to-Surface Missile Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-132: Gun Testing - Large-Caliber – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-133: Gun Testing - Medium-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-134: Gun Testing – Small-Caliber – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-135: Laser Targeting Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-136: Maritime Security Operations – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-137: Missile and Rocket Testing – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-138: Rocket Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.8 Unmanned Systems

Table K-139: Underwater Search, Deploy, and Recovery – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-140: Unmanned Aerial System Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-141: Unmanned Surface Vehicle System Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-142: Unmanned Underwater Vehicle Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.9 Vessel Evaluation

Table K-143: Air Defense Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-144: In-Port Maintenance Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-145: Propulsion Testing – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-146: Signature Analysis Operations – Propulsion Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-147: Small Ship Shock Trial – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-148: Submarine Sea Trials – Propulsion Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-149: Submarine Sea Trials – Weapons System Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-150: Surface Warfare Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-151: Undersea Warfare Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Explosions in Air									NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-152: Vessel Signature Evaluation – Significance Determination Summary

	Resource Areas											
	Physical		Biological							Human		
Stressor	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.3.2.10 Other Testing Activities

Table K-153: Acoustic and Oceanographic Research – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-154: Acoustic Component Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
High-Energy Lasers							NS	NS	NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-155: Air Platform Shipboard Integration Test – Significance Determination Summary

Stressor	Resource Areas: Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-156: Simulant Testing – Significance Determination Summary

Stressor	Resource Areas: Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-157: Countermeasure Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Water Electromagnetic Devices					NS	NS	NS	NS	NS			
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Biodegradable Polymers					NS	NS	NS	NS				
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-158: Insertion/Extraction – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-159: Intelligence, Surveillance, Reconnaissance – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Air Guns					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Wires & Cables					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-160: Line Charge Testing – Significance Determination Summary

Stressor	*Resource Areas*											
	Physical		*Biological*							*Human*		
	Air Quality	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-161: Non-Acoustic Component Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Aircraft Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Aircraft & Aerial Target Strike									NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Cultural Resource Stressors												
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-162: Payload Deployer Testing – Significance Determination Summary

	Resource Areas											
	Physical		*Biological*							*Human*		
Stressor	*Air Quality*	*Sediment & Water Quality*	*Habitats*	*Vegetation*	*Invertebrates*	*Fishes*	*Marine Mammals*	*Reptiles*	*Birds & Bats*	*Cultural Resources*	*Socioeconomics*	*Public Health & Safety*
Acoustic Stressors												
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Munitions					NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Chemicals Other than Explosives		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-163: Semi-Stationary Equipment Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Weapons Noise					NS	NS	NS	NS	NS			
Air Guns					NS	NS	NS	NS	NS			
Explosive Stressors												
Explosions in Water			NS	NS	NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Entanglement Stressors												
Decelerators/Parachutes					NS	NS	NS	NS	NS			
Ingestion Stressors												
Military Expended Materials – Other					NS	NS	NS	NS	NS			
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Explosives & Explosive By-Products		NS										
Metals		NS										
Chemicals Other than Explosives		NS										
Other Materials		NS										
Cultural Resource Stressors												
Explosives										NS		
Physical Disturbance & Strike										NS		
Socioeconomic Resource Stressors												
Accessibility											NS	
Airborne Acoustics											NS	
Physical Disturbance & Strike											NS	
Public Health & Safety Stressors												
In-Water Energy												NS
In-Air Energy												NS
Physical Interactions												NS

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-164: Towed Equipment Testing – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

Table K-165: Undersea Range System Test – Significance Determination Summary

Stressor	Resource Areas											
	Physical		Biological							Human		
	Air Quality	Sediment & Water Quality	Habitats	Vegetation	Invertebrates	Fishes	Marine Mammals	Reptiles	Birds & Bats	Cultural Resources	Socioeconomics	Public Health & Safety
Acoustic Stressors												
Sonar & Other Transducers					NS	NS	NS	NS	NS			
Vessel Noise					NS	NS	NS	NS	NS			
Energy Stressors												
In-Air Electromagnetic Devices									NS			
Physical Disturbance & Strike Stressors												
Vessel & In-Water Device Strike			NS	NS	NS	NS	NS	NS	NS			
Military Expended Material			NS	NS	NS	NS	NS	NS	NS			
Seafloor Devices			NS	NS	NS	NS	NS	NS				
Air Quality Stressors												
Criteria Air Pollutants	NS											
Sediment & Water Quality Stressors												
Metals		NS										
Other Materials		NS										

Notes: Blank = Not Applicable; NS = Less than Significant; S = Significant

K.4 Activity-Level Significance Determinations

Based on methodology described in Section K.2 (Methodology) and using the summary tables in Section K.3.1 (Training Activity Significance Determinations) and Section K.3.2 (Testing Activity Significance

Determinations), the military readiness activities with less than significant impacts to the quality of the human environment under the National Environmental Policy Act are listed in Table K-166 and Table K-167.[1] Activity-level significance determinations assume implementation of mitigation measures described in Chapter 5 (Mitigation). Mitigation was developed in coordination with regulators and cooperating agencies, and was designed to be implemented under every action alternative carried forward.

Table K-166: Training Activities with Less than Significant Impacts

Warfare Area	Training Activity
Major Training Exercise - Large Integrated Anti-Submarine Warfare	• Composite Training Unit Exercise
Major Training Exercise - Medium Integrated Anti-Submarine Warfare	• Sustainment/Task Force Exercise
Small Integrated Anti-Submarine Warfare Training	• Navy Undersea Warfare Training Assessment Course • Surface Warfare Advanced Tactical Training
Medium Coordinated Anti-Submarine Warfare Training	• Anti-Submarine Warfare Tactical Development Exercise
Small Coordinated Anti-Submarine Warfare Training	• Amphibious Ready Group Marine Expeditionary Unit Composite Training Unit Exercise • Group Sail
Air Warfare	• Air Combat Maneuvers • Air Defense Exercise • Gunnery Exercise Air-to-Air Medium-Caliber • Gunnery Exercise Air-to-Air Small-Caliber • Gunnery Exercise Surface-to-Air Large-Caliber • Gunnery Exercise Surface-to-Air Medium-Caliber • Missile Exercise – Man-Portable Air Defense System • Missile Exercise Air-to-Air • Missile Exercise Surface-to-Air
Amphibious Warfare	• Amphibious Assault • Amphibious Operations in a Contested Environment • Amphibious Raid • Amphibious Ready Group Marine Expeditionary Unit Exercise • Amphibious Squadron Marine Expeditionary Unit Integration Training • Amphibious Vehicle Maneuvers • Naval Surface Fire Support Exercise – At Sea • Naval Surface Fire Support Exercise – Land-Based Target • Non-combat Evacuation Operation

[1] The National Environmental Policy Act threshold for a Finding of No Significant Impact determination is assumed to be more stringent than the threshold for a Finding of No Significant Harm under Executive Order 12114, *Environmental Effects Abroad of Major Federal Actions*. Therefore, all activities with a less than significant impact to the human environment under the National Environmental Policy Act will also have no significant harm to the global commons within the Study Area under Executive Order 12114.

Table K-166: Training Activities with Less than Significant Impacts (continued)

Warfare Area	Training Activity
Anti-Submarine Warfare	• Anti-Submarine Warfare Torpedo Exercise – Helicopter • Anti-Submarine Warfare Torpedo Exercise – Maritime Patrol Aircraft • Anti-Submarine Warfare Torpedo Exercise – Ship • Anti-Submarine Warfare Torpedo Exercise – Submarine • Anti-Submarine Warfare Tracking Exercise – Helicopter • Anti-Submarine Warfare Tracking Exercise – Maritime Patrol Aircraft • Anti-Submarine Warfare Tracking Exercise – Ship • Anti-Submarine Warfare Tracking Exercise – Submarine
Electronic Warfare	• Counter Targeting Chaff Exercise – Aircraft • Counter Targeting Chaff Exercise – Ship • Counter Targeting Flare Exercise • Electronic Warfare Operations • High Speed Anti-Radiation Missile Exercise
Expeditionary Warfare	• Dive and Salvage Operations • Personnel Insertion/Extraction – Air • Personnel Insertion/Extraction – Surface and Subsurface • Personnel Insertion/Extraction – Swimmer/Diver • Port Damage Repair • Underwater Construction Team Training
Mine Warfare	• Airborne Mine Countermeasures - Mine Detection • Airborne Mine Countermeasures – Towed Mine Neutralization • Airborne Mine Laying • Civilian Port Defense – Homeland Security Anti-Terrorism/Force Protection Exercises • Coordinated Unit Level Helicopter Airborne Mine • Installation and Maintenance of Mine Training Areas • Mine Countermeasures – Mine Neutralization – Remotely Operated Vehicles • Mine Countermeasures – Ship Sonar • Mine Neutralization Explosive Ordnance Disposal • Submarine Mine Laying • Surface Ship Object Detection • Underwater Mine Countermeasure Raise, Tow, Beach and Exploitation Operations
Surface Warfare	• Bombing Exercise Air-to-Surface • Gunnery Exercise Air-to-Surface Medium-Caliber • Gunnery Exercise Air-to-Surface Small-Caliber • Gunnery Exercise Surface-to-Surface Boat Medium-Caliber • Gunnery Exercise Surface-to-Surface Boat Small-Caliber • Gunnery Exercise Surface-to-Surface Ship - Large-Caliber • Gunnery Exercise Surface-to-Surface Ship - Medium-Caliber • Gunnery Exercise Surface-to-Surface Ship Small-Caliber • Integrated Live Fire Exercise • Laser Targeting – Aircraft • Laser Targeting – Ship • Long-Range Unmanned Surface Vessel Training

Table K-166: Training Activities with Less than Significant Impacts (continued)

Warfare Area	Training Activity
Surface Warfare (continued)	• Maritime Security Operations • Missile Exercise Air-to-Surface • Missile Exercise Air-to-Surface – Rocket • Missile Exercise Surface-to-Surface • Sinking Exercise • Small Boat Attack
Other Training Activities	• Precision Anchoring • Search and Rescue • Submarine Navigation • Submarine Sonar Maintenance and Systems Checks • Submarine Under Ice Certification • Surface Ship Sonar Maintenance and Systems Checks • Unmanned Aerial System Training and Certification • Unmanned Underwater Vehicle Training - Certification and Development • Waterborne Training

Table K-167: Testing Activities with Less than Significant Impacts

Warfare Area	Testing Activity
Acoustic and Oceanographic Science and Technology	• Acoustic and Oceanographic Research • Large Displacement Unmanned Undersea Vehicle Testing • Mine Countermeasure Technology Research
Air Warfare	• Air Combat Maneuvers Test • Air Platform Vehicle Test • Air Platform Weapons Integration Test • Air-to-Air Gunnery Test – Medium-Caliber • Air-to-Air Missile Test • Air-to-Air Weapons System Test • Intelligence, Surveillance, and Reconnaissance Test
Amphibious Warfare	• Amphibious Vessel Testing
Anti-Submarine Warfare	• Anti-Submarine Warfare Mission Package Testing • Anti-Submarine Warfare Torpedo Test • Anti-Submarine Warfare Tracking Test (Fixed-Wing) • Anti-Submarine Warfare Tracking Test (Rotary Wing) • At-Sea Sonar Testing • Kilo Dip Test • Pierside Sonar Testing • Sonobuoy Lot Acceptance Test • Surface Ship Sonar Testing/Maintenance • Torpedo (Explosive) Testing • Torpedo (Non-Explosive) Testing
Electronic Warfare	• Chaff Test • Electronic Systems Test • Flare Test • Radar and Other Systems Testing

Table K-167: Testing Activities with Less than Significant Impacts (continued)

Warfare Area	Testing Activity
Mine Warfare	• Airborne Dipping Sonar Minehunting Test • Airborne Laser Mine Detection System Test • Airborne Mine Neutralization System Test • Airborne Sonobuoy Minehunting Test • Mine Countermeasure and Neutralization Testing • Mine Countermeasure Mission Package Testing • Mine Detection and Classification Testing • Mine Laying Test
Surface Warfare	• Air-to-Surface Bombing Test • Air-to-Surface Gunnery Test • Air-to-Surface High-Energy Laser Test • Air-to-Surface Missile Test • Gun Testing - Large-Caliber • Gun Testing - Medium-Caliber • Gun Testing - Small-Caliber • Laser Targeting Test • Maritime Security Operations • Missile and Rocket Testing • Rocket Test
Unmanned Systems	• Underwater Search, Deployment, and Recovery • Unmanned Aerial System Testing • Unmanned Surface Vehicle System Testing • Unmanned Underwater Vehicle Testing
Vessel Evaluation	• Air Defense Testing • In-Port Maintenance Testing • Propulsion Testing • Signature Analysis Operations • Small Ship Shock Trial • Submarine Sea Trials – Propulsion Testing • Submarine Sea Trials – Weapons System Testing • Surface Warfare Testing • Undersea Warfare Testing • Vessel Signature Evaluation
Other Testing Activities	• Acoustic and Oceanographic Research • Acoustic Component Testing • Air Platform Shipboard Integration Test • Simulant Testing • Non-Acoustic Component Testing • Countermeasure Testing • Insertion/Extraction • Intelligence, Surveillance, Reconnaissance • Line Charge Testing • Non-Acoustic Component Testing • Payload Deployer Testing • Semi-Stationary Equipment Testing

Table K-167: Testing Activities with Less than Significant Impacts (continued)

Warfare Area	Testing Activity
Other Testing Activities (continued)	• Towed Equipment Testing • Undersea Range System Test

APPENDIX L
AGENCY CORRESPONDENCE

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

L AGENCY CORRESPONDENCE L-1

L.1 Cooperating Agency Status L-2

L.2 Coastal Zone Management Act L-14

L.2.1 Alabama L-15
L.2.2 Connecticut L-18
L.2.3 Delaware L-20
L.2.4 Florida L-25
L.2.5 Georgia L-29
L.2.6 Louisiana L-31
L.2.7 Maine L-34
L.2.8 Maryland L-38
L.2.9 Massachusetts L-41
L.2.10 Mississippi L-43
L.2.11 New Hampshire L-46
L.2.12 New Jersey L-49
L.2.13 New York L-53
L.2.14 North Carolina L-55
L.2.15 Rhode Island L-59
L.2.16 South Carolina L-61
L.2.17 Texas L-65
L.2.18 Virginia L-68

L.3 Endangered Species Act L-84

L.4 Magnuson-Stevens Fishery Conservation and Management Act L-94

L.5 Marine Mammal Protection Act L-103

L.6 National Historic Preservation Act L-105

L.6.1 Alabama L-106
L.6.2 Connecticut L-109
L.6.3 Delaware L-112
L.6.4 Florida L-115
L.6.5 Georgia L-118

L.6.6 Louisiana L-121
L.6.7 Maine L-125
L.6.8 Maryland L-128
L.6.9 Massachusetts L-132
L.6.10 Mississippi L-136
L.6.11 New Hampshire L-139
L.6.12 New Jersey L-145
L.6.13 New York L-149
L.6.14 North Carolina L-151
L.6.15 Rhode Island L-154
L.6.16 South Carolina L-157
L.6.17 Texas L-160
L.6.18 Virginia L-164
L.7 National Marine Sanctuaries Act L-167

List of Figures

This appendix does not contain figures.

List of Tables

This appendix does not contain tables.

L AGENCY CORRESPONDENCE

Appendix L contains correspondence between the Navy and federal or state agencies with respect to cooperating agency status (Section L.1), Coastal Zone Management Act (Section L.2), Endangered Species Act (Section L.3), Magnuson-Stevens Fishery Conservation and Management Act (Section L.4), Marine Mammal Protection Act (Section L.5), National Historic Preservation Act (Section L.6), and the National Marine Sanctuaries Act (Section L.7).

L.1 COOPERATING AGENCY STATUS

DEPARTMENT OF THE NAVY
Office of the Chief of Naval Operations
2000 Navy Pentagon
Washington DC 20350-2000

5090
Ser N4I/22U130173
August 4, 2022

Ms. Kimberly Damon-Randall
Director, Office of Protected Resources
NOAA Fisheries
1315 East West Highway
Silver Spring, MD 20910

Dear Ms. Damon-Randall:

SUBJECT: ATLANTIC FLEET TRAINING AND TESTING SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT - COOPERATING AGENCY

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy is preparing a Supplement to the 2018 Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement/Overseas Environmental Statement (SEIS/OEIS).

This AFTT SEIS/OEIS represents the fourth phase (Phase IV) of NEPA and EO 12114 compliance for continuation of at-sea training and testing. It will evaluate the conduct of military readiness activities from 2025 to the reasonably foreseeable future. It will also accommodate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new Fleet platforms (vessels, aircraft, and weapon systems).

The Phase IV AFTT SEIS/OEIS provides analysis of military readiness training and testing requirements and is intended to serve as a basis for the renewal of current regulatory permits and authorizations. The existing Marine Mammal Protection Act (MMPA) Final Rule and Letters of Authorization for AFTT will expire in November 2025.

To complete the analysis required within the permitting and consultation process pursuant to the MMPA and the Endangered Species Act (ESA), the Navy believes that participation by National Marine Fisheries Service (NMFS) is essential. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 C.F.R. Part 1501) and CEQ's 2002 guidance on cooperating agencies, Navy requests that NMFS serve as a cooperating agency for the development of the Phase IV AFTT SEIS/OEIS.

As defined in 40 CFR Section 1501.6, the Navy is the lead agency for the Phase IV AFTT SEIS/OEIS. As the lead agency, the Navy will perform the following:

5090
Ser N4I/22U130173
August 4, 2022

- Gather all necessary background information and prepare all permit applications associated with the proposed action.
- Work with NMFS personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.
- Determine the scope of the AFTT SEIS/OEIS, including the alternatives evaluated.
- Circulate the NEPA document to the public and other interested parties.
- Schedule and supervise meetings held in support of the NEPA process and compile comments received from the public.
- Maintain an administrative record and respond to any Freedom of Information Act requests relating to the AFTT SEIS/OEIS.
- Maintain and execute an overall project planning schedule. The initial AFTT SEIS/OEIS Stick Chart containing major milestones is provided in enclosure (1).
- Maintain and execute an interagency permitting schedule for MMPA and ESA authorizations. The AFTT Interagency Permitting Milestone Schedule is provided in enclosure (2).
- Track permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy on a weekly basis and accessible by Navy and NMFS staff.
- Provide monthly Interagency Permitting Milestone Schedule Status Reports beginning at publication of the Notice of Intent and ending when the MMPA and ESA authorizations are finalized. The monthly status reports will be forwarded by the Navy project lead to NMFS as well as Navy senior leadership.
- Provide proposed schedule changes, as necessary, to the Interagency Permitting Milestone Schedule with the monthly status reports.

Navy respectfully requests that NMFS, in its role as a cooperating agency, provide support as follows:

- Provide timely comments on working drafts of the SEIS/OEIS. The Navy requests that comments on draft SEIS/OEIS documents be provided in accordance with approved project schedules.

2

5090
Ser N4I/22U130173
August 4, 2022

- Provide timely regulatory deliverables, such as draft and final Proposed Rules, in accordance with approved project schedules.
- Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones.
- Respond to Navy requests for information, in particular related to review of the acoustic effects analysis and evaluation of the effectiveness of protective and mitigation measures.
- Coordinate, to the maximum extent practicable, any public comment periods required in the MMPA permitting process with the Navy's NEPA public comment periods.
- Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the SEIS/OEIS.
- Participate in project scoping and public meetings and attend any scheduled risk communication training in advance of those meetings.
- Provide a formal, written response to this cooperating agency request.

Navy and NMFS have been working to develop the enclosed schedules integrating the requirements of NEPA, MMPA and ESA in support of environmental planning for the AFTT Study Area.

- The schedules establish target milestones to facilitate coordination across the agencies' areas of responsibility. Each agency commits to support the target milestones within their area of responsibility, to notify other affected parties if a milestone within that signatory's area of responsibility is at risk, and to identify in-house schedule adjustments to achieve Record of Decision dates.
- This commitment to support integrated scheduling in no way supersedes regulatory processes nor assumes the outcome of requisite regulatory analyses, agency determinations, public involvement processes or independent agency decision authorities.
- Navy and NMFS agree to coordinate any changes to the schedules with their senior leadership. Proposed changes that require a waiver of the two-year CEQ timeline for completion of an Environmental Impact Statement will be forwarded to Navy and NMFS senior agency officials for approval.

3

5090
Ser N4I/22U130173
August 4, 2022

The Navy views this agreement as critical to the successful completion of the environmental planning process for the AFTT SEIS/OEIS. NMFS assistance will be invaluable in this endeavor.

We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Ms. Kimberly Kler, who can be reached at (360) 865-5015 or kimberly.h.kler.civ@us.navy.mil.

Sincerely,

KERN.ERIN.M.1230261306 Digitally signed by KERN.ERIN.M.1230261306 Date: 2022.08.04 10:46:43 -04'00'

E. M. KERN
Director, Installations (N4I)

Enclosures: 1. AFTT SEIS/OEIS Overall Project Schedule
2. AFTT SEIS/OEIS Interagency Permitting Milestone Schedule

Copy to:
ASN (EI&E)
DASN (EM&R)
OAGC (EI&E)
COMUSFLTFORCOM (N46)
COMPACFLT (N465)
CNIC (N45)
COMNAVSEASYSCOM
COMNAVAIRSYSCOM
CNR
COMNAVREG SE (N45)
COMNAVREG MIDLANT (N45)

4

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

August 18, 2022

Deputy Chief of Naval Operations
(Fleet Readiness and Logistics (CNO N4))
Attn: Capt. Chad Brooks (N4I)
2000 Navy Pentagon
Washington, DC 20350-200

Dear Captain Brooks,

Thank you for your letter requesting that the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) participate as a cooperating agency in the preparation of a Supplemental Environmental Impact Statement (SEIS)/Overseas Environmental Impact Statement (OEIS) to evaluate potential environmental effects of military readiness activities, which consist of training and testing, conducted within the Atlantic Fleet Training and Testing (AFTT) Study Area. We reaffirm our support of the Navy's decision to prepare an SEIS/OEIS for AFTT and agree to be a cooperating agency, due, in part, to our responsibilities under section 101(a)(5)(A) of the Marine Mammal Protection Act and section 7 of the Endangered Species Act.

In response to your letter, NMFS staff will continue to, to the extent possible, provide support as follows:

- Provide timely comments on working drafts of the SEIS/OEIS in accordance with approved project schedules;
- Provide timely regulatory deliverables, such as draft and final proposed rules, in accordance with approved project schedules;
- Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy when there is a likelihood of missing schedule milestones;
- Respond to Navy requests for information, in particular related to review of the acoustic effects analysis and evaluation of the effectiveness of protective and mitigation measures;
- Coordinate, to the maximum extent practicable, any public comment periods required in the MMPA permitting process with the Navy's NEPA public comment periods;
- Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the SEIS/OEIS; and

- Assess the need for participation in project scoping and public meetings and attend when agreed upon given staff workload and available funding.

Further, as noted in your letter, the Navy and NMFS have been working to develop the schedules included in Enclosures 1 and 2 to the Navy's letter, integrating the requirements of NEPA, MMPA and ESA in support of environmental planning for the AFTT Study Area. NMFS commits to support the target milestones within its area of responsibility, to notify other affected parties if a milestone within our area of responsibility is at risk, and to identify in- house schedule adjustments to achieve Record of Decision dates. This commitment to support integrated scheduling in no way supersedes regulatory processes nor assumes the outcome of requisite regulatory analyses, agency determinations, public involvement processes or independent agency decision authorities. Additionally, the Navy and NMFS agree to coordinate any changes to the schedules with their senior leadership. Proposed changes that require a waiver of the two-year CEQ timeline for completion of an Environmental Impact Statement will be forwarded to Navy and NMFS senior agency officials for approval.

If you need any additional information, please contact Jolie Harrison, NMFS Office of Protected Resources, at (301) 427-8401.

Sincerely,



Kimberly Damon-Randall
Director, Office of Protected Resources

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

5090
Ser N4I/

Mr. Andrew Haley
Chief, Office of Environmental Management
Commandant (CG-47)
U.S. Coast Guard Headquarters, Stop 7714
2703 Martin Luther King Jr. Ave. SE
Washington, DC 20593

Dear Mr. Haley:

SUBJECT: ATLANTIC FLEET TRAINING AND TESTING SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT – JOINT LEAD AGENCY

In accordance with the National Environmental Policy Act (NEPA), the Department of the Navy (Navy) is initiating the preparation of a Supplement to the 2018 Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement/Overseas Environmental Statement (SEIS/OEIS).

This AFTT SEIS/OEIS represents the fourth phase (Phase IV) of ongoing NEPA and Executive Order 12114 compliance for continuation of at-sea training and testing. It will evaluate the conduct of military readiness activities from 2025 into the reasonably foreseeable future and accommodate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the Fleet.

The Phase IV AFTT SEIS/OEIS provides analysis of military readiness training and testing requirements and is intended to serve as a basis for the renewal of current regulatory permits and authorizations. The existing Marine Mammal Protection Act (MMPA) Final Rule and Letters of Authorization for AFTT will expire in November 2025.

To include the analysis of potential impacts caused by the conduct of Coast Guard training activities in support of various Department of Defense statutory missions, the Navy believes that participation by the U.S. Coast Guard is essential. Therefore, in accordance with the Council on Environmental Quality's (CEQ's) NEPA guidelines (specifically 40 C.F.R. Part 1501) and NEPA (specifically 42 U.S.C. 4336a), Navy requests that U.S. Coast Guard serve as a joint lead agency for the development of the Phase IV AFTT SEIS/OEIS.

As defined in 40 CFR section 1501.7, the Navy is the lead agency for the Phase IV AFTT SEIS/OEIS. As the lead agency, the Navy will perform the following:

5090
Ser N4I/

a. Gather all necessary background information and prepare all necessary permit applications associated with the proposed action.

b. Work with National Marine Fisheries Service (NMFS) personnel to determine the method of estimating potential effects to protected marine species, including threatened and endangered species.

c. Determine the scope of the AFTT SEIS/OEIS, including the alternatives evaluated.

d. Circulate the NEPA document to the public, including any other interested parties.

e. Schedule and supervise meetings held in support of the NEPA process and compile any comments received from the public.

f. Maintain an administrative record and respond to any Freedom of Information Act requests relating to the AFTT SEIS/OEIS.

g. Maintain and execute an overall project planning schedule. Schedule changes will be coordinated between Navy project lead and U.S. Coast Guard project lead. The initial AFTT SEIS/OEIS Stick Chart containing major milestones is provided in enclosure (1).

h. Track interagency permitting schedule milestones via an online At-Sea Permitting Dashboard that will be updated by Navy on a weekly basis and will be accessible by Navy and U.S. Coast Guard staff.

i. Provide monthly Interagency Permitting Milestone Schedule Status Reports beginning at publication of the Notice of Intent and ending when the MMPA and ESA authorizations are finalized. The monthly status reports will be forwarded by the Navy project lead to U.S. Coast Guard as well as Navy senior leadership.

j. Provide proposed schedule changes for team discussion, as necessary, to the Interagency Permitting Milestone Schedule with the monthly status reports.

Navy respectfully requests that U.S. Coast Guard, in its role as a joint lead agency, provide support as follows:

a. Provide timely comments on working drafts of the SEIS/OEIS. The Navy requests that comments on draft SEIS/OEIS documents be provided in accordance with approved project schedules (see Enclosure 2).

b. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy if there is a likelihood of missing schedule milestones.

2

5090
Ser N4I/

c. Respond to Navy requests for information, in particular related to proposed training activities that will be conducted in the AFTT Study Area.

d. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the SEIS/OEIS.

e. Participate in project public meetings and attend any scheduled risk communication training in advance of those meetings.

f. Provide a formal, written response to this joint lead agency request.

The Navy views this agreement as critical to the successful completion of the environmental planning process for the AFTT SEIS/OEIS. U.S. Coast Guard assistance will be invaluable in this endeavor.

We appreciate your consideration of our request and look forward to your response. The Navy point of contact for this action is Ms. Kimberly Kler, (360) 649-1160, email: kimberly.h.kler.civ@us.navy.mil.

Sincerely,

SINDER.MARK.S.1277897365 Digitally signed by SINDER.MARK.S.1277897365 Date: 2023.11.08 14:05:05 -05'00'

M. S. SINDER
Director, Installations Division

Enclosures: 1. AFTT SEIS/OEIS Overall Project Schedule (Stick Chart)
2. AFTT Master Project Schedule

Copy to:
ASN (EI&E)
DASN (EM&R)
OAGC (EI&E)
MCICOM GF EV
COMUSFLTFORCOM NORFOLK VA (N46)
COMPACFLT PEARL HARBOR HI (N465)
CNIC WASHINGTON DC (N45)
COMNAVSEASYSCOM WASHINGTON DC
COMNAVAIRSYSCOM PATUXENT RIVER MD
CNR ARLINGTON VA
COMNAVREG SE JACKSONVILLE FL (N45)
COMNAVREG MIDLANT NORFOLK VA (N45)

3

U.S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

2703 Martin Luther King Jr. Avenue SE
U.S. Coast Guard STOP 7714
Washington DC 20593-7714
Staff Symbol: CG-47D
Phone: (202) 475-5690
Fax: (202) 372-8419

5090
December 14, 2023

Mr. M.S. Sinder
Director, Installations Division (N4I)
Office of the Chief of Naval Operations
2000 Navy Pentagon
Washington DC 20350-2000

Dear Mr. Sinder:

The Coast Guard appreciates the Navy's 08 November 2023 request to join the Atlantic Fleet Training and Testing Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (AFTT SEIS/OEIS) team as a joint lead agency. In accordance with 40 CFR section 1501.7, we recognize the Navy's role as the lead agency in the development of the AFTT SEIS/OEIS which will cover training and testing activities from 2025 to the foreseeable future.

The Coast Guard is committed to being a meaningful partner in the development of the AFTT SEIS/OEIS and related environmental compliance efforts. Specifically, the Coast Guard will:

a. Provide timely comments on working drafts of the SEIS/OEIS. The Navy requests that comments on draft SEIS/OEIS documents be provided in accordance with approved project schedules.
b. Adhere to the overall schedule as set forth by the Navy and provide advance notification to the Navy if there is a likelihood of missing schedule milestones.
c. Respond to Navy requests for information, in particular related to proposed training activities that will be conducted in the AFTT Study Area.
d. Participate, as necessary, in Tiger Team meetings hosted by the Navy for discussion of issues related to the SEIS/OEIS.
e. Participate in project public meetings and attend any scheduled risk communication training in advance of those meetings.
f. Provide formal, written responses when requested.

The Coast Guard views this agreement as critical to the successful completion of the environmental planning process for the AFTT SEIS/OEIS. We appreciate your invitation and look forward to working together. The Coast Guard's point of contact for this action is Mr. Neil Sheehan, (202) 714-7955, email: neil.a.sheehan@uscg.mil.

Sincerely,

HALEY.ANDREW.SHEENAN.1283556065 Digitally signed by HALEY.ANDREW.SHEENAN.1283556065 Date: 2023.12.14 11:11:10 -05'00'

A. S. Haley
Chief, Office of Environmental Management
U.S. Coast Guard

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/019
May 21, 2024

Ms. Kimberly Damon-Randall
Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
SSMC3, Room 13821
Silver Spring, MD 20901-3282

Dear Ms. Damon-Randall:

In accordance with the Marine Mammal Protection Act, as amended, and 50 C.F.R. Part 216, the U.S. Navy requests a seven-year incidental take authorization and regulations for the incidental taking of marine mammals associated with the Atlantic Fleet Training and Testing (AFTT) activities occurring within the Gulf of Mexico and Atlantic Ocean.

The proposed action may incidentally expose marine mammals that reside within the AFTT study area to sound and other environmental stressors associated with training and testing activities. The enclosed request further describes the AFTT activities and study area, and provides the specific information required by the National Marine Fisheries Service (NMFS) for consideration for an incidental take request.

The U.S. Navy also requests that the regulation authorize, and NMFS issue, three seven-year Letters of Authorization; one issued to Commander, United States Fleet Forces Command for training activities; one issued to Commandant, United States Coast Guard for training activities; and one issued to Commander, Naval Sea Systems Command for testing activities. Addresses for these commands are provided below:

Commander, United States Fleet Forces Command
Attn: Code N46
1562 Mitscher Avenue
Suite 250
Norfolk, Virginia 23551-2487

Commandant, United States Coast Guard
Headquarters, US Coast Guard
Office of Cutter Forces USCG COMDT CG-751
2703 Martin Luther King Jr. Avenue, SE
Washington, DC 20593-7714

5090
Ser N46/019
May 21, 2024

Commander, Naval Sea Systems Command
Attn: Code SEA 09F
1333 Isaac Hull Avenue, SE
Washington Navy Yard, DC 20376-0001

We appreciate your continued support in helping the U.S. Navy to meet its environmental responsibilities.

Sincerely,

AGUAYO.MARIA.L ORETO.1157276731 Digitally signed by AGUAYO.MARIA.L ORETO.1157276731 Date: 2024.05.21 10:27:50 -04'00'

M. L. AGUAYO
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Request for Regulations and Letters of Authorization for the Incidental Taking of Marine Mammals Resulting from the U.S. Navy Training and Testing Activities in the AFTT Study Area.

Copy to: Ms. Tanya Dobrzynski, NMFS Office of Protected Resources
Ms. Jolie Harrison, NMFS Office of Protected Resources
CNO WASHINGTON DC (OPNAV N4I)
COMNAVSEASYSCOM WASHINGTON DC
COMNAVAIRSYSCOM PATUXENT RIVER
ONR ARLINGTON VA

2

L.2 COASTAL ZONE MANAGEMENT ACT

Under the Coastal Zone Management Act, states/territories have 60 days to respond to federal consistency reviews or their concurrence is presumed. Consistency determinations were submitted to 18 states adjacent to the Study Area. Correspondence indicating concurrence were received from 13 states (Alabama, Delaware, Florida, Louisiana, Maine, Maryland, Mississippi, New Hampshire, New Jersey, North Carolina, South Carolina, Texas, and Virginia). Concurrence was presumed for the remaining five states (Connecticut, Georgia, Massachusetts, New York, and Rhode Island).

L.2.1 ALABAMA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/401
December 13, 2024

Mr. J. Scott Brown
Mobile Coastal Field Office
Department of Environmental Management
2204 Perimeter Road
Mobile, AL 36615

Dear Mr. Brown:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Alabama Department of Environmental Management and received concurrence with the Navy's Coastal Consistency Determination (2018-130-FC-FAA-Navy of April 10, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Alabama's Coastal Area Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Alabama Coastal Area Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:04:42 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

February 6, 2025

Jorge R. Cuadros
Director and Deputy Chief of Staff
Fleet Installations and Environment
C/O Laura Busch
U.S. Fleet Forces Command
Department of the Navy
1562 Mitscher Avenue, Suite 250
Norfolk, Virginia 23551-2487

RE: State of Alabama Coastal Consistency Concurrence
Phase IV for the Atlantic Fleet Training and Testing (AFTT) Study Area in the Gulf of Mexico
5090 Ser N46/401 December 13, 2024
Alabama Department of Environmental Management (ADEM) Tracking Code: ACAMP-2018-130.1-FC-FAA-Navy

Dear Director Cuadros:

On December 13, 2024, the ADEM received the U.S. Navy's Consistency Determination (CD) that the proposed federal action, referenced above, is consistent with the Alabama Coastal Area Management Program. Public noticing requirements of Title 15 C.F.R. §930.42 have been completed. Pursuant to Title 15 C.F.R. §930.41, by this letter the ADEM hereby notifies the U.S. Navy of its **concurrence** with the U.S. Navy's CD.

Any correspondence related to this decision should be sent to the email inbox coastal@adem.alabama.gov. Always reference the ADEM tracking code located at the top of this document when corresponding.

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

ASH/jsb/sam

cc: US Navy | Jaime B. Gormley – (Jaime.B.Gormley.civ@us.navy.mil)
DCNR.Coastal@dcnr.alabama.gov
ADCNR-SLD (Submerged.Lands@dcnr.alabama.gov)

File: CZCERT/XXX

Birmingham Office
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Office
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Coastal Office
1615 South Broad Street
Mobile, AL 36605
(251) 450-3400
(251) 479-2593 (FAX)

L.2.2 CONNECTICUT

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/402
December 13, 2024

Ms. Mary-Beth Hart
Land and Water Resources Division
Department of Energy & Environmental Protection
79 Elm Street, 3rd Floor
Hartford, CT 06106-5127

Dear Ms. Hart:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training

and testing activities necessary to meet mission needs. This consultation includes those activities that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Connecticut Department of Energy and Environmental Protection and did not receive a response to the Navy's Coastal Consistency Determination, thus concurrence was presumed.

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Connecticut Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Connecticut Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:03:27 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

L.2.3 DELAWARE

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/403
December 13, 2024

Ms. Jennifer L. Holmes
Coastal Regulatory Programs Manager
Delaware Coastal Programs
Department of Natural Resources & Environmental Control
100 W. Water Street, Suite 7B
Dover, DE 19904

Dear Ms. Holmes:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

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This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training

and testing activities necessary to meet mission needs. This consultation includes those activities that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Delaware Department of Natural Resources and Environmental Control and received concurrence with the Navy's Coastal Consistency Determination (FC 2018.0030 of May 15, 2018,).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Delaware's Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent practicable with the applicable enforceable policies of the Delaware Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:03:59 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF CLIMATE, COASTAL AND ENERGY
STATE STREET COMMONS
COASTAL PROGRAMS
100 W. WATER STREET, SUITE 7B
DOVER, DELAWARE 19904
PHONE
(302) 739-9283

Feb 13, 2025

Jorge Ricardo Cuadros
Director, Fleet Installations & Environment and Deputy Chief of Staff
Department of the Navy
U.S. Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk VA 23551-2487

RE: Delaware Coastal Management Program — Federal Consistency Determination Concurrence for Atlantic Fleet Training and Testing Study Area CCD (FC 2025.0013)

Dear Jorge Ricardo Cuadros,

The Delaware Department of Natural Resources and Environmental Control (DNREC) Coastal Management Program (DCMP) has completed its review of the above referenced project, received by this office on December 16, 2024.

PROPOSED ACTION

The United States Navy proposes to conduct new and existing training and testing activities in the Atlantic Fleet Training and Testing Study Area. The determination submitted reflects changes in the proposed U.S. Navy training and testing activities needed to meet mission requirements and U.S. Coast Guard training activities. Training exercises that may occur in or near Delaware waters include basic and applied scientific research and technology development; testing, evaluation, and maintenance of sensors and systems, such as missiles, torpedoes, radar, active and passive sonar systems, vessels, submarines, and aircraft; acquisition of technologically advanced vessels, aircraft, and systems. The U.S. Navy will notify and coordinate with DNREC's Division of Fish and Wildlife during the planning of events that could impact resources within Delaware's coastal zone.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act (CZMA) of 1972, as amended, each federal agency activity within or outside the coastal zone that can have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent

to the maximum extent practicable with the enforceable policies of approved state management programs. The National Oceanic and Atmospheric Administration (NOAA) is required to review and approve a proposed state management program for it to become effective. Under the CZMA implementing regulations, Federal Consistency with Approved Coastal Management Programs (15 CFR 930), subpart C, federal agencies are advised to provide state agencies with a consistency determination at the earliest practicable time in the planning or reassessment of an activity, and also before the federal agency reaches a significant point of decision-making in its review process. The term "consistent to the maximum extent practicable" in 15 CFR 930.32 means fully consistent with the enforceable policies of a management program unless full consistency is prohibited by existing law applicable to the federal agency.

PUBLIC PARTICIPATION

In accordance with 15 CFR §930.42, the public notice of this proposed action was published in English in the Delaware State News and The News Journal on January 15, 2025. The notice was also posted on the DNREC public notices list service website on January 15, 2025, in English, Spanish, and Haitian Creole. The public was given 20 days to comment on this notice. No public comments were received.

FEDERAL CONSISTENCY ANALYSIS

The DNREC DCMP coordinates the review of consistency determinations with agencies administering the enforceable and advisory policies of the program. The proposed activity is to be implemented in a manner consistent with the enforceable policies of the DCMP under Section 5.0 of the DCMP Federal Consistency Policy and Procedures document. The following agencies participated in this review:

DNREC, Division of Air Quality
DNREC, Division of Fish and Wildlife

Please be advised that the Division of Air Quality (DAQ) recommends that the U.S Navy, U.S. Coast Guard and other participating agencies seek out and to comply with all Delaware Air Quality Regulations to not exceed air quality emission thresholds. The applicant is encouraged to make every reasonable effort to perform all training and testing activities in a manner which minimizes any adverse impacts on existing air quality. In 7 DE Admin. Code 1135, a federal action is defined as "any activity engaged in by a department, agency, or instrumentality of the Federal government, or any activity a department, agency or instrumentality of the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 et seq.)."

Please note that the following Delaware air quality regulations may apply: Open Burning (7 DE Admin. Code 1113), Conformity of General Federal Actions to the State Implementation Plan (7 DE Admin. Code 1135), Excessive Idling of Heavy-Duty Vehicles (7 DE Admin. Code 1145),

Regulations Governing the Control of Noise (7 DE Admin. Code 1149), Outer Continental Shelf Air Regulations (7 DE Admin. Code 1150), and Limiting Emissions of Volatile Organic Compounds from Consumer and Commercial Products (7 DE Admin. Code 1141).

The Division of Fish and Wildlife reminds the applicant that state rare or federally listed species may occur in the study area, including species of whale, turtles, and sturgeon. The U.S. Navy will notify and coordinate with DNREC's Division of Fish and Wildlife during the planning of events that could impact resources within Delaware's coastal zone.

CONCURRENCE

Based on its review and pursuant to 15 CFR 930, the DCMP concurs that the U.S. Navy Atlantic Fleet Training and Testing Study Area CCD as proposed is consistent to the maximum extent practicable.

Pursuant to 15 CFR 930.46, U.S. Navy shall notify the DCMP of any proposed modifications to activities after receiving a decision from the DCMP. Modifications will be subject to supplemental federal consistency review if effects to any coastal use or resource will be substantially different than originally described. Please be advised that this federal consistency review does not negate the need for other authorizations that may be required.

Thank you for the opportunity to evaluate this federal activity. If you have any questions, please contact me or Stephanie Zmina of my staff at (302) 739-9283.

Sincerely,

Jesse Hayden (Feb 13, 2025 12:52 EST)

Jesse Hayden, Administrator
Delaware Coastal Management Program

JH/sz

cc: File FC 2025.0013
Tina Merrill, DAQ
Matthew Young, DFW
Laura Busch, U.S. Navy
Jaime Gormley, U.S. Navy

L.2.4 FLORIDA

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/404
December 13, 2024

Mr. Chris Stahl
Florida State Clearinghouse Coordinator
Department of Environmental Protection
3800 Commonwealth Blvd
Douglas Building, Mail Station 47
Tallahassee, FL 32399-2400

Dear Mr. Stahl:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

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that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Florida Department of Environmental Protection and received concurrence with the Navy's Coastal Consistency Determination (FL2018030782270C of May 9, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Florida's Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent practicable with the enforceable policies of the Florida Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:01:33 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

LaVere, Ashley

From: Stahl, Chris <Chris.Stahl@FloridaDEP.gov>
Sent: Thursday, November 14, 2024 2:40 PM
To: elizabeth.nashold@navy.mil
Cc: State_Clearinghouse; LaVere, Ashley
Subject: State Clearance Letter for FL202409250246C- Draft Supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), Atlantic Fleet Training And Testing Activities(AFTT), Atlantic Ocean And Gulf Of Mexico, Florida
Attachments: FWC Comments_Atlantic Fleet Training And Testing DEIS-OEIS_File No. FL202409250246C.pdf

[EXTERNAL SENDER] Use Caution opening links or attachments

November 14, 2024

Elizabeth Nashold
Naval Facilities Engineering Command, Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

RE: Department of Defense, Department of the Navy, Draft Supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), Atlantic Fleet Training and Testing Activities(AFTT), Atlantic Ocean and Gulf of Mexico, Florida
SAI # FL202409250246C

Dear Elizabeth:

Florida State Clearinghouse staff has reviewed the proposal under the following authorities: Presidential Executive Order 12372; § 403.061(42), Florida Statutes; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

Attached are comments generated by Florida Fish and Wildlife Conservation Commission (FWC) staff and incorporated hereto.

If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The applicant shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at (850)-245-6333. Project activities shall not resume without verbal and/or written authorization. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05,

Based on the information submitted, the state has no objections to the subject project and, therefore, it is consistent with the Florida Coastal Management Program (FCMP). Thank you for the opportunity to review the proposed plan. If you have any questions or need further assistance, please don't hesitate to contact me at (850) 717-9076.

1

Thank You,

Chris Stahl

Chris Stahl, Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Blvd., M.S. 47
Tallahassee, FL 32399-2400
ph. (850) 717-9076
Chris.Stahl@floridadep.gov



L.2.5 GEORGIA

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/405
December 13, 2024

Ms. Kelie Moore
Coastal Management Program
Department of Natural Resources
Coastal Resources Division
One Conservation Way, Suite 300
Brunswick, GA 31520-8687

Dear Ms. Moore:

As is required by the Coastal Zone Management Act (CZMA) the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

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activities that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since Phase III. In 2018, the Navy conducted a CZMA consultation with the Department of Natural Resources Coastal Resources Division, which objected to the Navy's Coastal Consistency Determination (Letter of May 15, 2018). After additional dialogue, the Navy responded that is had satisfied its consultation requirements under the CZMA and intended to proceed with the proposed action.

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Georgia's Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent practicable with the enforceable policies of the Georgia Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:02:39 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

L.2.6 LOUISIANA

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/406
December 13, 2024

Ms. Sara Krupa
Manager, Interagency Affairs
Office of Coastal Management
Louisiana Department of Energy and Natural Resources
P.O. Box 44487
Baton Rouge, LA 70804

Dear Ms. Krupa:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

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that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with Louisiana's Department of Natural Resources and received concurrence with the Navy's Coastal Consistency Determination (C20180023 of April 17, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Louisiana's Coastal Resources Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent possible with the enforceable policies of the Louisiana Coastal Resources Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:03:03 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

TYLER PATRICK GRAY
SECRETARY

DUSTIN H. DAVIDSON
DEPUTY SECRETARY

KEITH O. LOVELL
ASSISTANT SECRETARY
COASTAL MANAGEMENT

AMANDA MCCLINTON
ASSISTANT SECRETARY
ENERGY

MARK NORMAND, JR.
UNDERSECRETARY

MANNY ACOSTA
OIL SPILL COORDINATOR

ANDREW B. YOUNG
ASSISTANT SECRETARY
MINERAL RESOURCES

STEVEN M. GIAMBRONE
INTERIM DIRECTOR
CONSERVATION

DEPARTMENT OF ENERGY AND NATURAL RESOURCES

February 18, 2025

Laura M. Busch
U.S. Fleet Forces
Environmental Readiness Division
1562 Mitscher Ave., Suite 250
Norfolk, VA 23551-2487
Via email: Laura.M.Busch2.civ@us.navy.mil

RE: **C20250002,** Coastal Zone Consistency
U.S. Navy
Direct Federal Action
Atlantic Fleet Training and Testing Study Area
Coastwide and Offshore, Louisiana

Dear Ms. Busch,

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP.

If you have any questions concerning this determination, please contact Jim Bondy of the Consistency Section at (225) 342-3870 or James.Bondy@la.gov.

Sincerely yours,

/S/ Charles Reulet
Administrator
Interagency Affairs/Field Services Division

CR/MH/jab

cc: Dave Butler, LDWF

Post Office Box 94396, Baton Rouge, LA 70804-9396 • 617 North Third Street, Baton Rouge, LA 70802
PHONE: (225)342-2710 • FAX: (225)342-3790 • www.dnr.louisiana.gov
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L.2.7 MAINE

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/407
December 13, 2024

Ms. Erin Wilson
Federal Consistency Coordinator
Maine Coastal Program
Maine Department of Marine Resources
21 State House Station
Augusta ME, 04333-0021

Dear Ms. Wilson:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Maine Department of Marine Resources and received concurrence with the Navy's Coastal Consistency Determination (letter of May 18, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed the Maine Coastal Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Maine Coastal Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:08:08 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

February 27, 2025

Laura Busch
U.S. Department of the Navy
1562 Mitscher Avenue, Suite 250
Norfolk, VA 23551

RE: CZMA Concurrence for Atlantic Fleet Training and Testing Phase IV

Dear Ms. Busch,

This letter is in response to the federal consistency submission for the above referenced project, received by the Maine Coastal Program (MCP) on December 17, 2024, submitted by you on behalf of the United States Department of the Navy (USN), U.S. Fleet Forces Command. On January 29, 2025, the MCP and USN mutually agreed to extend the review deadline to March 1, 2025.

The USN, in cooperation with U.S. Coast Guard, proposes to conduct certain activities as part of the Atlantic Fleet Training and Testing (AFTT) Phase IV needed to meet mission requirements along the East Coast of the U.S., the Gulf of Mexico, and portions of the Caribbean Sea. This includes activities occurring at Navy and Coast Guard pierside locations; port transit channels, bays, harbors, inshore waterways, and civilian ports; during transits between homeports and operating areas; and on the high seas. AFTT Phase IV largely builds on and continues previous phases of USN's AFTT program that were also reviewed for federal consistency with MCP's enforceable policies.

Pursuant to the Coastal Zone Management Act (CZMA) of 1972 implementing regulations, Federal Consistency with Approved Coastal Management Programs (15 CFR 930), subpart C, federal agency activities affecting any coastal use or resource must be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of approved coastal management programs.

In accordance with 15 CFR 930.41, the public was invited to provide comment on this proposed project in the Portland Press Herald from December 22, 2024 to January 11, 2025. No comments were received.

The MCP concurs with the USN determination that AFTT Phase IV would be consistent to the maximum extent practicable with applicable enforceable policies of the coastal management program. The MCP coordinates the review of consistency determinations with agencies administering the enforceable and advisory policies of the program, including Maine Departments of Environmental Protection (DEP), Inland Fisheries and Wildlife (DIFW), and Marine Resources (DMR).

OFFICES AT 32 BLOSSOM LANE, MARQUARDT BUILDING, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550 FAX: (207) 624-6024

To the extent AFTT Phase IV activities represent a continuation of those from previous phases, MCP reiterates and incorporates by reference the findings, conclusions, and recommendations included in its March 11, 2013 and May 18, 2018 concurrence letters.

Although not enforceable, MCP incorporates Maine's Coastal Management Policies (38 M.R.S. §§1801-1802) into the Maine Guide to Federal Consistency Review. These policies recognize the coast as a valuable asset to the state and the nation and emphasize the need to balance development along the coast with protection and conservation of natural resources. In the spirit of these policies, MCP continues to urge USN to avoid, minimize, and mitigate to the maximum extent practicable the potential for adverse effects on coastal uses and resources, including marine, estuarine, and diadromous species, including the federally-listed threatened and endangered species listed in the Maine Endangered Species Act (12 M.R.S. §§6971-6976). MCP encourages state and local consultation for specific activities that may have impacts when practicable.

Pursuant to 15 CFR 930.46, the USN shall notify the MCP of any proposed modifications to activities after receiving a decision from the MCP. Modifications may be subject to supplemental federal consistency review if effects to any coastal use or resource will be substantially different than originally described. Please additionally be advised that this federal consistency review does not negate the need for any other authorizations that may be required.

Thank you for the opportunity to review and respond to the USN Atlantic Fleet Training and Testing Phase IV project. If you have any questions, please contact Erin Wilson of my staff at erin.wilson@maine.gov or (207) 707-2324.

Sincerely,

Mer (Feb 27, 2025 21:16 EST)
Meredith Mendelson, Acting Director
DMR Deputy Commissioner

cc: 2024.12.17/ew
Heidi Leighton, DMR

Enclosures: March 11, 2013 Concurrence; May 18, 2018 Concurrence

OFFICES AT 32 BLOSSOM LANE, MARQUARDT BUILDING, AUGUSTA, MAINE
http://www.Maine.gov/dmr
PHONE: (207) 624-6550 FAX: (207) 624-6024

L.2.8 MARYLAND

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/408
December 13, 2024

Ms. Danielle Spendiff
Federal Consistency Coordinator
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Ms. Spendiff:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects

since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Maryland Department of the Environment and did not receive a response to the Navy's Coastal Consistency Determination and thus concurrence was presumed.

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Maryland's Coastal Zone Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent practicable with the enforceable policies of the Maryland Coastal Zone Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:08:38 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

January 31, 2025

Ms. Laura Busch
Department of the Navy
United States Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk VA 23551-2487

Re: Federal Consistency Determination - U.S. Navy's Atlantic Fleet Training and Testing (AFTT) Study Area CCD

Ms. Busch,

On behalf of Danielle Spendiff (MD Federal Consistency Coordinator), I am responding to your request for CZM consistency concurrence under 15 C.F.R. Part 930, Subpart C (Federal Activity or Development Project) for the following project:

The United States Department of the Navy is proposing to renew training activities and testing within the Atlantic Fleet Training and Testing (AFTT) Study Area. Environmental impacts of training and testing within the AFTT are presented in the 2024 Draft Environmental Impact Statement (DEIS) and include biological, physical, or human resource impacts. Overall, the Action Proponents would reduce unavoidable impacts from proposed activities on coastal zone uses and resources by adhering to standard operating procedures and implementing environmental mitigation measures.

Based on our review of the information provided, the above project is consistent to the maximum extent practicable with the enforceable coastal policies of the Maryland Coastal Zone Management Program. Please note that this determination does not obviate the applicant's responsibility to obtain any other State or local approvals that may be necessary for the project.

Sincerely,

Laura Canton

Laura Canton
Coastal Policy Coordinator
Maryland Department of Natural Resources

cc: Danielle Spendiff, MDE

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – *dnr.maryland.gov* – TTY Users Call via the Maryland Relay

L.2.9 MASSACHUSETTS

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/409
December 13, 2024

Mr. Sean Duffey
Office of Coastal Zone Management
Executive Office of Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Mr. Duffey:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pier-side and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

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III. In 2018, the Navy conducted a CZMA consultation with the Massachusetts Office of Coastal Zone Management and did not received a response to the Navy's Coastal Consistency Determination, thus concurrence was presumed.

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed the Massachusetts Office of Coastal Zone Management Federal Consistency Review Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Massachusetts Office of Coastal Zone Management Federal Consistency Review Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:06:40 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

L.2.10 MISSISSIPPI

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/410
December 13, 2024

Ms. Willa Brantley
Mississippi Coastal Program
Department of Marine Resources
1141 Bayview Avenue
Biloxi, MS 39530

Dear Ms. Brantley:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

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since Phase III. In 2018, the Navy conducted a CZMA consultation with the Mississippi Department of Marine Resources and received concurrence with the Navy's Coastal Consistency Determination (DMR-130194 of Apr 19, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents' reviewed Mississippi's Coastal Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Mississippi Coastal Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:07:00 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

STATE OF MISSISSIPPI
Tate Reeves
Governor

MISSISSIPPI DEPARTMENT OF MARINE RESOURCES
Joe Spraggins, Executive Director

March 03, 2025

U.S. Department of the Navy
Attn: J.R. Cuadros
U.S. Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk, VA 23551-2487

Re: FCC25-000001; U.S. Navy's Atlantic Fleet Training and Testing (AFTT) Study Area Coastal Zone Consistency Determination

The Mississippi Department of Marine Resources in cooperation with other state agencies is responsible under the Mississippi Coastal Program (MCP) for managing the coastal resources of Mississippi. Proposed activities in the coastal area are reviewed to ensure that the activities are in compliance with the MCP.

The Department has completed review of the above-referenced project under the Coastal Zone Management Act of 1972 and the Coastal Zone Reauthorization Amendments of 1990 and as the lead Coastal Program Agency for the State of Mississippi pursuant to 16 U.S.C. Section 1456(c) and Mississippi Code § 57-15-5, concurs with the submitted consistency determination for this project.

The above granted consistency certification was based upon the plan presented.

If you have any questions regarding this letter, please contact Thomas Butera with the Bureau of Wetlands Permitting at 228-523-4065 or thomas.butera@dmr.ms.gov.

Sincerely,

Willa J. Brantley
Director, Bureau of Wetlands Permitting
MS Department of Marine Resources

WJB/tb

CC: Laura Busch, U.S. Department of the Navy

L.2.11 NEW HAMPSHIRE

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/411
December 13, 2024

Mr. Chris Williams
New Hampshire Coastal Program
Department of Environmental Services
222 International Drive, Suite 175
Portsmouth, NH 03801

Dear Mr. Williams:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

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The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed New Hampshire's Coastal Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the New Hampshire Coastal Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:07:27 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

February 3, 2025

J.R. Cuadros, Director
Fleet Installations & Environment and Deputy Chief of Staff
Department of the Navy
U.S. Fleet Forces Command
1562 Mitscher Ave., Suite 250
Norfolk, VA 23551-2487

RE: File No. 2024-09; Atlantic Fleet Training and Testing Study Area Activities

Dear Mr. Cuadros:

The New Hampshire Coastal Program (NHCP) has received the joint Department of the Navy and U.S. Coast Guard federal consistency determination for proposed activities in the Atlantic Fleet Training and Testing Study Area, pursuant to Section 307(c)(1) of the Coastal Zone Management Act, 16 U.S.C. §1456(c)(1). After reviewing the proposed action, we find it to be consistent, to the maximum extent practicable, with the enforceable policies of New Hampshire's federally approved coastal management program.

Please be advised, the NHCP, after consultation with the New Hampshire Fish and Game Department, recommends that the Department of the Navy avoid, to the greatest extent practicable, pier side sonar testing at the Portsmouth Naval Shipyard from mid-March through mid-November to minimize potential adverse impacts to lobster, river herring, and shad migrating into and out of the Great Bay Estuary, as well as sturgeon that may be present in the Piscataqua River. The NHCP also recommends that the Department of the Navy consult with the National Marine Fisheries Service to avoid impacts to migrating Atlantic large whales in state and federal waters.

Should you have any questions, please feel free to contact me at (603) 559-0025 or at christian.p.williams@des.nh.gov.

Sincerely,

Christian Williams
Program Coordinator
New Hampshire Coastal Program

cc: Laura Busch, Department of the Navy
Cheri Patterson, NH Fish & Game Department

www.des.nh.gov
222 International Drive, Suite 175 • Portsmouth, NH 03801
(603) 559-1500 • Fax: 559-1510 • TDD Access: Relay NH 1-800-735-2964

L.2.12 NEW JERSEY

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/412
December 13, 2024

Ms. Colleen Keller
New Jersey Department of Environmental Protection
Office of Policy and Coastal Management
501 East State Street
Mail Code 501-02A
Trenton, NJ 08625

Dear Ms. Keller:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the New Jersey Department of Environmental Protection and did not receive a response to the Navy's Coastal Consistency Determination, thus concurrence was presumed.

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed New Jersey's Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent practicable with the enforceable policies of the New Jersey Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:07:48 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Watershed & Land Management Program
Mail Code 501-02A
P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/landuse

SHAWN M. LATOURETTE
Commissioner

February 28, 2025

Laura Busch
US NAVY, US Fleet Forces Command
Environmental Readiness Division
Natural Resources Program Manager
1562 Mitscher Ave, Suite 250
Norfolk, VA 235512487

RE: Federal Consistency Determination
File and Activity No.: 0000-12-0026.1 CDT240001
Applicant: US NAVY
Project: Atlantic Fleet Training and Testing Phase IV

Dear Ms. Busch:

The New Jersey Department of Environmental Protection, Division of Land Resource Protection (Division), acting under Section 307 of the Federal Coastal Zone Management Act (P.L. 92-583) as amended, concurs with the certification that the above referenced project is consistent with the approved New Jersey Coastal Management Program.

Specifically, the project consists of Phase IV of training and testing activities within existing range complexes off of the U.S. Atlantic coast, which may include the use of active sonar, fleet training and testing exercises, gunnery exercises, missile testing, the use of explosives, anti-submarine training, electronic warfare and other associated training and testing activities. The proposed action is further described in the draft Atlantic Fleet Training and Testing (AFFT) phase IV draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (2024).

The Navy's proposed action is a continuation of existing training and testing activities, however the proposal includes an increase in scope in some areas and decreasing others, reclassification, modification and the addition of some inshore locations that were not included in the past. However, the Navy states that adverse effects to the environmental resources will continue to be minimized through mitigation and monitoring, in consultation with the National Marine Fisheries Service.

The Division has reviewed the submitted information and has determined that the project is consistent, to the maximum extent practicable, with New Jersey's Coastal Zone Management Rules N.J.A.C. 7:7-1.1 et seq., (as amended on October 5, 2021).

This Federal Consistency is authorized pursuant to all parties following the guidelines set forth, and agreed upon, for the proposed activities.

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File No.: 0000-12-0026.1 CDT240001 2

Pursuant to 15 CFR 930.44, the Division reserves the right to object and request remedial action if this proposal is conducted in a manner, or is having an effect on, the coastal zone that is substantially different than originally proposed.

Thank you for your attention to and cooperation with New Jersey's Coastal Zone Management Program. If you have any questions regarding this determination, please do not hesitate to call Kara Turner of our staff at (609) 633-2289.

Sincerely,

Digitally signed by
Janet Stewart
Date: 2025.02.28
13:58:59 -05'00'

Janet Stewart, Manager
Division of Land Resource Protection

CC: Colleen Keller, DLRP

L.2.13 NEW YORK

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/413
December 13, 2024

Mr. Matthew Maraglio
Office of Planning, Development & Community Infrastructure
New York State Department of State
99 Washington Avenue
Suite 1010
Albany, NY 12231-0001

Dear Mr. Maraglio:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018 the Navy conducted a CZMA consultation with the New York State Department of State and received a response on May 30, 2018 (F-2018-0209 (DA)). Upon review of the response, the Navy notified New York that its concurrence with the Navy's Coastal Consistency Determination was presumed (letter of August 17, 2018).

The AFTT Draft Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed New York's Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the New York Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:11:08 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

L.2.14 NORTH CAROLINA

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/414
December 13, 2024

Mr. Daniel Govoni
Division of Coastal Management
Department of Environmental Quality
400 Commerce Avenue
Morehead City, NC 28557-3421

Dear Mr. Govoni:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects

since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with North Carolina Department of Environmental Quality and received concurrence with the Navy's Coastal Consistency Determination (CD18-012 letter of April 26, 2018 [DCM#20180012]).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed North Carolina's Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the North Carolina Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:11:28 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

JOSH STEIN
Governor
D. REID WILSON
Secretary
TANCRED MILLER
Director

NORTH CAROLINA
Environmental Quality

Laura Busch
US Fleet Forces
Environmental Readiness Division
Natural Resources Program Manager

SUBJECT: Phase IV Supplemental Consistency Concurrence, United States Department of the Navy, Atlantic Fleet Training and Testing Study Area

Dear Ms. Busch:

The N.C. Division of Coastal Management (DCM) received a supplemental consistency determination from the United States Department of the Navy to update the 2018 coastal consistency determination. This supplemental consistency determination has been submitted to reflect any changes in the proposed training and testing activities needed to meet mission requirements.

North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of North Carolina's Administrative Code, and the land use plan(s) of the county and/or local municipalities in which the proposed project is located. It is the objective of DCM to manage the State's coastal resources to ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic and aesthetic values of the State's coastal resources.

DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 7H and 7M of Chapter 7 in Title 15A of the North Carolina Administrative Code. DCM concurs that the proposed project is consistent, to the maximum extent practicable, with North Carolina's certified coastal management program.

Prior to the initiation of the activities described, the U.S. Department of the Navy should obtain any required State approvals or authorizations. Should the proposed action be modified, a revised consistency determination could be necessary. This might take the form of either a supplemental consistency certification pursuant to 15 CFR 930.46, or a new consistency certification pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required.

North Carolina Department of Environmental Quality | Division of Coastal Management
Morehead City Office | 400 Commerce Avenue | Morehead City, North Carolina 28557
252.515.5400

If you have any questions or concerns, please contact DCM Federal Consistency Coordinator Cameron Luck via e-mail at Cameron.luck@deq.nc.gov. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

Cameron Luck
Federal Consistency Coordinator
N.C. Division of Coastal Management

North Carolina Department of Environmental Quality | Division of Coastal Management
Morehead City Office | 400 Commerce Avenue | Morehead City, North Carolina 28557
252.515.5400

L.2.15 RHODE ISLAND

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/415
December 13, 2024

Mr. Kevin Sloan
Coastal Resources Management Council
Stedman Office Building
4808 Tower Hill Road
Wakefield, RI 02879

Dear Mr. Sloan:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most training and testing activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with Rhode Island Coastal Resources Management Council and received concurrence for the Navy's Coastal Consistency Determination (A2018-03-004 of April 17, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Rhode Island's Coastal Resources Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of Rhode Island's Coastal Resources Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:11:47 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

L.2.16 SOUTH CAROLINA

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/416
December 13, 2024

Mr. Christopher Stout
Coastal Zone Consistency Section
Office of Ocean & Coastal Resource Management
Department of Health and Environmental Control
1362 McMillan Avenue, Suite 400
Charleston, SC 29405

Dear Mr. Stout:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most testing and training activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the South Carolina Department of Health and Environmental Control and received concurrence with the Navy's Coastal Consistency Determination (HNC-9R05-KN5F3 of April 20, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed South Carolina's Coastal Zone Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be consistent to the maximum extent practicable with the enforceable policies of the South Carolina Coastal Zone Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:10:01 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

SC DEPARTMENT of ENVIRONMENTAL SERVICES

August 18, 2025

J.R. Cuadros
Director, Fleet Installations & Environment and Deputy Chief of Staff
1562 MITSCHER AVE
STE 250
NORFOLK, VA 23551-2423

RE: US Navy Atlantic Fleet Training and Testing Phase 4

Reference #: HQE-58HB-BXV7Y

Location: NO land activities, Charleston, County, South Carolina

Dear J.R. Cuadros:

This Coastal Zone Consistency Concurrence is in response to the U.S. Department of the Navy, Fleet Forces Command, Coastal Zone Consistency Determination submitted to South Carolina Department of Environmental Services Bureau of Coastal Management (SCDES BCM) began on July 17, 2025.

The proposed activity consists of proposed training and testing activities along the East Coast of the United States, the Gulf of Mexico, and portions of the Caribbean Sea. This includes activities occurring at Navy and Coast Guard pierside locations; port transit channels, bays, harbors, inshore waterways, and civilian ports; during transits between homeports and operating areas; and on the high seas.

This Atlantic Fleet Training and Testing (AFTT) Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities 2 that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the South Carolina Department of Health and Environmental Control and received concurrence with the Navy's Coastal Consistency Determination (HNC-9R05-KN5F3 of April 20, 2018).

Pursuant to 15 CFR 930.33, staff has determined the placement and use of the Atlantic Fleet Training and Testing Study Area consists of a "de minimis" activity and will not have any significant direct or indirect coastal effects and is consistent with the enforceable policies contained within the S. C. Coastal Zone Management Program (SCCZMP). Therefore, we agree with your determination request and no further action is necessary.

info@des.sc.gov | des.sc.gov | 803.898.3432

Please contact me at Anna.Bisig@des.sc.gov if you have any questions about this concurrence.

Sincerely,

Anna M. Bisig
Coastal Zone Consistency Project Manager
SCDES Bureau of Coastal Management

cc:
Laura Busch, US Navy, Applicant
laura.m.busch2.civ@us.navy.mil

info@des.sc.gov | des.sc.gov | 803.898.3432

L.2.17 TEXAS

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/417
December 13, 2024

Ms. Leslie Koza
Federal Consistency Coordinator
Texas Coastal Management Program
Texas General Land Office
PO Box 12873
Austin, TX 78711

Dear Ms. Koza:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

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This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Texas General Land Office and received concurrence for the Navy's Coastal Consistency Determination (18-1154-F2 of March 20, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Texas' Coastal Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Texas Coastal Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:10:25 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

2

TEXAS GENERAL LAND OFFICE
COMMISSIONER DAWN BUCKINGHAM, M.D.

February 13, 2025

Department of Navy
U.S. Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk, VA 23551-2487
POC: Jorge Ricardo Cuadros

Re: Atlantic Fleet Training and Testing Study Area – Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement Gulf of Mexico (GOMEX) Range Complex, Civilian ports of Beaumont and Corpus Christi, Texas, U.S. Coast Guard Station Corpus, Christi, Texas
CMP#: 25-1090-F2

Dear Mr. Cuadros:

The project referenced above has been reviewed for consistency with the Texas Coastal Management Program (CMP) pursuant to 31 Texas Administrative Code §30.20. It has been determined that the project, as proposed, is consistent with the CMP goals and enforceable policies.

Please note that this letter does not authorize the use of Coastal Public Land. No work may be conducted or structures placed on State-owned land until you have obtained all necessary authorizations, including any required by the General Land Office and the U.S. Army Corps of Engineers.

If you have any questions or concerns, please contact me at (512) 463-7497 or at federal.consistency@glo.texas.gov.

Sincerely,

Leslie Koza

Leslie Koza
Federal Consistency Coordinator
Texas General Land Office

1700 North Congress Avenue, Austin, Texas 78701-1495
P.O. Box 12873, Austin, Texas 78711-2873
512-463-5001 glo.texas.gov

L.2.18 VIRGINIA

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/418
December 13, 2024

Ms. Bettina Rayfield
Environmental Impact Review
Virginia Coastal Zone Management Program
Department of Environmental Quality
P.O. Box 1105
Richmond, VA 23218

Dear Ms. Rayfield:

As is required by the Coastal Zone Management Act (CZMA), the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) requests concurrence with its Coastal Consistency Determination for proposed activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. This Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. These proposed activities are generally consistent with those analyzed in prior Navy consultations and are representative of the activities the Action Proponents have been conducting in the AFTT Study Area for decades.

In 2013, the Navy analyzed the potential environmental effects of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) (termed "AFTT Phase II"). To account for changes in training and support renewed permits and authorizations, the Navy completed an additional EIS/OEIS with associated consultations in 2018 (termed "AFTT Phase III"), and these permits expire in 2025. Each phase of review has further refined the Navy's analysis and supported issuance of permits and authorizations issued in compliance with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA). A Supplemental EIS/OEIS is being prepared (termed "AFTT Phase IV"), which supplements the Navy's AFTT Phase III EIS/OEIS. In addition, AFTT Phase IV incorporates U.S. Coast Guard training activities. This current consultation is supported by the 2024 Draft AFTT Supplemental EIS/OEIS, and accounts for some modifications in the training and testing activities, as well as changes in the types, frequency, and locations of those activities.

Most testing and training activities discussed in the AFTT Phase III version of the AFTT EIS/OEIS are similar to the proposed AFTT Phase IV activities, with the resulting effects remaining unchanged from the previous consultations. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. In addition, some training activities are proposed for selected inshore locations that were not included in past consultations.

This AFTT Phase IV CZMA consultation supplements the AFTT Phase III Coastal Consistency Determination to account for changes in the Action Proponents' proposed training and testing activities necessary to meet mission needs. This consultation includes those activities

that are new to AFTT Phase IV or have increased in frequency, intensity, or possible effects since AFTT Phase III. In 2018, the Navy conducted a CZMA consultation with the Virginia Department of Environmental Quality and received concurrence for the Navy's Coastal Consistency Determination (DEQ# 18-048F of May 1, 2018).

The Draft AFTT Phase IV Supplemental EIS/OEIS and the AFTT website (www.nepa.navy.mil/aftteis/) contain detailed information and analyses of potential effects. The Action Proponents reviewed Virginia's Coastal Zone Management Program in preparation of the enclosed Coastal Consistency Determination. Based on the analyses, the Action Proponents have determined that the proposed action will be fully consistent with the enforceable policies of the Virginia Coastal Zone Management Program.

We request that you provide your concurrence with our findings within 60 days of receipt of this letter. If a response has not been received by that time, concurrence with this finding will be assumed. My point of contact for this matter is Laura Busch who may be reached at (757) 836-8471 or at laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.12.12 16:10:46 -05'00'

J. R. CUADROS
Director, Fleet Installations & Environment
and Deputy Chief of Staff

Enclosure: Coastal Consistency Determination

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Stefanie K. Taillon
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus

February 14, 2025

Laura Busch
Department of the Navy
U.S. Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk, VA 23551-2487
Via email: laura.m.busch2.civ@us.navy.mil

RE: Federal Consistency Determination: Atlantic Fleet Training and Testing, Department of the Navy (DEQ 24-212F)

Dear Ms. Busch:

The Commonwealth of Virginia has completed its review of the federal consistency determination (FCD) for the above-referenced project. The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of FCDs and responding on behalf of the Commonwealth. This letter is in response to the FCD that was submitted by the U.S. Department of the Navy, dated December 13, 2024 and received by DEQ on December 17, 2024. The following agencies and locality participated in this review:

Department of Environmental Quality (DEQ)
Department of Conservation and Recreation (DCR)
Department of Historic Resources (DHR)
Marine Resources Commission (VMRC)
Department of Wildlife Resources (DWR)
City of Norfolk

In addition, Virginia Institute of Marine Science, City of Portsmouth, City of Virginia Beach, City of Newport News, the Accomack-Northampton Planning District Commission, and the Hampton Roads Planning District Commission were invited to comment on the proposal.

PROJECT DESCRIPTION

The U.S. Department of the Navy (Navy) proposes to conduct the Atlantic Fleet Training and Testing (AFTT) in coastal Virginia waters. The AFTT Study Area begins at the mean high-water mark and extends seaward, including airspace, sea, and undersea space. The locations of training

and testing activities proposed to occur off the coast of Virginia include the following: Virginia Capes (VACAPES) Range Complex, the lower Chesapeake Bay, the James River and tributaries, the York River, Naval Station Norfolk in Norfolk, Virginia, Norfolk Naval Shipyard in Portsmouth, Virginia, Joint Expeditionary Base Little Creek – Fort Story in Virginia Beach, Virginia, a contractor-owned shipyard in Newport News, Virginia, and U.S. Coast Guard Stations in Portsmouth and Virginia Beach, Virginia. Proposed training and testing activities are typically identified at the range complex or testing range level because activities are not tied to specific locations and must adhere to operation requirements (e.g. certain depths) and safety considerations. Examples of testing and training activities include unmanned underwater vehicle training, precision anchoring, search and rescue, radar and other systems testing, and ship-to-shore fuel transfer system training. Depending on the mission, some activities are conducted within or near the coastal zone and may have reasonably foreseeable effects on coastal use or resources, while other activities occur outside of 12 nautical miles and are not expected to affect any coastal use or resource.

The Draft Supplemental Environmental Impact Statement (SEIS)/Overseas Environmental Impact Statement for this project was recently reviewed under DEQ #24-168F.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972 (§ 1456(c)), as amended, and the federal consistency regulations implementing the CZMA (15 CFR Part 930, Subpart C, § 930.30 *et seq.*), federal actions that can have reasonably foreseeable effects on Virginia's coastal uses or resources must be conducted in a manner which is consistent, to the maximum extent practicable, with the Virginia Coastal Zone Management (CZM) Program. The CZM Program is comprised of a network of programs administered by several agencies. In order to be consistent with the CZM Program, the federal agency must obtain all the applicable permits and approvals listed under the enforceable policies of the CZM Program prior to commencing the project.

Federal Consistency Program Change

The National Ocean and Atmospheric Administration (NOAA) Office for Coastal Management (OCM) approved a program change to Virginia's Coastal Zone Management Program on October 2, 2020. The program change converted Virginia's existing enforceable policies to a narrative format and creates new enforceable policies, in narrative format for use in federal consistency reviews. Details are available at the following website:
https://www.deq.virginia.gov/our-programs/environmental-impact-review/federal-consistency

Future federal consistency submissions should address the new narrative enforceable policies.

U.S. Department of Navy
Atlantic Fleet Training and Testing
DEQ 24-212F

PUBLIC PARTICIPATION

In accordance with 15 CFR §930.2, a public notice of this proposed action was published in the DEQ Office of Environmental Impact Review Program Public Notice Bulletin and on the DEQ website from December 23, 2024 to January 17, 2025. No public comments were received.

FEDERAL CONSISTENCY CONCURRENCE

The FCD states that the project is consistent to the maximum extent practicable with the enforceable policies of the Virginia CZM Program. The reviewing agencies that are responsible for the administration of the enforceable policies generally agree with the FCD. Based on the review of the FCD and the comments submitted by agencies administering the enforceable policies of the Virginia CZM Program, DEQ concurs that the proposed project is consistent to the maximum extent practicable with the Virginia CZM Program, provided all applicable permits and approvals are obtained as described below. In addition, the Navy is encouraged to consider the advisory policies of the CZM Program.

Other state approvals which may apply to this project are not included in this FCD. Therefore, the Navy must also ensure that this project is constructed and operated in accordance with all applicable federal, state and local laws and regulations.

If, prior to construction, the project should change significantly and any of the enforceable policies of the Virginia CZM Program would be affected, pursuant to 15 CFR 930.46, the federal agency must submit supplemental information to DEQ for review and approval.

ANALYSIS OF ENFORCEABLE POLICIES

The analysis which follows responds to the discussion of the enforceable policies of the Virginia CZM Program that apply to this project and review comments submitted by agencies that administer these enforceable policies.

1. Point Source Air Pollution. The FCD (page 13) states that the proposed activities do not include stationary sources of air pollution that would require permitting.

1(a) Agency Jurisdiction. The policy is administered by DEQ through the federal Clean Air Act and Virginia's legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. It is the policy of the Commonwealth to abate, control, and prohibit air pollution throughout the Commonwealth (*Virginia Code § 10.1-1308*), to include: asphalt paving operations in volatile organic compound emission control areas (*Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-20-206 and -45-780*), open burning (*Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-80-1105, -130-10, -130-30 to -50, 20-60-30, and 5-60-200*), fugitive dust emissions (*Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-50-90 and -40-90*), state operation permits (*Virginia Code §§ 10.1-1308 and -1322; 9 VAC § 5-*

80-800), and new source review (*Virginia Code §§ 10.1-1308 and -1322; 9 VAC §§ 5-80-1100, -1400, -1605, and -2000*).

1(b) Agency Finding. The DEQ Air Division notes that the project is located in the Hampton Roads 1997 Ozone Attainment/Maintenance Area and the Hampton Roads ECA 9VAC5-20-206.1. d. and 2.d. Emission Control Area for volatile organic compounds (VOC) and oxides of nitrogen (NOx).

1(c) Fugitive Dust Requirement. During operations, fugitive dust must be kept to a minimum by using control methods outlined in 9VAC5-50-60 *et seq.* of the Regulations for the Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:

- Use, where possible, water or chemicals for dust control;
- Install and use hoods, fans and fabric filters to enclose and vent the handling of dusty materials;
- Cover open equipment for conveying materials; and
- Promptly remove spilled or tracked dirt or other materials from paved streets and remove dried sediments resulting from soil erosion.

Follow 9VAC 5-50-60 *et seq*. to limit particulate matter and other air pollutants to minimize fugitive emissions during the use of any vehicles for both on and offshore activity for naval operations, including but not limited to helicopters, boats, ships, and unmanned aerial systems.

1(d) Conclusion. Provided the project complies with applicable requirements, it will be consistent to the maximum extent practicable with the point source air pollution enforceable policy of the Virginia CZM Program.

2. Tidal and Non-Tidal Wetlands. The FCD (page 13) states that the project does not include regulated activities in wetlands that would require a permit.

2(a) Agency Jurisdiction. The purpose of the policy is to preserve and protect wetlands and non-tidal surface waters, to prevent their despoliation and destruction, and accommodate necessary economic development in a manner consistent with wetlands preservation. Impacts to wetlands and streams shall be avoided or minimized to the maximum extent practicable. Tidal Wetlands are administered by the Virginia Marine Resources Commission (VMRC) under the authority of the Tidal Wetlands Act of 1972 (*Virginia Code § 28.2-1301 and -1308; 4 VAC § 20-390-20*). Tidal and Nontidal Wetlands are administered by the Department of Environmental Quality (DEQ) through the Virginia Water Protection (VWP) Permit program and includes Water Quality Certification pursuant to Section 401 of the Clean Water Act (*Virginia Code §§ 62.1-44.15:20 and -44.15:21; and 9 VAC §§ 25-210-10, -210-45, 210-80, 260-10, -380, -390*).

2(b) DEQ Findings. The DEQ Tidewater Regional Office (TRO) states that potential adverse impacts to water quality and wetlands must be minimized. This can be achieved by using Best Management Practices (BMPs).

2(c) VMRC Findings. The VMRC found that there are no adverse impacts expected to tidal wetlands.

2(d) Requirements. Permanent or temporary impacts to surface waters and wetlands may require DEQ authorization under §401 of the Clean Water Act, Virginia Code §62.1-44.15:20, and Virginia Administrative Code 9 VAC 25-210-10 *et seq*.

Any federal activity resulting in impacts to tidal wetlands may need authorization from the Local Wetlands Board.

2(e) Conclusion. Provided any required VWP and/or Local Wetlands Board permit is obtained, as necessary, the project will be consistent to the maximum extent practicable with the Tidal and Non-tidal Wetlands enforceable policy of the Virginia Coastal Zone Management Program.

3. Subaqueous Lands. The FCD (page 13) notes that the proposed activities do not include dredging, filling, construction of bulkheads, riprap revetments, groins, jetties, boat ramps, piers, or any other activity that would necessitate a permit.

3(a) Agency Jurisdiction. All decisions affecting subaqueous lands shall be guided by the Commonwealth's General Policy to conserve, develop, and utilize its natural resources, its public lands, and its historical sites and buildings and to protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth. The General Assembly has authorized VMRC to grant or deny any use of state-owned bottomlands, including dredging, aquaculture, the taking and use of material from the bottomland, and the placement of wharves, bulkheads, and fill. (*Virginia Code §§ 28.2-1200, -1203, -1204 and -1205*).

3(b) Agency Finding. The VMRC states that no adverse impacts are expected to submerged lands.

3(c) Requirement. Any federal activity resulting in the fill of state-owned submerged lands may require a VMRC subaqueous permit.

3(d) Conclusion. Provided a VMRC subaqueous permit is obtained, as necessary, the project is consistent to the maximum extent practicable with the subaqueous lands enforceable policy of the Virginia CZM Program.

4. Marine Fisheries. The FCD (page 13) states that the proposed activities do not entail commercial or recreational fishing.

4(a) Agency Jurisdiction. The policy stresses the conservation and promotion of seafood and marine resources of the Commonwealth, including fish, shellfish and marine organisms, and

manage the fisheries to maximize food production and recreational opportunities within the Commonwealth's territorial waters. The policy is administered by VMRC (Virginia Code §§ 28.2-101, -201, -203, -203.1, -225, -551, -600, -601, -603 -618, and -1103, -1203 and the Constitution of Virginia, Article XI, Section 3).

4(b) Agency Finding. According to VMRC there are no adverse impacts expected to fisheries or shellfish.

4(c) Conclusion. The project is consistent to the maximum extent practicable with the Marine Fisheries enforceable policy of the Virginia CZM Program.

5. Dunes and Beaches. According to the FCD (page 13) states that the proposed activities would not cause permanent alteration of or construction upon primary sand dunes.

5(a) Agency Jurisdiction. The policy promotes the preservation and protection of coastal primary sand dunes and beaches, to prevent their despoliation and destruction, and whenever practical, to accommodate necessary economic development in a manner consistent with the protection of such features. Dune and beach protection is carried out pursuant to the Coastal Primary Sand Dune Protection Act as administered by VMRC (*Virginia Code §§ 28.2-1401 and -1408*).

5(b) Agency Finding. According to VMRC there are no adverse impacts expected to beaches and coastal primary sand dunes in close proximity to the project area.

5(c) Requirement. Any federal activity resulting in impacts to coastal primary sand dunes or beaches may need authorization from the Local Dune and Beach Board.

5(d) Conclusion. Provided authorization from the Local Dune and Beach Board is obtained, as necessary, the project will be consistent to the maximum extent practicable with the Dunes and Beaches enforceable policy of the Virginia CZM Program.

6. Point Source Water Pollution. The FCD (page 13) states that the proposed activity would not result in new point source pollutant discharges.

6(a) Agency Jurisdiction. The policy is administered by DEQ to protect existing high quality state waters and restore all other state waters to permit all reasonable public uses and support the propagation and growth of all aquatic life. Legal authority is granted by the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered by DEQ as the Virginia Pollutant Discharge Elimination System (VPDES) permit program (Virginia Code § 62.1-44.2; 9 VAC § 25-31-20).

6(b) Agency Findings. The proposed activities could result in a discharge to State Waters.

6(c) Requirement. Except in compliance with a VPDES permit, it shall be unlawful to discharge into state waters sewage, industrial wastes or any noxious or deleterious substances; or, otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or the uses of such waters for domestic or industrial consumption, or for recreation, or for other uses.

6(d) Conclusion. Provided the project obtains a VPDES permit for any discharge into State Waters, as necessary, the project will be consistent to the maximum extent practicable with the Point Source Water Pollution enforceable policy of the Virginia CZM Program.

7. Wildlife and Inland Fisheries. The FCD (page 13) does not indicate that wildlife and inland fisheries will be affected.

7(a) Agency Jurisdiction. The Department of Wildlife Resources (DWR) administers the enforceable policy for activities affecting wildlife and inland fisheries to ensure they do not negatively impact the Commonwealth's efforts in conserving, protecting, replenishing, propagating and increasing of the supply of game birds, game animals, fish and other wildlife of the Commonwealth(Virginia Code §§ 29.1-501, -512, -521, -530.2, -531, -533, -542, -543.1, -545, -548, -549, -550, -552, -554, -556, -569, and -574; 4 VAC §§ 15-30-10, -20, -50, and 15-290-60), fish or wildlife listed as threatened or endangered by the Department of Wildlife Resources Board(Virginia Code §§ 29.1-501, -564, -566, -567, and -568; 4 VAC §§ 15-20-130 and -140), the use of drugs on vertebrate wildlife (Virginia Code § 29.1-501 and -508.1), and nonindigenous aquatic nuisance, predatory, or undesirable species(Virginia Code §§ 29.1-501, -542, -543.1, -545, -569, -571, -574, and -575; 4 VAC §§ 15-20-210, -30-20, -30-40, and 15-290-60).

7(b) Agency Finding. DWR have reviewed the project that proposes to conduct training and testing activities, which may include the use of active sonar and explosives, primarily within existing range complexes, operating areas, and testing ranges, within the Atlantic Ocean along the Eastern coast and inland waters, including the Chesapeake Bay.

In addition, DWR submitted some additional comments related to related to cumulative impacts stemming from offshore wind facilities on the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement for this project which was previously reviewed under DEQ #24-168F. Refer to the attached DWR memorandum for details.

7(c) Recommendation. This project is located within two miles of a documented occurrence of federally endangered Atlantic sturgeon and/or a water designated a Threatened and Endangered Species due to its presence. To ensure protection of this species, DWR recommend coordination with NOAA Fisheries Service.

7(d) Conclusion. Assuming strict adherence to best management practices for erosion and sediment control is maintained, the project will be consistent to the maximum extent practicable with the wildlife and inland fisheries enforceable policy of the Virginia CZM Program.

U.S. Department of Navy
Atlantic Fleet Training and Testing
DEQ 24-212F

ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

In addition to the enforceable policies of the Virginia CZM Program, comments also were provided with respect to applicable requirements and recommendations of the following programs:

1. Solid and Hazardous Waste Management.

1(a) Agency Jurisdiction. On behalf of the Virginia Waste Management Board, the DEQ Division of Land Protection and Revitalization is responsible for carrying out the mandates of the Virginia Waste Management Act (Virginia Code §10.1-1400 et seq.), as well as meeting Virginia's federal obligations under the Resource Conservation and Recovery Act and the Comprehensive Environmental Response Compensation Liability Act, commonly known as Superfund. The DEQ Division of Land Protection and Revitalization also administers those laws and regulations on behalf of the State Water Control Board governing Petroleum Storage Tanks (Virginia Code §62.1-44.34:8 et seq.), including Aboveground Storage Tanks (9VAC25-91 et seq.) and Underground Storage Tanks (9VAC25-580 et seq. and 9VAC25-580-370 et seq.), also known as Virginia Tank Regulations, and § 62.1-44.34:14 et seq. which covers oil spills.

Virginia:

- Virginia Waste Management Act, Virginia Code § 10.1-1400 et seq.
- Virginia Solid Waste Management Regulations, 9VAC20-81
  - (9VAC20-81-620 applies to asbestos-containing materials)
- Virginia Hazardous Waste Management Regulations, 9VAC20-60
  - (9VAC20-60-261 applies to lead-based paints)
- Virginia Regulations for the Transportation of Hazardous Materials, 9VAC20-110.

Federal:

- Resource Conservation and Recovery Act (RCRA), 42 U.S. Code sections 6901 et seq.
- U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 Code of Federal Regulations, Part 107
- Applicable rules contained in Title 40, Code of Federal Regulations.

1(b) Agency Findings. The DEQ Tidewater Regional Office notes that active or closed petroleum pollution complaint cases may be encountered adjacent to or within proposed project footprints.

8

U.S. Department of Navy
Atlantic Fleet Training and Testing
DEQ 24-212F

1(c) Requirements.

1(c)(i) Waste Management. Any soil that is suspected of contamination or wastes that are generated during the action must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations. All construction and demolition debris must be characterized in accordance with the *Virginia Hazardous Waste Management Regulations* prior to disposal at an appropriate facility. It is the generator's responsibility to determine if solid waste meets the criteria of hazardous waste and as a result be managed as such.

1(c)(ii) Petroleum Releases and Contaminated Soils. If evidence of a petroleum release is discovered during implementation of this project, it must be reported to DEQ, as authorized by Virginia Code § 62.1-44.34.8 through 9 and 9 VAC 25-580-10 *et seq.* Petroleum contaminated soils generated during construction of this project must be characterized and disposed of properly.

1(c)(iii) Petroleum Storage Tanks. Installation, operation, removal, or relocation of any regulated petroleum storage tank(s) either aboveground storage tanks (AST) or underground storage tanks (UST) must also be conducted in accordance with the Virginia Regulations 9 VAC 25-91-10 *et seq*. and / or 9 VAC 25-580-10 *et seq*.

1(d) Agency Recommendation. DEQ encourages all projects to implement pollution prevention principles, including:

- the reduction, reuse and recycling of all solid wastes generated; and
- the minimization and proper handling of generated hazardous wastes.

2. Natural Heritage Resources.

2(a) Agency Jurisdiction.

2(a)(i) The Virginia Department of Conservation and Recreation's (DCR) Division of Natural Heritage (DNH): DNH's mission is conserving Virginia's biodiversity through inventory, protection and stewardship. The Virginia Natural Area Preserves Act (Virginia Code §10.1-209 through 217), authorized DCR to maintain a statewide database for conservation planning and project review, protect land for the conservation of biodiversity, and the protect and ecologically manage the natural heritage resources of Virginia (the habitats of rare, threatened and endangered species, significant natural communities, geologic sites, and other natural features).

2(a)(ii) The Virginia Department of Agriculture and Consumer Services (VDACS): The Endangered Plant and Insect Species Act of 1979 (Virginia Code Chapter 39 §3.1-1020 through 1030) authorizes VDACS to conserve, protect and manage endangered and threatened species of plants and insects. Under a Memorandum of Agreement established between VDACS and the

9

DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

2(b) Agency Finding – Natural Heritage Resources and Natural Area Preserves. DCR's Division of Natural Heritage (DNH) searched its Biotics Data System (Biotics) for occurrences of natural heritage resources from the area outlined on the submitted map and identified natural heritage resources in the vicinity.

The Parramore Island, Wreck Island and False Cape Natural Area Preserves are adjacent to the project area and support several different populations of rare nesting birds including the Piping plover (*Charadrius melodus,* G3/S2B/S1N/LT/LT), Least tern (*Sternula antillarum,* G4/S2B/NL/NL), Black skimmer (*Rynchops niger,* G4/S2BS1N/NL/NL), and, at False Cape Natural Area Preserve, Loggerhead sea turtle (*Caretta caretta,* G3/S1B,S1N/LT/LT). In addition, several state and federally listed sea turtles, whales and other marine mammals are located in the project vicinity and may be affected by the proposed activities.

2(c) Agency Findings – Threatened and Endangered Plant and Insect Species. DCR states that the current activity will not affect any documented state-listed plant and insect species.

2(d) Agency Recommendations. Contact DCR-DNH to secure updated information on natural heritage resources if the scope of the project changes and/or six months has passed before it is utilized. New and updated information is continually added to the Biotics Data System.

DCR recommends restricting any activities from April until August near the Parramore Island, Wreck Island and False Cape Natural Area Preserves during migration/nesting activities for sea turtles and migratory birds. Due to the legal status of many of these species, DCR also recommends continued coordination with the Virginia Department of Wildlife Resources (DWR), the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) for information regarding the possible impacts and to ensure compliance with protected species legislation.

3. Historic and Archaeological Resources.

3(a) Agency Jurisdiction. The Virginia Department of Historic Resources (DHR) conducts reviews of both federal and state projects to determine their effect on historic properties. Under the federal process, DHR is the State Historic Preservation Office, and ensures that federal undertakings - including licenses, permits, or funding - comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulation at 36 CFR Part 800. Section 106 requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of Historic Places. Please see DHR's website for more information about applicable state and federal laws and how to submit an application for review: https://www.dhr.virginia.gov/programs/federal-state-review/.

3(b) Requirement. The Navy or its agents must consult directly with DHR pursuant Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations codified at 36 CFR Part 800 which requires federal agencies to consider the impacts of their projects on historic properties.

4. Local Coordination.

4(a) Jurisdiction. In accordance with CFR 930, Subpart A, § 930.6(b) of the Federal Consistency Regulations, DEQ, on behalf of the state, is responsible for securing necessary review and comment from other state agencies, the public, regional government agencies, and local government agencies, in determining the Commonwealth's concurrence or objection to a federal consistency certification.

4(b) City of Norfolk Comments. The City of Norfolk supports the Department of Navy's proposed training and testing activities in and around Naval Station Norfolk.

REGULATORY AND COORDINATION NEEDS

1. Air Quality. Activities associated with this project may be subject to air regulations administered by DEQ. The state air pollution regulations that may apply to the project are:

- fugitive dust and emissions control (9VAC5-50-60 *et seq.*)

Coordinate with the DEQ Tidewater Regional Office (TRO) John Brandt (757-407-2341) for guidance on air pollution control as needed.

2. Tidal and Non-tidal Wetlands. Coordinate with the DEQ TRO contact Jeff Hannah, DEQ TRO at (757) 407-2510, as needed, to determine the need for a VWP permit for any activities that may cause permanent or temporary impacts to surface waters and wetlands.

Coordinate with the Local Wetlands Board to obtain authorization, as necessary, for any federal activity resulting in impacts to tidal wetlands. Contact VMRC (Tiffany Birge, 757-247-2254) with questions.

3. Subaqueous Lands. Any federal activity resulting in the fill of state-owned submerged lands may require a VMRC subaqueous permit. Contact VMRC (Tiffany Birge, 757-247-2254) as necessary to enquire about VMRC permit applicability.

As necessary, submit a Joint Permit Application (JPA) to VMRC for a full Public/Agency interest review and for a decision to issue a permit.

4. Dunes and Beaches. Any federal activity resulting in impacts to coastal primary sand dunes or beaches may need authorization from the Local Dune and Beach Board. Contact VMRC (Tiffany Birge, 757-247-2254) with questions.

5. Point Source Pollution Control. The proposed activities could result in a discharge to State Waters. Coordinate with the DEQ Water Permitting Division Director, Meghan Mayfield (804-914-3729) or DEQ TRO Regional VWP Permit Program Manager Jeffrey Hannah (757-407-2510) to discuss the applicability of a VPDES permit for this project.

6. Solid and Hazardous Wastes. All solid waste, hazardous waste, and hazardous materials must be managed in accordance with all applicable federal, state, and local environmental regulations. Contact DEQ TRO (Melinda Woodruff, 757-407-2516) for information on the location and availability of suitable waste management facilities in the project area or if free product, discolored soils, or other evidence of contaminated soils are encountered.

6(a) Petroleum Releases and Tanks. If evidence of a petroleum release is discovered during construction, it must be reported to DEQ TRO (Melinda Woodruff, 757-407-2516).

If there will be any installation, operation, removal, or relocation of any regulated petroleum ASTs or USTs submit documentation and / or questions to TRO Tanks at Tidewater Regional Office – 5636 Southern Blvd., Virginia Beach, VA 23462 or via email at tro.tanks@deq.virginia.gov.

7. Natural Heritage Resources. Contact DCR-DNH, Rene Hypes at (804) 371-2708, to secure updated information on natural heritage resources if the scope of the project changes and/or six months has passed before the project is implemented, since new and updated information is continually added to the Biotics Data System.

The DWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in DCR's review. Their database may be accessed at https://services.dwr.virginia.gov/fwis/ or contact Hannah Schul at Hannah.Schul@dwr.virginia.gov.

The U.S. Fish and Wildlife Service (USFWS) utilizes an online project review process (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process) to facilitate compliance with the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended. The process enables users to 1) follow step-by-step guidance; 2) access information that will allow them to identify threatened and endangered species, designated critical habitat, and other Federal trust resources that may be affected by their project; and 3) accurately reach determinations regarding the potential effects of their project on these resources as required under the ESA. If you have questions regarding the online review process, please contact Jackie Luu at jackie_luu@fws.gov.

U.S. Department of Navy
Atlantic Fleet Training and Testing
DEQ 24-212F

8. Historic and Archaeological Resources. Consult directly with DHR (Jenny Bellville-Marrion, Jennifer.Bellville-Marrion@dhr.virginia.gov) pursuant Section 106 of the National Historic Preservation Act and its implementing regulations codified at 36 CFR Part 800 which require federal agencies to consider the impacts of their projects on historic properties.

9. Wildlife and Inland Fisheries. Due to the project's location within two miles of a documented occurrence of the federally endangered Atlantic sturgeon and/or a water designated a Threatened and Endangered Species due to its presence, DWR recommends coordination with NOAA Fisheries Service (Christine Vaccaro, christine.vaccaro@noaa.gov).

Coordinate as needed with DWR (Hannah Schul, (804) 968-8546) with questions regarding DWR's recommendations and comments related to the Draft SEIS which was previously reviewed.

Thank you for the opportunity to comment on this FCD. The detailed comments of reviewers are attached. If you have questions, please do not hesitate to call me or Janine Howard at (804) 659-1916.

Sincerely,



Bettina Rayfield, Manager
Environmental Impact Review and Long-Range Priorities Program
Virginia Department of Environmental Quality
804-659-1915
bettina.rayfield@DEQ.virginia.gov
Central Office
1111 E. Main Street, Suite 1400
Richmond, Virginia 23219
804-698-4000

ec: Hannah Schul, DWR
Allison Tillett, DCR
Samantha Henderson, DHR
Emily Hein, VIMS
Claire Gorman, VMRC
Elaine Meil, Accomack-Northampton PDC
Ben McFarlane, Hampton Roads PDC
Seamus McCarthy, City of Norfolk
Rhonda Russell, City of Portsmouth

13

U.S. Department of Navy
Atlantic Fleet Training and Testing
DEQ 24-212F

Seth Edwards, City of Virginia Beach
Craig M. Galant, City of Newport News

14

L.3 ENDANGERED SPECIES ACT

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/029
August 20, 2024

Ms. Kimberly Damon-Randall
Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway, SSMC3, Room 13821
Silver Spring, MD 20910-3282

Dear Ms. Damon-Randall:

In accordance with Section 7 of the Endangered Species Act, the United States Navy (Navy) requests formal consultation on Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico beginning in November of 2025.

The proposed action may affect listed species that reside within the AFTT study area due to environmental stressors associated with military readiness activities. The AFTT Biological Assessment, which provides the required information pursuant to 50 C.F.R §402.12 (f), will be electronically forwarded to your staff. The supporting 2024 AFTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement will be available electronically beginning September 20, 2024 at https://www.nepa.navy.mil/aftteis/.

Based on the Navy's may affect, and is likely to adversely affect determinations, we are requesting formal consultation on the boulder star coral (*Orbicella franksi*), elkhorn coral (*Acropora palmata*), lobed star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), pillar coral (*Dendrogyra cylindrus*), rough cactus coral (*Mycetophyllia ferox*), staghorn coral (*Acropora cervicornis*), queen conch (*Alger gigas*), Atlantic salmon (*Salmo salar*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), Gulf sturgeon (*Acipenser oxyrinchus desotoi*), smalltooth sawfish (*Pristis pectinate*), Nassau grouper (*Epinephelus striatus*), giant manta ray (*Manta birostris*), oceanic whitetip shark (*Carcharhinus longimanus*), scalloped hammerhead shark (*Sphyrna lewini*), green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), Kemp's ridley turtle (*Lepidochelys kempii*), leatherback turtle (*Dermochelys coriacea*), loggerhead turtle (*Caretta caretta*), blue whale (*Balaenoptera musculus*), Rice's whale (*Balaenoptera ricei*), fin whale (*Balaenoptera physalus*), North Atlantic right whale (*Eubalaena glacialis*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*).

We request concurrence on our may affect, but is not likely to adversely affect determinations for designated critical habitat for boulder star coral, elkhorn coral, lobed star coral, mountainous coral, pillar coral, rough cactus coral, staghorn coral, Atlantic sturgeon, Gulf sturgeon, Nassau grouper, loggerhead turtle, and proposed critical habitat for green turtle and Rice's whale.

We appreciate your continued support in helping the Navy to meet its environmental responsibilities. Please direct any questions to Ms. Laura Busch (757) 836-8471.

Sincerely,

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Copy to: Ms. Jolie Harrison, NMFS Office of Protected Resources
Ms. Tanya Dobrzynski, NMFS Office of Protected Resources

2

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/031
September 6, 2024

Ms. Michelle Guay
Regional Section 7 Coordinator
US Fish and Wildlife Service
P.O. Box 1306
Albuquerque, NM 87103

SUBJECT: ENDANGERED SPECIES ACT SECTION 7 CONSULTATION FOR U.S. NAVY ATLANTIC FLEET TRAINING AND TESTING ACTIVITIES

In accordance with Section 7 of the Endangered Species Act, the United States Navy (Navy) requests concurrence on our determination that Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico beginning in November of 2025 will not adversely affect listed species.

The proposed action may affect listed species that reside within the AFTT action area due to environmental stressors associated with military readiness activities. The AFTT Consultation Package provides the required information pursuant to 50 C.F.R §402.12 (f) and an email with download instructions from DoD SAFE will be forwarded. The supporting 2024 AFTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement will be available electronically beginning September 20, 2024 at https://www.nepa.navy.mil/afttcis/.

We request concurrence on our may affect, but not likely to adversely affect determinations for the following listed and proposed species: American crocodile (*Crocodylus acutus*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), roseate tern (*Sterna dougallii dougallii*), Bermuda petrel (*Pterodroma cahow*), black-capped petrel (*Pterodroma hasitata*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Balaenoptera physalus*), tricolored bat (*Perimyotis subflavus*), and West Indian manatee (*Trichechus manatus*). Although sea turtles occur within the AFTT action area, the proposed action does not include activities above the mean high tide line where nesting occurs, therefore we are consulting with the National Marine Fisheries Service on sea turtles.

We appreciate your continued support in helping the Navy to meet its environmental responsibilities. Please direct any questions to Ms. Laura Busch (757) 836-8471.

Sincerely,

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/395
September 6, 2024

Mr. Heath Rauschenberger
Regional Section 7 Coordinator
US Fish and Wildlife Service
1875 Century Boulevard
Atlanta, GA 30345

SUBJECT: ENDANGERED SPECIES ACT SECTION 7 CONSULTATION FOR U.S. NAVY ATLANTIC FLEET TRAINING AND TESTING ACTIVITIES

In accordance with Section 7 of the Endangered Species Act, the United States Navy (Navy) requests concurrence on our determination that Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico beginning in November of 2025 will not adversely affect listed species.

The proposed action may affect listed species that reside within the AFTT action area due to environmental stressors associated with military readiness activities. The AFTT Consultation Package provides the required information pursuant to 50 C.F.R §402.12 (f) and an email with download instructions from DoD SAFE will be forwarded. The supporting 2024 AFTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement will be available electronically beginning September 20, 2024 at https://www.nepa.navy.mil/afttcis/.

We request concurrence on our may affect, but not likely to adversely affect determinations for the following listed and proposed species: American crocodile (*Crocodylus acutus*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), roseate tern (*Sterna dougallii dougallii*), Bermuda petrel (*Pterodroma cahow*), black-capped petrel (*Pterodroma hasitata*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Balaenoptera physalus*), tricolored bat (*Perimyotis subflavus*), and West Indian manatee (*Trichechus manatus*). Although sea turtles occur within the AFTT action area, the proposed action does not include activities above the mean high tide line where nesting occurs, therefore we are consulting with the National Marine Fisheries Service on sea turtles.

We appreciate your continued support in helping the Navy to meet its environmental responsibilities. Please direct any questions to Ms. Laura Busch (757) 836-8471.

Sincerely,

RCL

J.R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/394
September 6, 2024

Mr. Glenn Smith
Regional Section 7 Coordinator
US Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

SUBJECT: ENDANGERED SPECIES ACT SECTION 7 CONSULTATION FOR U.S. NAVY ATLANTIC FLEET TRAINING AND TESTING ACTIVITIES

In accordance with Section 7 of the Endangered Species Act, the United States Navy (Navy) requests concurrence on our determination that Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico beginning in November of 2025 will not adversely affect listed species.

The proposed action may affect listed species that reside within the AFTT action area due to environmental stressors associated with military readiness activities. The AFTT Consultation Package provides the required information pursuant to 50 C.F.R §402.12 (f) and an email with download instructions from DoD SAFE will be forwarded. The supporting 2024 AFTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement will be available electronically beginning September 20, 2024 at https://www.nepa.navy.mil/aftteis/.

We request concurrence on our may affect, but not likely to adversely affect determinations for the following listed and proposed species: American crocodile (*Crocodylus acutus*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), roseate tern (*Sterna dougallii dougallii*), Bermuda petrel (*Pterodroma cahow*), black-capped petrel (*Pterodroma hasitata*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Balaenoptera physalus*), tricolored bat (*Perimyotis subflavus*), and West Indian manatee (*Trichechus manatus*). Although sea turtles occur within the AFTT action area, the proposed action does not include activities above the mean high tide line where nesting occurs, therefore we are consulting with the National Marine Fisheries Service on sea turtles.

We appreciate your continued support in helping the Navy to meet its environmental responsibilities. Please direct any questions to Ms. Laura Busch (757) 836-8471.

Sincerely,

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 Westgate Center Drive
Hadley, MA 01035-9589

In Reply Refer To:
2025-0129684

Rear Admiral J.R. Cuadros
Director, Fleet Installations and Environment and Deputy Chief of Staff
Fleet Installations and Environmental Readiness
U.S. Fleet Forces Command
1562 Mitscher Avenue, Suite 250
Norfolk, Virginia 23551-2487

On September 6, 2024, the U.S. Fish and Wildlife Service (Service) received a consultation request from the U.S. Navy (Navy) for Atlantic Fleet Training and Testing (AFTT) activities occurring in areas of the western Atlantic Ocean along the east coast of North America, the Gulf of America, and portions of the Caribbean Sea. Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), requires federal agencies to consult with the Service to ensure that the actions authorized, funded, or carried out by such agencies do not jeopardize the continued existence of any threatened or endangered species or adversely modify or destroy designated critical habitat of such species.

The Navy's letter requests that the Service concur with the determination that this project "may affect but is not likely to adversely affect" the federally listed American crocodile (*Crocodylus acutus*), piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), roseate tern (*sterna dougallii dougallii*), Bermuda petrel (*Pterodroma cahow*), black-capped petrel (*Pterodroma hasitata*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), or West Indian manatee (*Trichechus manatus*). The Navy has also determined the AFTT program activities are not likely to adversely affect the proposed endangered tricolored bat (*Perimyotis subflavus*).

The Service acknowledges the Navy's determinations of "N/A = not applicable due to lack of geographic overlap with the stressor" as equating with a "no effect" determination for critical habitat for the American crocodile, piping plover, rufa red knot, Indiana bat, and West Indian manatee.

The Navy's September 6, 2024, letter stated that although sea turtles occur within the AFTT action area, the Proposed Action does not include activities above the mean high tide line where nesting occurs, therefore consultation will occur with the National Marine Fisheries Service for sea turtles in the marine environment. The Kemp's ridley sea turtle (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), and green sea turtle (*Chelonia mydas*) nest on all Gulf-facing beaches within the proposed study area. The Service has jurisdiction under the ESA for nesting sea turtles, while the National Marine Fisheries Service has jurisdiction under the ESA for sea turtles in the water. The Service confirmed with the Navy via phone call and e-mail on October 29, 2024, that the AFTT will not access Gulf-facing beaches to conduct these activities, so sea turtles will not be discussed further in this consultation.

Supplemental Information

On June 29 and July 13, 2025, the Navy provided supplemental information via email in response to the Service's May 9, 2025, request regarding the Proposed Action and effects to species including clarification regarding effects analyses and determinations. It was clarified by the Navy that, while

statements were made in the introductory background discussions regarding *potential* adverse effects to various species, the analysis for each species further clarified why the occurrence of those impacts were considered either discountable or insignificant and therefore supported a determination of "not likely to adversely affect." Additionally, the Navy included an analysis of effects from the Proposed Action to rufa red knot based on newly acquired flight height data, as well as clarification of helicopter flight buffers around barrier islands and other activities that will occur in proximity to breeding and staging grounds for listed birds, all of which supported the determination that project activities are not likely to adversely affect listed species.

Description of the Proposed Action

The AFTT Study Area (Study Area) includes areas of the western Atlantic Ocean along the east coast of North America, the Gulf of America, and portions of the Caribbean Sea. The Study Area begins at the mean high tide line along the U.S. coast and extends east to the 45-degree west longitude line, north to the 65-degree north latitude line, and south to approximately the 20-degree north latitude line. The vast majority of military readiness activities occur within appropriately designated range complexes and testing ranges that fall within the confines of the Study Area and encompass in-water and airspace components. The Study Area also includes Navy and Coast Guard pier side locations, port transit channels, bays, harbors, inshore waterways, and civilian ports where military readiness (training and testing) activities occur.

The Consultation Package includes the Navy's "mitigation measures", considered by the Service to functionally serve as conservation measures, defined as actions taken to completely avoid, partially reduce, or minimize the potential for a stressor to impact a resource and designed to ensure that proposed actions do not jeopardize the continued existence of endangered or threatened species or result in destruction or adverse modification of critical habitat. These measures include Marine Species Awareness training of personnel; Marine Mammal Incident Reporting; implementation of Mitigation Zone All-Clear Conditions before using acoustic stressors, explosives, or munitions; and Visual Observation Teams.

Effects to Species in the Action Area

Piping Plover, Rufa Red Knot, Roseate Tern, Bermuda Petrel, and Black-Capped Petrel

The main stressors from the Proposed Action that may affect ESA-listed birds are acoustics, explosives, energy from electromagnetic devices and lasers, physical disturbance and strikes, and ingestion of military expended materials.

Exposure to underwater sonar, electromagnetic devices, and pile driving will be dependent upon birds being submerged long enough for a sound-exposure impact. The piping plover and red knot do not submerge while foraging. The roseate tern submerges for periods less than two seconds, typically in shallow coastal waters where sonar activities are not taking place. Sonar exposure for Bermuda petrel or black-capped petrel is possible but unlikely due to the rarity of their presence offshore and their feeding behaviors. Black-capped petrels, Bermuda petrels, and roseate terns are unlikely to be in the coastal Gulf of America where underwater pile driving will occur. The use of electromagnetic devices (in air and water) as well as high-energy lasers is typically episodic and dispersed. Therefore, the Service considers the likelihood of exposure to these stressors to be discountable.

Explosive detonations in air and water during training and testing are episodic and typically occur in the offshore environment greater than 12 nautical miles from shore. In-air detonations occur at altitudes far higher (greater than 3,000ft) than where listed birds are known to occur. Additionally, the likelihood of a bird encountering a munition or munition fragment and consuming it remains low, and ingestion of military expended materials is not reasonably certain to occur. Due to the type of explosives proposed and their detonation locations, the Service finds it unlikely that the use of explosives will adversely affect listed birds.

Regarding the occurrence of physical strikes from weapons, vessels, and aircrafts, weapons firing from aircrafts and surface vessels during training and testing is typically episodic and in the offshore environment. Aerial weapons firing occurs at altitudes much higher than where migration and foraging behaviors are known to occur. Few exposures to in-water vessels are expected to occur based on the infrequency of operations and the low density of vessels in the Study Area at any given time. Commercial vessel activity is common along the coast and military vessel activity is orders of magnitude less than commercial traffic. Should an encounter occur, it would be expected to result in a brief behavioral response. The majority of fixed wing flights will occur at altitudes higher than where listed birds are known to occur. Due to the low population density of listed birds, the high altitude of the activities, and the 99.98 percent military non-strike rate per aerial operation, it is unlikely that an aircraft strike will occur.

Coastal birds may be exposed to noise from nearshore helicopter training and aircraft in transit to offshore training areas, as well as intermittent aircraft noise from aircraft originating from airfields located along the coast and vessel noise from nearshore boats. Excessive disturbance to coastal birds can impact their energy budgets and preclude the use of otherwise preferred habitats. Based upon the information provided, the effects of training and testing activities will be relatively local within the Study Area, and minimization measures have been incorporated to avoid disturbance to coastal birds. Additional information confirmed that transit corridors occur in locations without significant populations of these coastal birds. The majority of activities will occur in offshore areas where listed birds are not routinely present. Based on standard operating procedures for the portion of training and testing locations in the coastal zone, there will be an average of between 1 and 2 events per 100 square kilometers per year involving movement of aircraft or aerial targets. Additionally, the following measures are included in the Consultation Package to avoid affects from nearshore aircraft use:

- Rotary-wing aircraft will maintain at least a 3,000-foot altitude and a 1,000-yard horizontal distance from Fisherman Island National Wildlife Refuge when transiting between the Virginia Capes Range Complex and Norfolk Naval Station for at-sea training or testing.
- After transiting from Norfolk Naval Station for at-sea training or testing, rotary-wing aircraft will maintain a distance of at least 1 nautical mile from the beach when flying within the Virginia Capes Range Complex.

Additionally, commanding officers of aviation units shall take steps to prevent aircraft from frightening wild fowl or driving them from their feeding grounds. When it is necessary to fly over known wild fowl habitations, an altitude of at least 3,000 feet shall be maintained, conditions permitting.

Indiana Bat, Northern Long-eared Bat, and Tricolored Bat

The main stressors from the Proposed Action that may affect bats are acoustics, explosives, energy from electromagnetic devices and lasers, and physical disturbance and strikes. Training and testing activities have the potential to expose Indiana bats, northern long-eared bats, and tri-colored bats to a variety of stressors; however, listed bats are not routinely present in the offshore environment or the high coastal traffic areas identified by the Navy AFTT. Most aerial and vessel activities associated with training and testing activities occur starting at three nautical miles from shore during daylight hours. Most aircrafts will operate at altitudes higher than bat flight altitudes. Commercial vessel activity is common along the coast and military vessel activity is orders of magnitude less than commercial traffic. As a result, the proposed training and testing activities are not likely to adversely affect the Indiana bat, northern long-eared bat, or the proposed tricolored bat.

West Indian Manatee

The main stressors from the Proposed Action that may affect manatees are acoustics, explosives, physical disturbance and strikes, entanglement, and ingestion of military expended materials. Exposure to sonar, pile driving, aerial flights, weapons, and explosives is likely to elicit either no response or only short-term behavioral responses such as swimming to deeper water. Ninety-six percent of explosives occur at or above the water's surface, and most in-water explosive activities will occur more than twelve nautical miles from shore where manatees do not occur. Exposure to vessels at pier-side locations and within inshore locations along the southeastern United States and the Gulf of America could elicit reactions such as moving away from an approaching vessel, increasing their swimming speed, and moving toward deeper water; though most activities occur more than three nautical miles offshore where manatees are uncommon. The chance that an individual manatee would encounter expended cables or wires is extremely low based on the sparse distribution of both the cables and wires expended throughout the Study Area, and the fact that the wires and cables are generally expended in offshore areas where manatees do not occur. Exposure to and ingestion of military expended materials is also unlikely to occur. Manatees are more likely to be close to inshore habitats and shallow waters where some training and testing activities will occur; however, as described by the Navy in an email on July 22, 2025, the Consultation Package outlines minimization measures which should be effective in avoiding impacts to manatees:

- All Navy Lookouts are required to take Marine Species Awareness Training which includes manatees, in addition to taking/passing general Lookout training. Lookouts are required to report any marine species (including manatee) sightings and activities may be delayed, moved, or halted based on the activity if a marine mammal is sighted.
- For pile-driving in Gulfport, a shutdown is required if a marine mammal or sea turtle comes within 100-yards of the pile driver.

In addition, through email communication on July 30, 2025, the Navy agreed to include the following conservation measure:

- During in-water work in areas that potentially support manatees, all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. Additionally, personnel should be instructed not to feed, water, or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

American Crocodile

The majority of the proposed training and testing activities will not occur in or near areas known to be occupied by the American crocodile. The stressors from the Proposed Action that may affect the American crocodile include vessel and aircraft noise, explosives, physical disturbance and strikes, and ingestion of military expended materials.

Since Navy vessels operating in crocodile habitat will generally be near port facilities and therefore will be traveling slowly, it is unlikely that there will be negative impacts from strikes. Due to the small number of vessel trips expected to occur in preferred crocodile habitat, and the wariness and agility of the crocodile in avoiding collisions with vessels, the Service finds impacts to crocodiles due to noise from, and collisions with, vessels are not reasonably certain to occur.

The majority of aircraft operations associated with the proposed training and testing normally occur at high altitudes. In most cases, fixed-wing aircraft presence and noise will be brief as the aircraft quickly passes overhead. Helicopters that hover in a fixed location for an extended period can increase the potential for exposure; however, impacts from military readiness activities will be highly localized and concentrated in space and duration and the likelihood that an American crocodile will occur or remain at

the surface while an aircraft or helicopter transits directly overhead is low. Therefore, the Service finds it unlikely that noise resulting from the aircraft associated with the training and testing will result in adverse effects to the crocodile.

Due to the type of explosives proposed and the proposed detonation locations, the Service finds it unlikely that the use of explosives, as proposed, will adversely affect the American crocodile. The likelihood of an American crocodile encountering a munition or munition fragment and consuming it remains low, and ingestion of military expended materials is not reasonably certain to occur. As a result, crocodiles are not likely to be adversely affected by the Proposed Action.

Conclusion

Our response is based on our review of your consultation package received on September 6, 2024, and the clarifications and conservation measures included by the Navy throughout the consultation process. Our response represents the combined response for the Northeast, Southeast, and Southwest Regions, and is the result of review by all relevant Service Field Offices within the area affected by your Proposed Action. We concur that the Proposed Action *is not likely to adversely affect* the federally listed species identified above. We appreciate your willingness to clarify the Proposed Action and include conservation measures for the protection of federally listed species.

Reinitiation Notice

It may be necessary for you to contact the Service for reconsideration of the effects of this Proposed Action if, as described in 50 CFR §402.16, any of the following occurs:

1. New information reveals the effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
2. The identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or
3. A new species is listed or critical habitat designated that may be affected by the identified action.

Thank you for your cooperation in completing this section 7 consultation. Please contact Glenn Smith at 413-253-8627 or glenn_s_smith@fws.gov if you have any questions.

Sincerely,

Lowell Whitney

Lowell Whitney
Acting Assistant Regional Director - Ecological Services
Northeast Region

L.4 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/ 398
November 19, 2024

Ms. Carrie Selberg Robinson
Office of Habitat Conservation
1315 East-West Highway
14th Floor
Silver Spring, MD 20910

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the United States Navy (Navy) and United States Coast Guard (the Action Proponents) have prepared Essential Fish Habitat (EFH) assessments for Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico beginning in November of 2025. The Action Proponent's assessment concludes that EFH may be adversely affected by training and testing activities and requests initiation of the MSA's EFH consultation process.

Please note, that due to the size of the AFTT Study Area, the activities were divided regionally and one EFH assessment was developed for activities occurring within the New England/Mid-Atlantic region and another was developed for activities occurring within the Southeast region. The EFH assessments will be forwarded electronically to your staff. The supporting 2024 AFTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement is available electronically at https://www.ncpa.navy.mil/aftteis/.

We appreciate your continued support in helping the Navy meet its environmental responsibilities. Please direct any questions to Ms. Laura Busch (757) 836-8471.

Sincerely,

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

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

March 12, 2025

J. R. Cuadros Director
Fleet Installations and Environment
U.S. Fleet Forces Command
1562 Mitscher Ave. Suite 250
Norfolk VA 23551-2487

RE: Atlantic Fleet Training and Testing (AFTT) activities beginning in November of 2025

Dear Mr. Cuadros:

NOAA's National Marine Fisheries Service (NMFS), Southeast Regional Office (SERO) and Greater Atlantic Regional Office (GARFO) Habitat Conservation Divisions, reviewed the two Essential Fish Habitat (EFH) Assessments the Navy and United States Coast Guard prepared for activities conducted as part of for Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico beginning in November of 2025 (Phase IV).

After pre-submittal discussions, on November 22, 2024, the Navy and Coast Guard formally initiated consultation with us for Phase IV under the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) because some training and testing activities may adversely affect federally managed fisheries or EFH designated by the NMFS or a federal Fishery Management Council.

As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the NMFS provides the following comments and recommendations pursuant to authorities of the Fish and Wildlife Coordination Act and the MSA for the training and testing activities described in the EFH Assessment.

Covered Activities and Adverse Effects

Section 2 of the EFH Assessment describes the many activities comprising the Navy and Coast Guard's training and testing within the subject waters. This section includes activities that are similar to what was described in the 2013 and 2018 EIS/OEIS (U.S. Department of the Navy, 2013; 2018), with some activities increasing and others decreasing in scope. Some of the activities have also been reclassified or differ slightly from the previous consultations (termed "revised"). In addition, some training or testing activities are proposed within both inshore and at-sea locations that were not included in the scope of the Phase II Essential Fish Habitat Assessment (EFHA) and Phase III supplemental EFHA (U.S. Department of the Navy, 2013; 2018a; 2018b).

Section 3 of the EFH Assessment describes applicable EFH designations by the NMFS and federal Fishery Management Councils. To foster efficient review, the Navy and Coast Guard

grouped the EFH designations into three categories (water column, abiotic substrates, and biological substrates/features) and supplemented them with subcategories as needed. We greatly appreciate the Navy and Coast Guard's development of this framework and believe it significantly enhances the EFH evaluations. Most significantly, this approach facilitates the assessment of adverse effects (Section 4), which are subdivided into component environmental stressors. The stressors, cross referenced with appropriate EFH categories and sub-categories, allows efficient identification of mitigative measures and conclusions by the Navy of the likelihood of adverse impacts to EFH occurring from a specific training or testing activity.

Section 4 evaluates how and to what degree the proposed activities, as described in Chapter 2 (Description of the Proposed Action), could impact EFH and Habitat Areas of Particular Concern (HAPC) in the AFTT area. Table 4.1 of the EFH Assessment describes various Standard Operating Procedures (SOPs) and mitigation measures that the Navy and Coast Guard will follow during its training and testing activities. These include but are not limited to:

- The Navy and Coast Guard will not:
    - Detonate explosives on or near the seafloor (e.g., explosive bottom-laid or moored mines) within a horizontal distance of 350 yds. from artificial reefs, live hard bottom, shallow-water coral reefs, submerged aquatic vegetation, and shipwrecks.
    - Set vessel anchors (a seafloor device) within an anchor swing circle radius that overlaps artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks (except in designated anchorages).
    - Place other seafloor devices within a horizontal distance of 350 yd. from artificial reefs, live hard bottom, submerged aquatic vegetation, and shipwrecks except in South Florida Ocean Measurement Facility Seafloor Mitigation Area.
- The Navy and Coast Guard will:
    - Operate surface vessels in waters deep enough to avoid bottom scouring or prop dredging, with at least a 1-foot clearance between the deepest draft of the vessel (with the motor down) and the seafloor at mean low water.
    - Use a real-time geographic information system and global positioning system (along with remote-sensing verification) during deployment, installation, and recovery of anchors and mine-like objects and during deployment of bottom-crawling unmanned underwater vehicles in waters deeper than 10 feet to avoid live hard bottom.
    - Will minimize surface vessel movement and drift in accordance with mooring installation and deployment plans and will conduct activities during sea and wind conditions that allow vessels to maintain position and speed control during deployment, installation, and recovery of seafloor devices.

Section 4.8 addresses the cumulative adverse effects of the covered AFTT activities and finds that the combined adverse effects are assumed to be greater than the effect of individual stressors, but are not expected to change the nature of the effects from minimal to substantial. However, NMFS has determined that while the combined adverse effects may be minimal, they accumulate over multiple iterations of this program and may change the nature of effects from minimal to substantial. An action is considered adverse if the quality or quantity of EFH is reduced (50 CFR 600.810).

EFH Conservation Recommendations

Given the Navy and Coast Guard's mitigation measures, we offer the following EFH conservation recommendations to further conserve EFH for the proposed training and testing activities:

- Conservation Recommendation 1 - The discharge of marine debris associated with Military Expended Materials (MEM) from ongoing training and testing activities may adversely affect EFH, and over time (i.e., years), those effects are expected to accumulate. Therefore, the Navy and Coast Guard should offset those adverse effects on EFH, by removing marine debris from accessible portions of ranges and/or installations, as has been done previously for projects associated with the military or its installations.
- Conservation Recommendation 2 - Documenting the volume and location of MEM and other associated testing and training debris discharged would provide a baseline for how much material is expended into the ocean. Therefore, the Navy and the Coast Guard should establish a system for recording the type of materials, the volume or number of materials, and locations of where materials are expended.
- Conservation Recommendation 3 - To the maximum extent practicable, the Navy should avoid and minimize explosive or non-explosive medium- and large-caliber gunnery activities using a surface target; explosive or non-explosive missile and rocket activities using a surface target; explosive or non-explosive bombing and mine laying activities; explosive or non-explosive mine countermeasure and neutralization activities; and explosive or non-explosive mine neutralization activities involving Navy divers in sandbar and sand tiger shark Habitat Area of Particular Concern (HAPC) from May 15 to September 15 of any given year.
- Conservation Recommendation 4 - The Naval Undersea Warfare Center Division, Newport Testing Range overlaps with the Southern New England HAPC, which highlights the importance of this area for spawning Atlantic cod and several other managed species. Therefore, to minimize adverse effects to Atlantic cod spawning aggregations, testing and training of bottom disturbing or noise producing activities should not occur in the Southern New England HAPC between November 1 through March 31 of each year to the maximum extent practicable.

Please note that Section 305 (b)(4)(B) of the MSA requires that you provide us with a detailed written response to our EFH conservation recommendations, including the measures you have adopted to avoid, mitigate, or offset the impact of the project on EFH. In the case of a response that is inconsistent with our recommendations, Section 305 (b)(4)(B) of the MSA also indicates that you must explain your reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with us over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate or offset such effect pursuant to 50 CFR 600.920 (k).

Lastly, in several cases when discussing how training and testing activities may adversely affect EFH, the Navy provides its opinion of the significance of those impacts to fishery populations. Such evaluations are complex and beyond the requirements of an EFH Assessment, as defined by the Magnuson-Stevens Act and its implementing regulations. Accordingly, SER HCD and GARFO HESD did not evaluate the Navy's assessments of significance to fishery populations. If

you have any questions or would like to discuss our recommendations, please contact Karen Greene (karen.greene@noaa.gov, 732 872-3023) in GARFO or Pace Wilber (pace.wilber@noaa.gov, (843) 592-3024) in SER.

Sincerely,

Louis A. Chiarella
Assistant Regional Administrator
for Habitat and Ecosystem Services
Greater Atlantic Regional Fisheries Office

cc: Laura Busch, Naval Facilities Engineering Command, Atlantic
Kelly Shotts, NMFS SERO Chief, Habitat Conservation Division
Pace Wilbur, NMFS SERO Atlantic Branch Chief, Habitat Conservation Division

4

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/025
April 14, 2025

Mr. Louis A. Chiarella
Assistant Regional Administrator
Greater Atlantic Regional Fisheries Office
55 Republic Drive
Gloucester, MA 01930

Dear Mr. Chiarella,

The United States Navy (Navy) and United States Coast Guard (the Action Proponents) received the National Oceanic and Atmospheric Administration (NOAA)'s Essential Fish Habitat Consultation (EFH) response letter dated March 12, 2025. The letter addresses the Action Proponents military readiness activities in the Atlantic Fleet Training and Testing (AFTT) Study Area, which includes the Atlantic Ocean, the Gulf of America (formerly Gulf of Mexico), and portions of the Caribbean Sea.

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Action Proponents concluded that EFH may be adversely affected by military readiness activities and initiated the MSA's EFH consultation process by preparing EFH Assessments for the New England/Mid-Atlantic region and Southeast region.

NOAA Fisheries Habitat and Ecosystem Services Division responded with Conservation Recommendations (CRs) to ensure that any adverse effects to EFH and managed species from this project are adequately minimized and compensated. In accordance with Section 305 (b)(4)(B) of the MSA, the Action Proponents offer the following responses to the Conservation Recommendations:

Conservation Recommendation 1 - The discharge of marine debris associated with Military Expended Materials (MEM) from ongoing training and testing activities may adversely affect EFH, and over time (i.e., years), those effects are expected to accumulate. Therefore, the Navy and Coast Guard should offset those adverse effects on EFH, by removing marine debris from accessible portions of ranges and/or installations, as has been done previously for projects associated with the military or its installations.

1. The Navy and Coast Guard do not have statutory authority or responsibility for marine debris removal, nor are funds appropriated for that purpose. Accordingly, conducting marine debris removal to offset MEM is inconsistent with our mission and may violate fiscal law. However, while conducting military readiness activities, the Navy and Coast Guard attempt to recover MEM, to the greatest extent possible, whenever it is practical and safe to do so. For example, during gunnery exercises, expended shells are captured on the deck and not deposited into the ocean. Expended targets and medium to extra-large parachutes are recovered to the extent recovery is possible and safe to do so and unexploded ordnance in localized target areas are removed. When conducting activities on installations, personnel are required to clean up the beach of any items used during any exercise or event. The Action Proponents will continue to

5090
Ser N46/025
April 14, 2025

prevent the release of military expended materials into the ocean and recover military expended material when safe to do so to the extent practical.

Conservation Recommendation 2 - Documenting the volume and location of MEM and other associated testing and training debris discharged would provide a baseline for how much material is expended into the ocean. Therefore, the Navy and the Coast Guard should establish a system for recording the type of materials, the volume or number of materials, and locations of where materials are expended.

2. A requirement to generate an additional report during a training or a testing activity would be impracticable to implement due to implications for safety and Title 10 requirements. In the report titled Comprehensive Review of Recent Surface Force Incidents, the Navy found that creating additional administrative burdens on operational commanders distracts them from preparing a ready force. Additional reporting requirements would draw the event participants' attention away from the complex tactical tasks they are primarily obligated to perform (such as driving a warship or engaging in a gunnery activity), which would adversely impact personnel safety, public health and safety, and the effectiveness of the training or testing activity. Another consideration is concerns with classified information. The differentiation of item types in terms of their individual footprint (either by direct cite or calculation) when aggregated with other information, such as location of use, begins to become classified as to tactics and procedures. Additionally, the utility of a record of MEM would be limited as documenting the volume and location of MEM discharge doesn't necessarily inform how much MEM is accumulating or whereas some MEM could be carried for some distance away from the location and some may disintegrate or remain in the environment only a short time.

Conservation Recommendation 3 - To the maximum extent practicable, the Navy should avoid and minimize explosive or non-explosive medium- and large-caliber gunnery activities using a surface target; explosive or non-explosive missile and rocket activities using a surface target; explosive or non-explosive bombing and mine laying activities; explosive or non-explosive mine countermeasure and neutralization activities; and explosive or non-explosive mine neutralization activities involving Navy divers in sandbar and sand tiger shark Habitat Area of Particular Concern (HAPC) from May 15 to September 15 of any given year.

3. The Navy conducts the following activities greater than 3 nautical miles from shore: explosive or non-explosive medium- and large-caliber gunnery activities using a surface target; explosive or non-explosive missile and rocket activities using a surface target; and explosive or non-explosive bombing and mine laying activities and therefore would not conduct them in sand tiger and sandbar shark HAPC. The Action Proponents have a mitigation for sandbar shark HAPC off of North Carolina and will not detonate explosives from March 1 to September 30 during mine neutralization events and will avoid detonation of all other in-water explosives to the maximum extent practical. The remaining two activities - explosive or non-explosive mine countermeasure and neutralization activities and explosive or non-explosive mine neutralization activities involving Navy divers (activity name: Mine Neutralization - Explosive Ordnance

5090
Ser N46/025
April 14, 2025

Disposal) - can occur within 3 nm of shore. For the overlapping sandbar and sand tiger shark HAPC in Delaware Bay, the only activity proposed to occur in that location is Civilian Port Defense. The training involves the use of various mine detection sensors, which utilize active acoustics, for detection of mines and mine-like objects in and around a port. There are no explosives used during this training event. However, this exercise occurs on the east coast every other year, and there are nine potential port locations within the AFTT study area with only Delaware Bay, Delaware and Hampton Roads, Virginia being the only two possible locations within sand tiger or sandbar shark HAPC.

Regarding sandbar shark HAPC in Atlantic City, none of the activities listed in the conservation recommendation are proposed to occur within the HAPC. In the Chesapeake Bay sandbar shark HAPC, explosive or non-explosive mine countermeasure and neutralization activities and explosive or non-explosive mine neutralization activities are proposed to occur in the portion of the Chesapeake Bay within the Study Area. As mentioned above, Civilian Port Defense could occur in Hampton Roads once in the seven-year period. Due to the training schedule and requirement to certify sailors and ships prior to deployment, seasonal restrictions are not practical, but the Action Proponents will make the operators aware of areas with seasonal considerations.

The Navy uses a website titled "At-Sea Environmental Protective Measures", where the Protective Measures Assessment Protocol (PMAP) program (a mitigation tool) resides. The website also contains information regarding environmental requirements and protective measures. It is a "one-stop-shop" for information regarding at-sea environmental requirements. The Navy will create a page on the protective measures site that includes planning considerations, including maps and seasonal considerations. Event planners will be asked to check the page before planning an event to determine if there are recommendations for avoiding impacts to marine resources in the action area. This new site would include information about the HAPCs within the Study Area and we will notify the Fleet of the new page when sending other environmental messages. The USCG will also be using PMAP starting in Phase IV.

Conservation Recommendation 4 - The Naval Undersea Warfare Center Division, Newport Testing Range overlaps with the Southern New England HAPC, which highlights the importance of this area for spawning Atlantic cod and several other managed species. Therefore, to minimize adverse effects to Atlantic cod spawning aggregations, testing and training of bottom disturbing or noise producing activities should not occur in the Southern New England HAPC between November 1 through March 31 of each year to the maximum extent practicable.

4. Naval Undersea Warfare Center Division, Newport (NUWC) performs testing events year round in the testing range and many of these events involve de minimis acoustic testing, particularly with UUVs. NUWC also conducts events that involve deployment of objects on the seafloor, although such events are less frequent and are generally further offshore. Testing schedules make seasonal restrictions impractical, as a delay in testing of systems and platforms

3

5090
Ser N46/025
April 14, 2025

would delay delivery to the fleets. As with Conservation Recommendation #3, Navy is proposing to create a page on the protective measures site that includes planning considerations, including maps and seasonal considerations. Event planners will be asked to check the page before planning an event to determine if there are recommendations for avoiding impacts to marine resources in the action area.

Your staff's coordination and advice during the consultation process was appreciated and helpful to the Navy in meeting its environmental responsibilities. Please contact Ms. Laura Busch (757) 836-8471 should you have any questions to our responses.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.04.15 15:32:31 -04'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Copy to: Ms. Tanya Dobrzynski, NMFS Office of Protected Resources

4

L.5 MARINE MAMMAL PROTECTION ACT

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/019
May 21, 2024

Ms. Kimberly Damon-Randall
Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
SSMC3, Room 13821
Silver Spring, MD 20901-3282

Dear Ms. Damon-Randall:

In accordance with the Marine Mammal Protection Act, as amended, and 50 C.F.R. Part 216, the U.S. Navy requests a seven-year incidental take authorization and regulations for the incidental taking of marine mammals associated with the Atlantic Fleet Training and Testing (AFTT) activities occurring within the Gulf of Mexico and Atlantic Ocean.

The proposed action may incidentally expose marine mammals that reside within the AFTT study area to sound and other environmental stressors associated with training and testing activities. The enclosed request further describes the AFTT activities and study area, and provides the specific information required by the National Marine Fisheries Service (NMFS) for consideration for an incidental take request.

The U.S. Navy also requests that the regulation authorize, and NMFS issue, three seven-year Letters of Authorization; one issued to Commander, United States Fleet Forces Command for training activities; one issued to Commandant, United States Coast Guard for training activities; and one issued to Commander, Naval Sea Systems Command for testing activities. Addresses for these commands are provided below:

Commander, United States Fleet Forces Command
Attn: Code N46
1562 Mitscher Avenue
Suite 250
Norfolk, Virginia 23551-2487

Commandant, United States Coast Guard
Headquarters, US Coast Guard
Office of Cutter Forces USCG COMDT CG-751
2703 Martin Luther King Jr. Avenue, SE
Washington, DC 20593-7714

5090
Ser N46/019
May 21, 2024

Commander, Naval Sea Systems Command
Attn: Code SEA 09E
1333 Isaac Hull Avenue, SE
Washington Navy Yard, DC 20376-0001

We appreciate your continued support in helping the U.S. Navy to meet its environmental responsibilities.

Sincerely,

AGUAYO.MARIA.L ORETO.1157276731

M. L. AGUAYO
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Request for Regulations and Letters of Authorization for the Incidental Taking of Marine Mammals Resulting from the U.S. Navy Training and Testing Activities in the AFTT Study Area.

Copy to: Ms. Tanya Dobrzynski, NMFS Office of Protected Resources
Ms. Jolie Harrison, NMFS Office of Protected Resources
CNO WASHINGTON DC (OPNAV N4I)
COMNAVSEASYSCOM WASHINGTON DC
COMNAVAIRSYSCOM PATUXENT RIVER
ONR ARLINGTON VA

2

L.6 National Historic Preservation Act

Under regulations implementing Section 106 of the National Historic Preservation Act, states and territories have 30 days to respond to the federal agency's assessment of adverse effects; if no response or objection is received within that timeframe, the agency may proceed with implementing its action. The Navy submitted determinations to 18 states adjacent to the Study Area. Correspondence indicating concurrence were received from 17 states (Alabama, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, North Carolina, Rhode Island, South Carolina, Texas, and Virginia). The remaining state did not respond (New York).

L.6.1 ALABAMA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/001
January 16, 2025

Ms. Lisa D. Jones
Executive Director
Alabama Historical Commission
468 South Perry Street
P.O. Box 300900
Montgomery, Alabama 36130

Dear Ms. Jones:

With this letter, the United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard as Joint Lead Agency (hereinafter jointly referred to as the Action Proponents) intend to update our consultation with the Alabama Historical Commission (AHC), under Section 106 of the National Historic Preservation Act (NHPA), and in support of the National Environmental Policy Act, for continued Atlantic Fleet Training and Testing (AFTT) activities. The Action Proponents analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS) of 2013 (Phase II) and 2018 (Phase III). The Action Proponents are in the process of supplementing (Phase IV) the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS; published September 20, 2024.

The project information package (enclosed) details the proposed training and testing activities for this undertaking. In summary, most training and testing activities discussed in the 2013 and 2018 versions of the Final AFTT EIS/OEIS are similar to the current activities, with the resulting effect remaining unchanged from the previous consultation. Some activities have either increased or decreased in scope, been reclassified, or been modified slightly since the previous consultation. However, there are some activities proposed for inshore locations that were not included in previous Section 106 consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE) for NHPA. The locations where training and testing activities are proposed to occur off the coast of Alabama include the Gulf of Mexico Range Complex, Gulf of Mexico Range Complex Inshore (to include Mobile Bay), and the Naval Surface Warfare Center, Panama City Division Testing Range. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Alabama.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE. Various agencies and interested organizations maintain databases of known in-water resources. The Action Proponents used these inventories and information gathered from previous AFTT consultations to update the information package for this consultation.

The project information package describes how the undertaking could affect known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in state waters of Alabama. A complete assessment of the potential impacts on historic and cultural

5090
Ser N46/001
January 16, 2025

resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods for avoiding and minimizing effects to historic and cultural resources as part of implementing this undertaking. The Action Proponents practice standard operating procedures, which are essential to safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For example, underwater detonation training takes place in specially designated areas, reducing the potential for interactions with historic and cultural resources, as explained in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwreck mitigation areas. To ensure protection of historic and cultural resources in the AFTT Study Area, the Action Proponents will not conduct precision anchoring within the anchor swing diameter, or explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks.

While unintentional impacts to known historic and cultural resources may occur from certain activities conducted as part of the Proposed Action, the Action Proponents believe that chances of such impacts remain remote due to the standard operating procedures and avoidance measures employed. Furthermore, the Action Proponents believe that impacts on unidentified historic and cultural resources remain very unlikely. In accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if historic and cultural resources are impacted.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Alabama would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:32:39 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

ALABAMA HISTORICAL COMMISSION

468 South Perry Street
Montgomery, Alabama 36130-0900

Lisa D. Jones
Executive Director
State Historic Preservation Officer

Tel: 334-242-3184
Fax: 334-242-1083

July 14, 2025

Laura Busch
US Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk, VA 23551-2487

Re: AHC 24-1215
US Coast Guard-Atlantic Fleet Training and Testing Activities
Statewide

Dear Ms. Busch:

Upon review of the additional information forwarded by your office, we concur with your agency's determination of no effect to historic properties.

Consultation with the State Historic Preservation Office does not constitute consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public. If archaeological materials are encountered during construction, the procedures codified at 36 CFR 800.13(b) will apply. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal, and glass objects. The federal agency or the applicant receiving federal assistance should contact our office immediately. If human remains are encountered, the provisions of the Alabama Burial Act (*Code of Alabama* 1975, §13A-7-23.1, as amended; Alabama Historical Commission Administrative Code Chapter 460-X-10 Burials) should be followed. This stipulation shall be placed on the construction plans to ensure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact Amanda McBride at 334.230.2692 or Amanda.McBride@ahc.alabama.gov. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Hewett

Lee Anne Hewett
Deputy State Historic Preservation Officer

LAH/nj

THE STATE HISTORIC PRESERVATION OFFICE
www.ahc.alabama.gov

L.6.2 CONNECTICUT

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/002
January 16, 2025

Mr. Jonathan Kinney
SHPO
Connecticut State Historic Preservation Office
450 Columbus Boulevard, Suite 5
Hartford, Connecticut 06103

Dear Mr. Kinney:

As required by Section 106 of the National Historic Preservation Act (NHPA) and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the with the Connecticut State Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. There are also activities proposed for new inshore locations that were not part of prior Section 106 consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE) for NHPA. The locations where training and testing activities are proposed to occur off the coast of Connecticut include the following: the Narragansett Operating Area in the Northeast Range Complexes; Naval Undersea Warfare Development Center Newport Testing Range; portions of the Thames River; Naval Submarine Base New London in Groton, Connecticut; a commercial shipyard in Groton, Connecticut; and the U.S. Coast Guard Station in New London, Connecticut. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Connecticut.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Connecticut. A complete assessment of the potential impacts on

5090
Ser N46/002
January 16, 2025

historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may occur result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Connecticut would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:33:54 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

State Historic Preservation Office
Department of Economic and Community Development

CONNECTICUT

February 20, 2025

Laura Busch
Department of the Navy
U.S. Fleet Forces Command
1562 Mitscher Avenue, Suite 250
Norfolk, VA 23551-2487
(via email only to laura.m.busch2.civ@us.navy.mil)

Subject: Supplemental Environmental Impact Statement (Phase IV)
Atlantic Fleet Training and Testing
Connecticut Waters of Long Island Sound

Dear Mr. Busch:

The Connecticut State Historic Preservation Office (CT SHPO) has reviewed the Project Information prepared for the State of Connecticut as it pertains to the referenced activities. In 2018, CT SHPO provided comments on the final Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement and Overseas Environmental Impact Statement (EIS/OEIS). The AFTT is designed to maintain, train, and equip combat-ready naval forces through training and testing activities that include the use of sonar and explosives within existing range complexes and testing ranges. At that time, we concurred with the Navy that the proposed procedures, mitigation, and monitoring measures would sufficiently avoid harm to cultural resources and that no historic properties would be affected by the undertaking. We understand that the 2024 Supplemental EIS/OEIS includes activities that have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations; as well as activities proposed for new inshore locations that were not part of prior Section 106 consultations.

CT SHPO concurs with the Area of Potential Effect (APE) defined for the undertaking, which is the same as the Study Area identified in the Supplemental EIS/OEIS. The proposed locations off the coast of Connecticut include the following: the Narragansett Operating Area in the Northeast Range Complexes; Naval Undersea Warfare Development Center Newport Testing Range; portions of the Thames River; Naval Submarine Base New London in Groton; a commercial shipyard in Groton; the U.S. Coast Guard Station in New London; and other AFTT coastal waters, as needed. Our office appreciates the comprehensive consideration given to cultural and historic resources and it is our opinion that the procedures, mitigation, and monitoring measures will sufficiently avoid harm to cultural resources and no historic properties will be affected by the undertaking. With these precautions taken into consideration, CT SHPO concurs that the undertaking will have no adverse effect to historic properties.

Our office appreciates the opportunity to review and comment upon this project. Do not hesitate to contact Catherine Labadia, Staff Archaeologist and Deputy State Historic Preservation Officer, for additional information at (860) 500-2329 or catherine.labadia@ct.gov.

Sincerely,

Jonathan Kinney
State Historic Preservation Officer

450 Columbus Boulevard, Suite 5
Hartford, CT 06103
Phone: 860-500-2300

CTMakeItHere.com

L.6.3 DELAWARE

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/003
January 16, 2025

Ms. Suzanne Savery
Delaware State Historic Preservation Office
29 North State Street
Dover, Delaware 19901

Dear Ms. Savery:

As required by Section 106 of the National Historic Preservation Act (NHPA) and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the with Delaware State Historic Preservation Office (DE SHPO) regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. There are also activities proposed for new inshore locations that were not part of prior Section 106 consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Delaware include Delaware Bay and the Virginia Capes Range Complex. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Delaware.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Delaware. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/003
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Delaware would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:53:44 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

From: Briggs, Kara (DOS) <Kara.Briggs@delaware.gov>
Sent: Thursday, August 7, 2025 10:55 AM
To: Busch, Laura M CIV USN (USA) <laura.m.busch2.civ@us.navy.mil>
Cc: Carr, Sarah (DOS) <Sarah.Carr@delaware.gov>; Gormley, Jaime B CIV USN USFFC (USA) <jaime.b.gormley.civ@us.navy.mil>; Lay, Allison E CTR (USA) <allison.e.lay2.ctr@us.navy.mil>; Davis, Gwen (DOS) <Gwen.Davis@delaware.gov>
Subject: [Non-DoD Source] RE: US Navy Atlantic Fleet Training and Testing Section 106

Good Morning Laura,

Thank you for providing this confirmation, and inclusion of new information, regarding the proposed scope of work as follows:

- Civilian Port Defense activity will not include use of explosives.
- There would not be any on land activities.
- The activity may include placing inert mine shapes on the seafloor temporarily (no more than one week) that will be retrieved at the end of the exercise.

New information offered in your most recent email indicates that there may be there may be activities that interact with the seafloor to include placing objects on the sea floor. Such an action may count as a ground disturbing activity with the potential to adversely effect cultural resources.

According to the information provided, personnel will utilize the Protective Measures Assessment Protocol (PMAP) program to determine if the event is allowable in the location chosen and ensure cultural resources are avoided and not disturbed during the activity. DE SHPO has determined the avoidance plan as described is sufficient.

However, if at any time, a previously unidentified cultural resource (unknown wreck) is impacted you must stop work immediately and consult with our Office.

Thank you,
Kara

Kara A. Briggs
Architectural Historian
Tax Credit Program Manager
29 N. State Street| Dover, DE 19901
tel (302) 736-7400

1

L.6.4 FLORIDA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/004
January 16, 2025

Ms. Alissa Slade Lotane
Florida Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Dear Ms. Lotane:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Florida Division of Historical Resources regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Florida include the following: the Gulf of Mexico (GOMEX) Range Complex; Jacksonville (JAX) Range Complex; Key West Range Complex; Naval Station Mayport in Jacksonville, Florida; Port Canaveral in Cape Canaveral, Florida; Naval Surface Warfare Center, Panama City Division; South Florida Ocean Measurement Facility; portions of the St. Johns River, which is included in the JAX Range Complex Inshore; Truman Harbor and Demolition Key which are included in the Key West Range Complex Inshore; and St. Andrew Bay and Tampa Bay which are included in the GOMEX Range Complex Inshore. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Florida.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Florida. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/004
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Florida would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:34:21 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

FLORIDA DEPARTMENT of STATE

RON DESANTIS
Governor

CORD BYRD
Secretary of State

Mr. J.R. Cuadros
Director, Fleet Installations and Environment
Department of the Navy
U.S. Fleet Forces Command
1562 Mitscher Avenue Suite 250
Norfolk Va 23551-2487

February 19, 2025

RE: DHR Project File No.: 2025-385
Atlantic Fleet Training and Testing Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement Naval Support Activity

Dear Mr. Cuadros:

The Florida State Historic Preservation Officer reviewed the referenced project for possible effects on historic properties listed, or eligible for listing, in the *National Register of Historic Places.* The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966,* as amended and the *National Environmental Policy Act of 1969,* as amended.

Based on the information provided, our office concurs with your finding that the proposed undertaking should have no adverse effect on the historic properties.

If you have any questions, please contact Scott Edwards, Historic Preservationist, by electronic mail *scott.edwards@dos.fl.gov,* or at 850.245.6333 or 800.847.7278.

Sincerely,

Kelly L Chase
For

Alissa Slade Lotane
Director, Division of Historical Resources
and State Historic Preservation Officer

Division of Historical Resources
R.A. Gray Building • 500 South Bronough Street• Tallahassee, Florida 32399
850.245.6300 • 850.245.6436 (Fax) • FLHeritage.com

L.6.5 GEORGIA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/005
January 16, 2025

Mr. Christopher Nunn, Commissioner
Georgia Historic Preservation Division
60 Executive Park South, NE
Atlanta, Georgia 30329

Dear Mr. Nunn:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Georgia Historic Preservation Division regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Georgia include the following: the Jacksonville Range Complex, including both the Jacksonville and Charleston Operating Areas; Jacksonville Range Complex Inshore (including Kings Bay), Naval Submarine Base Kings Bay; Savannah, Georgia and Kings Bay, Georgia (for civilian port training exercises). In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Georgia.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Georgia. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/005
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may occur result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic properties is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Georgia would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
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Date: 2025.01.16 14:56:00 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

Brian P. Kemp
Governor

Christopher Nunn
Commissioner

GEORGIA DEPARTMENT *of* COMMUNITY AFFAIRS

February 14, 2025

J.R. Cuadros
Director, Fleet Installations & Environment; Deputy Chief of Staff
U.S. Fleet Forces Command
Department of the Navy
1562 Mitscher Avenue, Suite 250
Norfolk, Virginia 23551-2487
Attn: Laura Busch, Natural Resources Program Manager

RE: **USN: Atlantic Fleet Training & Testing Activities (AFTT), Atlantic Coast of Georgia Statewide, Georgia**
HP-231127-008

Dear Mr. Cuadros:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced project. Our comments are offered to assist the U.S. Department of the Navy in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of revised training and testing activities within or adjacent to Georgia territorial waters, including the Jacksonville Range Complex, the Jacksonville Range Complex Inshore, and the Naval Submarine Base Kings Bay. Based on the information provided and desktop research, HPD concurs that the subject project, as proposed, will have **no adverse effect** to historic properties within its area of potential effect (APE), as defined in 36 CFR Part 800.5(d)(1), due to the standard operating procedures and mitigation measures employed during training and testing activities.

This letter evidences consultation with our office for compliance with Section 106 of the NHPA. It is important to remember that any changes to this project as it is currently proposed may require additional consultation. HPD encourages federal agencies and project applicants to discuss such changes with our office to ensure that potential effects to historic properties are adequately considered in project planning.

Please refer to project number **HP-231127-008** in any future correspondence regarding this project. If we may be of further assistance, please contact me at Stacy.Rieke@dca.ga.gov or (470) 522-7979 or Noah Bryant, Compliance Review Archaeologist, at Noah.Bryant@dca.ga.gov or (404) 679-0649.

Sincerely,

Stacy Rieke, MHP
Program Manager
Environmental Review & Preservation Planning

60 Executive Park South, NE | Atlanta, GA 30329-2231 |404-679-4940 | dca.georgia.gov
An Equal Opportunity Employer

L.6.6 LOUISIANA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/006
January 16, 2025

Ms. Nicole Hobson-Morris, Executive Director
Louisiana State Historic Preservation Office
P.O. Box 44247
Baton Rouge, Louisiana 70804

Dear Ms. Hobson-Morris:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Louisiana State Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Additionally, there are some activities proposed for new inshore locations that were not included in previous Section 106 consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Louisiana include the Gulf of Mexico (GOMEX) Range Complex, specifically the New Orleans Operating Area; GOMEX Range Complex Inshore, which includes Lake Borgne, Atchafalaya Bay and Atchafalaya River; and the U.S. Coast Guard station in New Orleans, Louisiana. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Louisiana.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Louisiana. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/006
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Louisiana would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:37:14 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

No known historic properties will be affected by this undertaking. Therefore, our office has no objection to the implementation of this project. This effect determination could change should new information come to our attention.

Carrie Broussard

Carrie Broussard
State Historic Preservation Officer

Date 02/03/2025

.RTMENT OF THE NAVY

. FLEET FORCES COMMAND
MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/006
January 16, 2025

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:e

Dear Ms. Hobson-Morris:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Louisiana State Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Additionally, there are some activities proposed for new inshore locations that were not included in previous Section 106 consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Louisiana include the Gulf of Mexico (GOMEX) Range Complex, specifically the New Orleans Operating Area; GOMEX Range Complex Inshore, which includes Lake Borgne, Atchafalaya Bay and Atchafalaya River; and the U.S. Coast Guard station in New Orleans, Louisiana. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Louisiana.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Louisiana. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/006
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Louisiana would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

L.6.7 MAINE

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/009
January 16, 2025

Mr. Kirk Mohney
Director, Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, Maine 04333-0065

Dear Mr. Mohney:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with Maine Historic Preservation Commission regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Maine include the following: the Boston Operating Area in the Northeast Range Complexes; Portsmouth Naval Shipyard in Kittery, Maine; a commercial shipyard in Bath, Maine; and the U.S. Coast Guard Station in Southwest Harbor, Maine. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Maine.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Maine. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures,

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Ser N46/009
January 16, 2025

which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Maine would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:40:46 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

February 12, 2025

Ms. Laura Busch
US Fleet Forces
Environmental Readiness Division
1562 Mitscher Ave
Suite 250
Norfolk, VA 23551

Project: MHPC# 0133-25 Gulf of Maine; Various Locations
Atlantic Fleet Training and Testing Study Area
Town: Gulf of Maine, ME

Dear Ms. Busch:

In response to your recent request, I have reviewed the information received January 23, 2025 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I have concluded that there will be no historic properties (architectural or archaeological) affected by this proposed undertaking, as defined by Section 106.

Please contact Megan Rideout at (207) 287-2992 or megan.m.rideout@maine.gov if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132 FAX: (207) 287-2335

L.6.8 MARYLAND

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/008
January 16, 2025

Ms. Elizabeth Hughes, Director
Maryland Historical Trust
100 Community Place, Third Floor
Crownsville, Maryland 21032

Dear Ms. Hughes:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Maryland Historical Trust (MHT) regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The location where training and testing activities are proposed to occur off the coast of Maryland is the Virginia Capes Range Complex. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Maryland.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect submerged historic and cultural resources, which may occur in the jurisdictional waters of Maryland. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in

5090
Ser N46/008
January 16, 2025

designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Maryland would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:44:33 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

Busch, Laura M CIV USN (USA)

From: Maryland Historical Trust <donotreply@maryland.gov>
Sent: Monday, January 27, 2025 2:35 PM
To: Busch, Laura M CIV USN (USA)
Subject: [Non-DoD Source] MHT e106 project review – MHT Completed Comments

Date: January 27, 2025

To: Laura Busch
US Navy Fleet Forces Command

Project Name: Atlantic Fleet Training and Testing
County: Maryland, Statewide
Agency: Navy
Second Agency: -- Not noted --
MHT Log #: 202500584

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

The undertaking will have no adverse effect on historic properties. Additional consultation with our office may be required if there are any significant changes in project scope or location.

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

Dixie Henry dixie.henry@maryland.gov

Troy Nowak troy.nowak@maryland.gov

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

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MHT.Maryland.gov
Planning.Maryland.gov

L.6.9 MASSACHUSETTS

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/007
January 16, 2025

Ms. Brona Simon, Executive Director
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Dear Ms. Simon:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Massachusetts Historical Commission regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Massachusetts include the following: Northeast Range Complexes to include the Boston and Narragansett Bays Operating Areas; Naval Undersea Warfare Center Division, Newport Testing Range; and the U.S. Coast Guard Station and civilian port in Boston, Massachusetts. In addition, some activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Massachusetts.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Massachusetts. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures,

5090
Ser N46/007
January 16, 2025

which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

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The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Massachusetts would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
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J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

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MASS. HIST. COMM
RE. 54094

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/007
January 16, 2025

CONCURRENCE. Brona Simon
2/20/25
BRONA SIMON
STATE HISTORIC
PRESERVATION OFFICER
MASSACHUSETTS
HISTORICAL COMMISSION

Ms. Brona Simon, Executive Director
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Dear Ms. Simon:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Massachusetts Historical Commission regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Massachusetts include the following: Northeast Range Complexes to include the Boston and Narragansett Bays Operating Areas; Naval Undersea Warfare Center Division, Newport Testing Range; and the U.S. Coast Guard Station and civilian port in Boston, Massachusetts. In addition, some activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Massachusetts.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Massachusetts. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures,

5090
Ser N46/007
January 16, 2025

which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Massachusetts would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:44:02 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

L.6.10 MISSISSIPPI

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/010
January 16, 2025

Ms. Katie Blount, Director
Mississippi Department of Archives and History
P.O. Box 571
Jackson, Mississippi 39205-0571

Dear Ms. Blount:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with Mississippi Department of Archives and History (MDAH) regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. There are also activities proposed for new inshore locations that were not part of prior Section 106 consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Mississippi include the following: the Gulf of Mexico (GOMEX) Range Complex; GOMEX Range Complex Inshore, which includes the Pascagoula River; the civilian ports of Gulfport and Pascagoula; and a commercial shipyard in Pascagoula, Mississippi. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Mississippi.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of Mississippi. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

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Ser N46/010
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

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The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Mississippi would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:41:14 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

MDAH
MISSISSIPPI DEPARTMENT OF ARCHIVES & HISTORY

P.O. Box 571
Jackson, MS 39205-0571
601-576-6850
mdah.ms.gov

February 26, 2025

Ms. Laura Busch
US Navy
1562 Mitscher Avenue, Suite 250
Norfolk, Virginia 23551

RE: Proposed Activities for the Atlantic Fleet Training and Testing, (Navy) MDAH Project Log #02-018-25, Multiple Counties

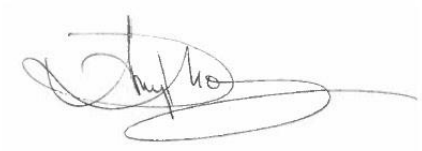
Dear Ms. Busch:

We have reviewed the request for cultural resources assessment, received on January 30, 2025, for the above referenced project in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800.

After reviewing the information provided, MDAH concurs that the proposed work will have no adverse effect to historic resources. However, if any cultural materials such as pottery, nails, glass, stone tools such as arrowheads, or animal bones are encountered, all work should cease, and the Chief Archaeologist shall be notified within 24 hours so that the appropriate descendant communities can be consulted for a path forward in accordance with state and federal law. Should submerged cultural resources be encountered, MDAH requests notification to determine a path forward in accordance with state and federal law. With this condititon, we have no objection with the proposed undertaking.

Should there be additional work in connection with the project, or any changes in the scope of work, please let us know in order that we may provide you with appropriate comments in compliance with the above referenced regulations. If you have any questions, please do not hesitate to contact us at (601) 576-6940.

Sincerely,



Amy D. Morgan
Review and Compliance Officer

FOR: Katie Blount
State Historic Preservation Officer

Board of Trustees: Spence Flatgard, *president* | Nancy Carpenter, *vice president* | Reginald Buckley | Carter Burns | Betsey Hamilton | Mark E. Keenum | Lucius M. Lampton | TJ Taylor

L.6.11 NEW HAMPSHIRE

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/012
January 16, 2025

Mr. Benjamin Wilson, Director
New Hampshire Division of Historical Resources
172 Pembroke Road
Concord, New Hampshire 03301

Dear Mr. Wilson:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with New Hampshire Division of Historical Resources regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV) published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of New Hampshire include the Northeast Range Complexes, including the Boston Operating Area, and Portsmouth Naval Shipyard in Kittery, Maine. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of New Hampshire.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect submerged historic and cultural resources, which may occur in jurisdictional waters of New Hampshire. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as

5090
Ser N46/012
January 16, 2025

detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of New Hampshire would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:43:32 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

EMMIT+

Project Record
Review & Compliance
2025PR00092

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

Atlantic Fleet Training and Testing

At-sea training and Testing

Agencies

US NAVY (US NAVY) - Primary: Yes, Program-Permit: NA/NA

Project Contacts

Laura Busch - laura.m.busch2.civ@us.navy.mil
Laura Busch - laura.busch.navy@gmail.com

Towns

No Towns Available

Review and Compliance

Type
Federal Section 106 Review

Present Land Use
None

Past Land Use and Disturbances
Nond

Project Address
No address

Location Description
State waters beginning at mean high water mark

APE Description
State waters beginning at mean high water mark

APE Justification
State jurisdiction

APE Acreage
Not Available

Project Includes Construction: No
Project Includes Demolition: No
Project Includes Disposition/Transfer: No
Project Includes Rehabilitation: No
Project Includes Refinancing: No
Ground Disturbance: No
One or More Above Ground Resources 45 Years or Older: No

Associated Resources

This report was printed on **2/24/2025** at **5:38 PM** and reflects the data record at the time of printing. Real-time data is subject to change. 1 / 4

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Project Record
Review & Compliance
2025PR00092

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

1) 2003RE01114 - Star Fort
2) 2008RE00369 - Star Island Meetinghouse
3) 2016RE00302 - Isles of Shoals

Associated Surveys

No Surveys Available

Agreements

No Agreements Available

Documents

1) Navy AFTT Transmittal Letter - Requests consultation
2) Navy AFTT Enclosure - Activity Description
3) DHR Effect Finding Letter for 2025PR00092 - Effect Finding rendered as No Adverse Effect

Photos (0)

No Photos Available

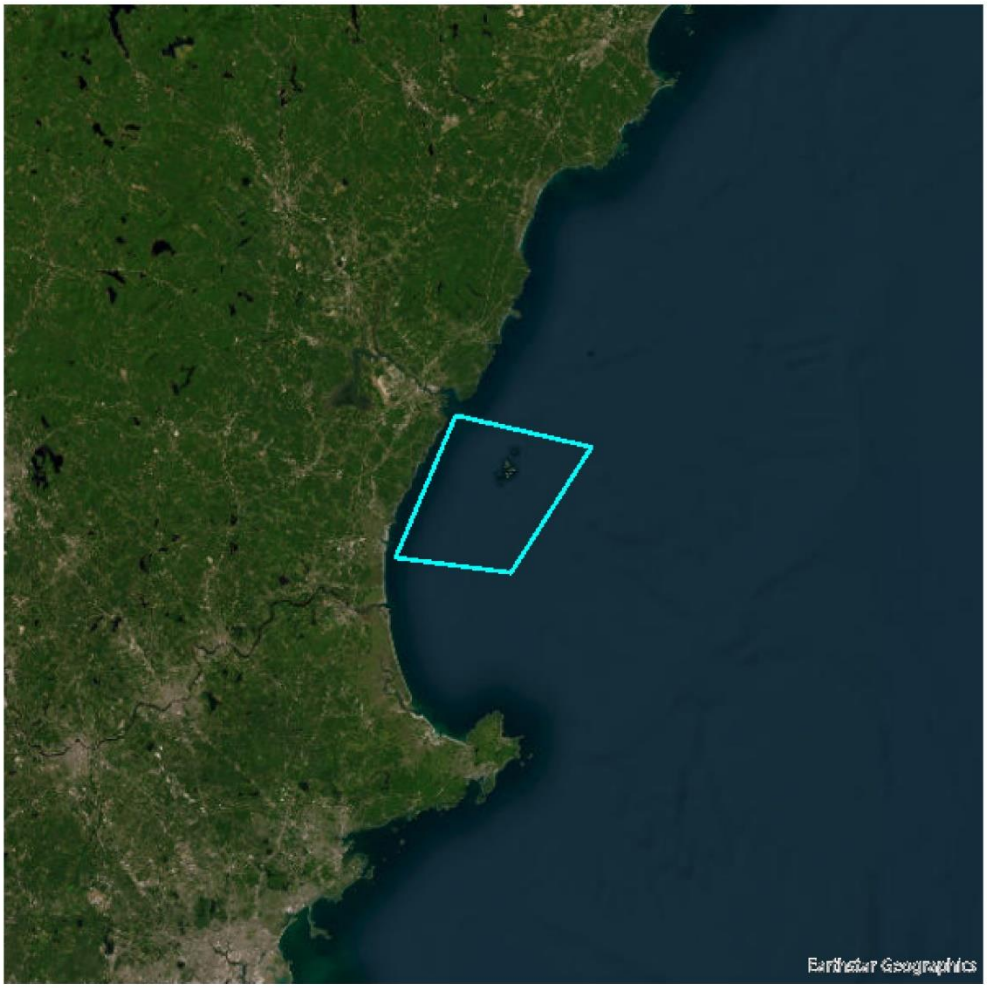
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EMMIT+

Project Record
Review & Compliance
2025PR00092

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

APE Boundary



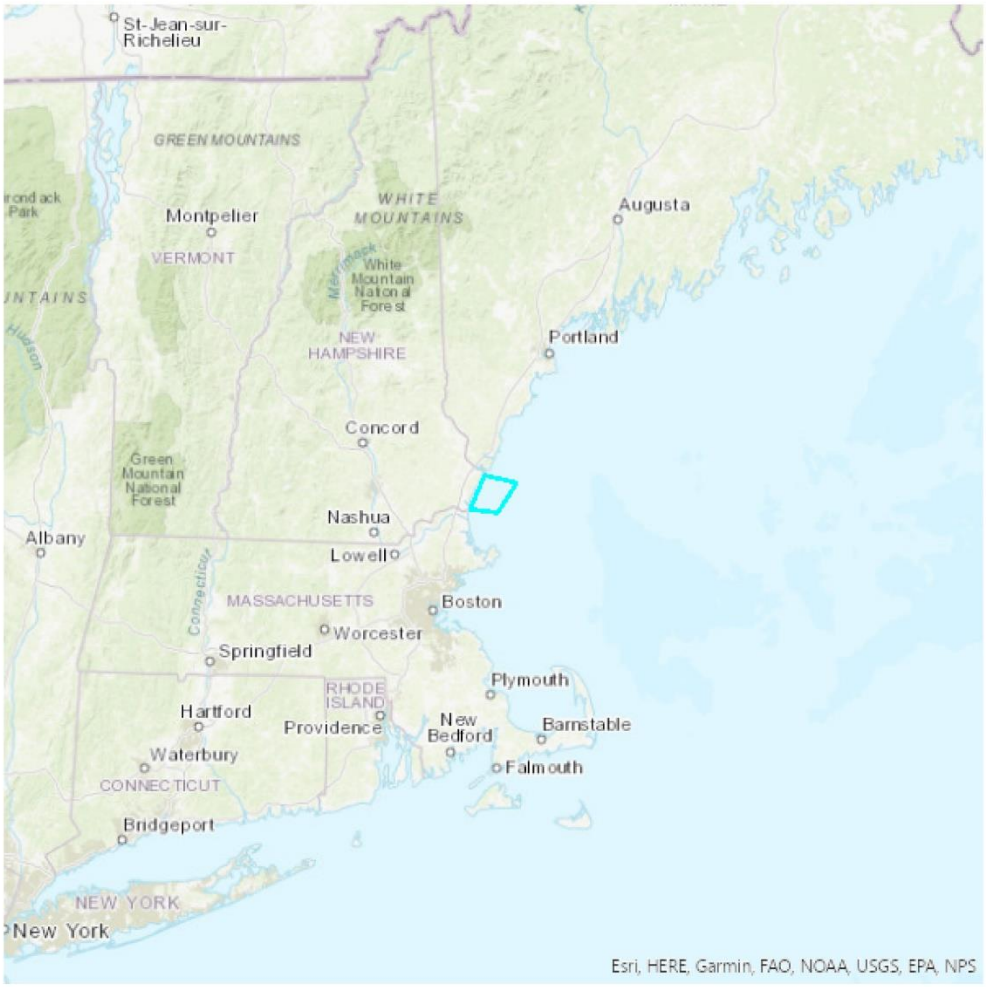
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Project Record
Review & Compliance
2025PR00092

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

Map Overview



This report was printed on **2/24/2025** at **5:38 PM** and reflects the data record at the time of printing. Real-time data is subject to change. 4 / 4

L.6.12 NEW JERSEY

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/013
January 16, 2025

Ms. Katherine Marcopul, Administrator
New Jersey Historic Preservation Office
Mail Code 501-04B, P.O. Box 420
Trenton, New Jersey 08625-0420

Dear Ms. Marcopul:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with New Jersey Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV) published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of New Jersey include the following: the Northeast Range Complexes, including the Narragansett Bay Operating Area (OPAREA) and Atlantic City OPAREA; Delaware Bay; Earle, New Jersey; and the U.S. Coast Guard Station in Atlantic City, New Jersey. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of New Jersey.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of New Jersey. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/013
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of New Jersey would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:49:23 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

HPO Project # 25-0663-1
HPO-B2025-195

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/013
January 16, 2025

Ms. Katherine Marcopul, Administrator
New Jersey Historic Preservation Office
Mail Code 501-04B, P.O. Box 420
Trenton, New Jersey 08625-0420

Dear Ms. Marcopul:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with New Jersey Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV) published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of New Jersey include the following: the Northeast Range Complexes, including the Narragansett Bay Operating Area (OPAREA) and Atlantic City OPAREA; Delaware Bay; Earle, New Jersey; and the U.S. Coast Guard Station in Atlantic City, New Jersey. In addition, activities occurring in **"Other AFTT Areas" have the potential to occur in the coastal waters of New Jersey**.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of New Jersey. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

HPO Project # 25-0663-1
HPO-B2025-195
5090
Ser N46/013
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of New Jersey would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:49:23 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

As proposed, the project will **not adversely affect** historic properties. Pursuant to 800.5(c), if no consulting parties object to this finding within the 30-day review period, the project may proceed, as proposed, unless resources are discovered during project implementation, pursuant to 800.13.

Katherine J. Marcopul 2/21/2025

Katherine J. Marcopul Date
Deputy State Historic Preservation Officer **NAE**

2

L.6.13 NEW YORK

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/014
January 16, 2025

Mr. Daniel Mackay
Deputy Commissioner
New York State Historic Preservation Office
P.O. Box 189
Waterford, New York 12188

Dear Mr. Mackay:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with New York State Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of New York include the following: Northeast Range Complexes, to include the Narragansett Bay Operating Area; Northeast Range Complexes Inshore, to include Block Island Sound; and the U.S. Coast Guard Station in Montauk, New York. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of New York.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of New York. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/014
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of New York would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2025.01.16 14:50:18 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

L.6.14 NORTH CAROLINA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/011
January 16, 2025

Ms. Ramona Bartos
Administrator, North Carolina State Historic Preservation Office
Mail Service Center 4617
Raleigh, North Carolina 27699

Dear Ms. Bartos:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with North Carolina State Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

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The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of North Carolina include the following: Virginia Capes Range Complex and associated Operating Areas (OPAREAs); Jacksonville Range Complex and associated OPAREAs (Charleston OPAREA); Navy Cherry Point Range Complex; the inland waters of Wilmington, North Carolina, and Morehead City, North Carolina; and the U.S. Coast Guard Station in Elizabeth City, North Carolina. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of North Carolina.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in the jurisdictional waters of North Carolina. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/011
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of North Carolina would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
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Date: 2025.01.16 14:41:44 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

North Carolina Department of Natural and Cultural Resources
State Historic Preservation Office
Ramona M. Bartos, Administrator

Governor Josh Stein
Secretary Pamela B. Cashwell

Office of Archives and History
Deputy Secretary Darin J. Waters, Ph.D.

August 12, 2025

Laura Busch
Department of the Navy
U.S. Fleet Forces Command
1562 Mitscher Avenue, Suite 250
Norfolk, VA 23551

laura.m.busch2.civ@us.navy.mil

Re: Atlantic Fleet Training and Testing (AFTT) activities, offshore North Carolina, ER 24-2039

Dear Ms. Busch:

Thank you for your letter of January 24, 2025, regarding the above-referenced undertaking. We have reviewed the submission and offer the following comments.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of North Carolina would occur from the activities analyzed within the project information package. We concur with this assessment. Based on available information, there is a low probability any maritime sites potentially eligible for NRHP listing will be affected by the proposed project.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-814-6579 or environmental.review@dncr.nc.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona Bartos, Deputy
State Historic Preservation Officer

Location: 109 East Jones Street, Raleigh NC 27601 **Mailing Address:** 4617 Mail Service Center, Raleigh NC 27699 4617 **Telephone/Fax:** (919) 814 6570/814 6898

L.6.15 RHODE ISLAND

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/015
January 16, 2025

Mr. Jeffrey Emidy
Executive Director
Rhode Island Historical Preservation & Heritage Commission
1 Capitol Hill, Suite 201
Providence, Rhode Island 02908

Dear Mr. Emidy:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with Rhode Island Historical Preservation & Heritage Commission regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV) published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Rhode Island include the following: the Northeast Range Complexes, specifically, the Narragansett Bay Operating Area; Naval Undersea Warfare Center Division, Newport Testing Range; Northeast Range Complexes Inshore, to include Block Island Sound, Rhode Island Sound, and Narragansett Bay; Naval Station Newport; and the U.S. Coast Guard Station in Newport, Rhode Island. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Rhode Island

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of Rhode Island. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/015
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

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The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Rhode Island would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:45:12 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

STATE OF RHODE ISLAND

HISTORICAL PRESERVATION & HERITAGE COMMISSION

Old State House 150 Benefit Street Providence, RI 02903

Telephone 401-222-2678 Fax 401-222-2968
TTY 401-222-3700 www.preservation.ri.gov

18 February 2025

Jorge Cuadros
Director, Fleet Installations and Environment
Dept. of the Navy, US Fleet Forces Command
1562 Mitscher Ave., Suite 250
Norfolk VA 23551

Via email to Laura Busch
US Fleet Forces
Environmental Readiness Division
laura.m.busch2.civ@us.navy.mil

Re: Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV)

Dear Mr. Cuadros:

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the above-referenced Atlantic Fleet Training and Testing activites to be conducted within Rhode Island waters.

We concur that the proposed activities will have no effect on any significant cultural resources (those listed in, or eligible for listing in, the National Register of Historic Places) located within Rhode Island waters.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact Elizabeth Totten, Project Review Coordinator, or Charlotte Taylor, archaeologist at this office.

Very truly yours,

Jeffrey D. Emidy
Executive Director
State Historic Preservation Officer

250218.07

L.6.16 SOUTH CAROLINA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/016
January 16, 2025

Dr. W. Eric Emerson, Director
South Carolina State Historic Preservation Office
8301 Parklane Road
Columbia, South Carolina 29223

Dear Dr. Emerson:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with South Carolina State Historic Preservation Office regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV) published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of South Carolina include the following: Jacksonville Range Complex; Jacksonville Range Complex Inshore, to include portions of the Cooper River; and the U.S. Coast Guard Station in Charleston South, Carolina. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of South Carolina.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of South Carolina. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures,

5090
Ser N46/016
January 16, 2025

which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic properties may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic properties is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic properties within the jurisdictional waters of South Carolina would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic properties within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:46:42 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

From: Spirek, Jim <SPIREKJ@mailbox.sc.edu>
Sent: Thursday, April 24, 2025 10:53 AM
To: Busch, Laura M CIV USN (USA) <laura.m.busch2.civ@us.navy.mil>
Cc: Larsen, Robert <RLarsen@scdah.sc.gov>; Krater, Wyatt <WKRATER@mailbox.sc.edu>
Subject: [Non-DoD Source] Re: Atlantic Fleet Training & Testing Study Area (AFTT) - 2025 Update

Ms. Busch,

We have reviewed the materials that you have provided concerning the above project. We concur with the proposed mitigation efforts to avoid adverse impacts to submerged cultural resources within state waters. In the event of potential damage to a shipwreck or other archaeological features please contact the SHPO or my office for further guidance. Also, for a more complete listing of shipwrecks within the AFTT's boundaries in Federal waters please consult the Bureau of Ocean Energy Management's Atlantic Shipwreck Database. Find the BOEM contact information below to request access to the database. If you need any additional information, please contact me or Wyatt Krater. Good luck with conducting safe operations.

renewable_reporting@boem.gov
OREP/Atlantic Regional Historic Preservation Officer
Bureau of Ocean Energy Management
Office of Renewable Energy
45600 Woodland Road,
Sterling, Virginia 20166
703-787-1549

Jim

James D. Spirek
State Underwater Archaeologist
Maritime Research Division
South Carolina Institute of Archaeology and Anthropology
College of Arts and Sciences
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1321 Pendleton Street
Columbia SC 29208 USA
Phone: (803) 576-6566
Fax: (803) 254-1338
E-mail: spirek@sc.edu
Maritime Research Division Website: http://artsandsciences.sc.edu/sciaa/mrd/
Follow MRD on Facebook: @MaritimeResearchDivision
Follow MRD on Instagram: @MaritimeResearchDivision
SCIAA Website: http://www.cas.sc.edu/sciaa/
Follow SCIAA on Facebook: @SCIAAOfficial



UNIVERSITY OF
SOUTH CAROLINA

L.6.17 TEXAS

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/017
January 16, 2025

Mr. John L. Nau, III, Chairman
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711

Dear Mr. Nau:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Texas Historical Commission regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Texas include the following: the Gulf of Mexico Range Complex, including the Corpus Christi Operating Area; the civilian ports of Beaumont and Corpus Christi, Texas; and the U.S. Coast Guard Station in Corpus Christi, Texas. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Texas.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of Texas. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures,

5090
Ser N46/017
January 16, 2025

which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

While unintentional impacts to known historic and cultural resources may result from some activities involved in the Proposed Action, the Action Proponents believe such impacts are unlikely due to the standard operating procedures and avoidance measures in place. Additionally, the Action Proponents believe the likelihood of impacts on unidentified historic and cultural resources is very low. However, in accordance with the provisions found in 36 Code of Federal Regulations Section 800.13, the Action Proponents will promptly initiate consultation with your office if submerged historic and cultural resources are discovered.

The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Texas would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
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Date: 2025.01.16 14:47:04 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

TEXAS HISTORICAL COMMISSION
REAL PLACES TELLING REAL STORIES

P.O. Box 12276
Austin, Texas 78711-2276
512-463-6100
thc.texas.gov

July 8, 2025

Laura Busch
U.S. Fleet Forces Command
1562 Mitscher Avenue, Suite 250
Norfolk, VA 23551-2487

Re: Project review under Section 106 of the National Historic Preservation Act of 1966 and the Antiquities Code of Texas
Atlantic Fleet Training and Testing Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement
THC Tracking No. 202507485, 202512116

Dear Ms. Busch,

Thank you for your correspondence describing the above-referenced project. This letter serves as comment on the proposed federal undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC). As the state agency responsible for administering the Antiquities Code of Texas, these comments also provide recommendations on compliance with state antiquities laws and regulations.

The THC Archeology Division review staff, led by State Marine Archeologist Amy Borgens, has completed the review of the Atlantic Fleet Training and Testing (AFTT) Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement. On 12 March 2025, the THC requested additional information about AFTT training tasks that might introduce impacts to the seafloor within the Corpus Christi Operating Area (OPAREA). There are nearly 2,000 shipwrecks reported in Texas waters, of which approximately 10% have been detected and are recorded archeological sites. The Corpus Christi OPAREA has many underwater archeological sites including those associated with the Mansfield Cut Underwater Archeological National Register District.

Coordination with the Naval Facilities Engineering Systems Command Atlantic (NAVFAC) confirmed that some AFTT tasks may introduce ground-disturbing impacts. As part of this consultation, the THC offered to provide NAVFAC with a shapefile delineating areas that contain significant archeological sites requiring avoidance. According to NAVFAC, this sensitive information would be made available for planning purposes in the Navy classified mitigation software Protective Measures Assessment Protocol (PMAP) to ensure avoidance of the protected underwater archeological sites. The polygons created by the THC intentionally depict large areas, drawn along the Texas General Land Office track boundaries, to conceal specific site locations which are protected and restricted information. The shapefile "THC Avoidance Areas" was created in consultation with and approved by Bradford Jones, State Archeologist and Director of the Division of Archeology at the THC. It was provided to NAVFAC in an email on 17 June 2025. The THC concurs that the AFTT introduces no adverse effects to historic properties on the condition that the THC-specified areas presented in the "THC Avoidance Areas" shapefile are avoided.

Thank you for your cooperation in this federal and state review process, and for your efforts to preserve the

Atlantic Fleet Training and Testing, THC Tracking No. 202512116

irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Amy Borgens at amy.borgens@thc.texas.gov/737-329-5898.**

Sincerely,

for Brad Patterson, Chief Deputy State Historic Preservation Officer
Deputy Executive Director, Texas Historical Commission
BP/ab

L.6.18 VIRGINIA

DEPARTMENT OF THE NAVY

U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/018
January 16, 2025

Ms. Julie Langan
Director, Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221

Dear Ms. Langan:

As required by Section 106 of the National Historic Preservation Act and in support of the National Environmental Policy Act, the United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), in cooperation with the U.S. Coast Guard as Joint Lead Agency (referred to as the Action Proponents), intends to update its consultation with the Virginia Department of Historic Resources regarding activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. The Action Proponents previously analyzed the potential environmental impacts of its pierside and at-sea training and testing activities in the western Atlantic Ocean and the Gulf of Mexico in the 2013 (Phase II) and 2018 (Phase III) AFTT Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS). The Action Proponents are currently supplementing the 2018 Final AFTT EIS/OEIS with the 2024 Draft AFTT Supplemental EIS/OEIS (Phase IV); published on September 20, 2024.

The enclosed project information package details the proposed training and testing activities for this phase of the undertaking. Most of the activities are similar to those discussed in the 2013 and 2018 EIS/OEISs, with no significant change in their potential effects. However, some activities have either increased or decreased in scope, been reclassified, or slightly modified since the previous consultations. Note that the 2024 Draft AFTT Supplemental EIS/OEIS assesses all proposed training and testing activities, not just those that have changed since the 2018 Final AFTT EIS/OEIS.

The project information package includes a description of the AFTT Study Area, which functions as the area of potential effects (APE). The locations where training and testing activities are proposed to occur off the coast of Virginia include the following: the Virginia Capes (VACAPES) Range Complex; VACAPES Range Complex Inshore (which includes the lower Chesapeake Bay, portions of the James River and tributaries, portions of the York River, and Broad Bay); Naval Station Norfolk in Norfolk, Virginia; Norfolk Naval Shipyard in Portsmouth, Virginia; Joint Expeditionary Base Little Creek-Fort Story in Virginia Beach, Virginia; U.S. Coast Guard Stations in Portsmouth and Virginia Beach, Virginia; and, a commercial shipyard in Newport News, Virginia. In addition, activities occurring in "Other AFTT Areas" have the potential to occur in the coastal waters of Virginia.

The project information package details the Action Proponents' efforts to identify historic and cultural resources within the APE, utilizing databases of known in-water resources maintained by various agencies and interested organizations. This information, combined with data from prior consultations, was used to update this current consultation.

The project information package describes how the undertaking could affect both known and unidentified historic and cultural resources within the APE. Navy analysis identified explosives and physical disturbance as stressors that have the potential to affect historic and cultural resources, which may occur in jurisdictional waters of Virginia. A complete assessment of the potential impacts on historic and cultural resources due to training and testing activities can be found in the final versions of the 2013 and 2018 AFTT EIS/OEIS.

5090
Ser N46/018
January 16, 2025

The project information package describes the Action Proponents' methods used to avoid and minimize effects to historic and cultural resources. The Action Proponents follow standard operating procedures, which ensure safety and mission success, but also potentially provide secondary benefits to historic and cultural resources during training and testing activities. For instance, underwater detonation training occurs in designated areas, reducing the potential for interactions with historic and cultural resources, as detailed in section 2.3.3.9 of the 2018 Final AFTT EIS/OEIS (Underwater Detonation Safety). The Action Proponents also designed mitigation measures to avoid potential impacts from the Proposed Action. Section 5.7.2 of the 2024 Draft AFTT Supplemental EIS/OEIS details mitigation measures for artificial reef, live hard bottom, submerged aquatic vegetation, and shipwrecks. As an example, the Action Proponents will avoid precision anchoring within the anchor swing diameter and refrain from conducting explosive mine countermeasure and neutralization activities within 350 yards (320 meters) of shipwrecks to ensure protection of historic and cultural resources.

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The Action Proponents have determined that no adverse effect to historic and cultural resources within the jurisdictional waters of Virginia would occur from the activities analyzed within the project information package. We request your concurrence with our finding of no adverse effect to historic and cultural resources within 30 days of receipt of this letter. My point of contact for this matter is Ms. Laura Busch, who may be reached at (757) 836-8471 or laura.m.busch2.civ@us.navy.mil.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162
Digitally signed by CUADROS.JORGE.RICARDO.1186806162
Date: 2025.01.16 14:48:31 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: Project Information Package

2

From: Bellville-marrion, Jennifer (DHR) <Jennifer.Bellville-Marrion@dhr.virginia.gov>
Sent: Wednesday, June 25, 2025 2:45 PM
To: Busch, Laura M CIV USN (USA) <laura.m.busch2.civ@us.navy.mil>
Subject: [Non-DoD Source] Re: Atlantic Fleet Training and Testing (DHR File No. 2025-3140)

Ms. Busch,

Thank you for requesting comments from the Department of Historic Resources (DHR) on the referenced project, Atlantic Fleet Training and Testing (DHR File No. 2025-3140). Based upon the documentation provided, it is our opinion that the historic properties within the Area of Potential Effects (APE) will not be adversely affected by the proposed undertaking.

Implementation of the undertaking in accordance with the finding of *No Adverse Effects* as documented fulfills the Federal agency's responsibilities under Section 106 of the National Historic Preservation Act. If the scope of the undertaking changes or if the undertaking cannot be completed as proposed in the application submitted and reviewed by DHR, please contact our office for guidance on reinitiating consultation under Section 106.

If you have any questions or require any further assistance, please contact me.

Sincerely,

DHR
VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

Jenny Bellville-Marrion
Archaeologist - Review and Compliance
Department of Historic Resources

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L.7 NATIONAL MARINE SANCTUARIES ACT

As part of the Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) process, and in accordance with Section 304 (d) of the National Marine Sanctuaries Act, the Navy submitted a Sanctuary Resource Statement in November of 2024 to initiate consultation for the training and testing activities occurring within the Gulf of America and Atlantic Ocean as described in the Draft Supplemental EIS/OEIS. The Sanctuary Resource Statement further describes the proposed activities and study area, and provides the specific information required by the Office of National Marine Sanctuaries for consultation.

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/397
November 20, 2024

Ms. Vicki Wedell
NOAA Office of National Marine Sanctuaries
National Permit Coordinator
1305 East-West Highway (N/ORM6)
Silver Spring, MD 20910-3282

Dear Ms. Wedell:

In accordance with Section 304(d) of the National Marine Sanctuaries Act, the United States Navy (Navy) and United States Coast Guard (the Action Proponents) have prepared the enclosed Sanctuary Resource Statement to initiate consultation for training and testing activities associated with Atlantic Fleet Training and Testing (AFTT) activities occurring within the Atlantic Ocean and Gulf of Mexico. These activities comprise the proposed action as described in the AFTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement released in September 2024.

The proposed action may incidentally expose marine resources that reside within Stellwagen Bank, Gray's Reef, and Florida Keys National Marine Sanctuaries and the Hudson Canyon Proposed National Marine Sanctuary to sound and other environmental stressors associated with training and testing activities. The Sanctuary Resource Statement further describes the AFTT activities and study area, and provides the specific information required by the Office of National Marine Sanctuaries for consideration for this consultation.

We appreciate your continued support in helping the Navy to meet its environmental responsibilities. Please direct any questions to Ms. Jaime Gormley (757) 836-9099.

Sincerely,

CUADROS.JORGE.RICARDO.1186806162 Digitally signed by CUADROS.JORGE.RICARDO.1186806162 Date: 2024.11.20 07:55:53 -05'00'

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of National Marine Sanctuaries
Eastern Regional Office
1305 East West Highway
Silver Spring, MD 20910

January 23, 2025

Ms. Jaime Budzynkiewicz Gormley
Marine/Natural Resources Manager, N46544
Scientific Resources Branch
U.S. Fleet Forces Command
1562 Mitscher Ave., Ste 250
Norfolk, Virginia 2355

Ms. Jolie Harrison
NOAA National Marine Fisheries Service
Office of Protected Resources, Permits and Conservation Division
1315 East West Highway
Silver Spring, Maryland 20910

Dear Ms. Gormley and Ms. Harrison:

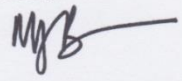
On December 3, 2024, the National Oceanic and Atmospheric Administration (NOAA) Office of National Marine Sanctuaries (ONMS) received the U.S. Department of the Navy and NOAA National Marine Fisheries Service (NMFS) Sanctuary Resource Statement (SRS) and request to initiate consultation under section 304(d) of the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1434(d)) for Atlantic Fleet Testing and Training (AFTT) Phase IV activities occurring within the Gulf of Mexico and Atlantic Ocean. The testing and training activities analyzed therein comprise of the proposed action as described in the AFTT Draft Environmental Impact Statement/Draft Overseas Environmental Impact Statement published in September 2024.

Pursuant to section 304(d) of the NMSA, ONMS conducted a review of the AFTT Phase IV SRS and finds that it is sufficient for Stellwagen Bank, Gray's Reef, and Florida Key national marine sanctuaries for the purposes of making an injury determination and developing recommended alternatives. The next step in the consultation process is for ONMS to evaluate whether sanctuary resources are likely to be injured by the proposed action and, if so, to develop any necessary reasonable and prudent alternatives to protect sanctuary resources. ONMS will complete this work within 45 days of the date of this letter, and no later than March 10, 2025, unless another date is agreed to.

We appreciate the preliminary analysis on the effect of Navy/NMFS activities on the proposed Hudson Canyon National Marine Sanctuary. This information will be very helpful to inform a future consultation of the effects of Navy's ongoing training and testing activities if this sanctuary is designated. Should NOAA publish a final rule designating the new sanctuary, we would suggest that Navy and NMFS formally initiate section 304(d) consultation for that sanctuary. Navy and NMFS are welcome to rely on the preliminary analysis in the 2024 SRS to the extent it remains accurate, along with any new information that is necessary for ONMS to fully evaluate the potential to destroy, cause the loss of, or injure any sanctuary resources (or may affect the resources of Stellwagen Bank National Marine Sanctuary) and develop ONMS recommended alternatives to protect sanctuary resources.

If you have any questions, please contact Vicki Wedell at vicki.wedell@noaa.gov.

Sincerely,



Matt Brookhart, Regional Director

APPENDIX M
PUBLIC INVOLVEMENT AND DISTRIBUTION

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

M PUBLIC INVOLVEMENT AND DISTRIBUTION M-1

M.1 Project Website M-1

M.2 Scoping Period M-1

M.2.1 Public Scoping Notification M-1

M.2.1.1 Notification Letters M-1

M.2.1.2 Scoping Email M-4

M.2.1.3 Newspaper Advertisements M-4

M.2.2 Public Scoping Comments M-8

M.3 Notification of Availability of Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement M-36

M.3.1 Notification of Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and Public Meetings M-36

M.3.1.1 Notification Letters M-36

M.3.1.2 Stakeholder Postcard M-45

M.3.1.3 Newspaper Advertisements M-45

M.3.2 Public Meetings M-50

M.3.3 Distribution of Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement M-50

M.3.4 Comments on the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement M-51

M.3.4.1 Comment Response Process M-51

List of Figures

Figure M.2-1: Stakeholder Scoping Notification Letter M-5

Figure M.2-2: Stakeholder Scoping Email M-6

Figure M.2-3: Newspaper Announcement of Scoping M-8

Figure M.2-4: Virginia Department of Environmental Quality Comment M-11

Figure M.2-5: Federal Aviation Administration Comment M-15

Figure M.2-6: Private Individual (3) Comment M-18

Figure M.2-7: Texas Historical Commission Comment M-19

Figure M.2-8: Private Individual (4) Comment M-21
Figure M.2-9: New Jersey Department of Environmental Protection, Office of Permitting and Project Navigation Comment M-22
Figure M.2-10: Congressman Seth Moulton Comment M-23
Figure M.2-11: Private Individual (6) Comment M-24
Figure M.2-12: Maine Historic Preservation Commission Comment M-25
Figure M.2-13: New Hampshire Division of Historical Resources Comment M-26
Figure M.2-14: Turtle Island Restoration Network Comment M-27
Figure M.3-1: Stakeholder Letter for the Notification of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement M-40
Figure M.3-2: Stakeholder Postcard M-46
Figure M.3-3: Newspaper Announcement of Notification of Availability of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and Announcement of Public Meetings M-49
Figure M.3-4: Virginia Department of Environmental Quality Comment M-92
Figure M.3-5: Marine Mammal Commission Comment M-111
Figure M.3-6: U.S. Environmental Protection Agency Comment M-143
Figure M.3-7: U.S. Department of the Interior Comment M-148
Figure M.3-8: Louisiana Office of Coastal Zone Management Comment M-150
Figure M.3-9: Massachusetts Office of Coastal Zone Management Comment M-152
Figure M.3-10: Turtle Island Restoration Network Comment M-153
Figure M.3-11: Florida State Clearinghouse Comment M-162
Figure M.3-12: Private Individual (1) Comment M-169
Figure M.3-13: Private Individual (2) Comment M-170

List of Tables

Table M.2-1: Entities that Received the Scoping Notification Letter M-2
Table M.2-2: Newspaper Announcements of Scoping Period M-7
Table M.2-3: Scoping Comments M-9
Table M.3-1: Entities that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Notification Letter M-37
Table M.3-2: Newspaper Announcements of Notification of Availability of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and Announcement of Public Meetings M-48
Table M.3-3: Repositories that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement M-50
Table M.3-4: Public Comments and Responses M-52

M PUBLIC INVOLVEMENT AND DISTRIBUTION

This appendix describes the efforts to involve the public in preparing this Supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), including distribution of the Draft EIS/OEIS.

M.1 PROJECT WEBSITE

A public website was established for this project: https://www.nepa.navy.mil/aftteis. This website address was published in the Notice of Intent to Prepare a Supplement to the 2018 *Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (hereinafter referred to as the 2018 Final EIS/OEIS) (Appendix N, Federal Register Notices). It was subsequently reprinted in newspaper advertisements, agency letters, emails, and postcards for the Notice of Intent and the Notice of Availability of the Draft Supplemental EIS/OEIS. The scoping fact sheets, public meeting fact sheets, technical reports, and various other materials are available on the project website and were made available throughout the course of the project.

M.2 SCOPING PERIOD

The public scoping period began with issuance of the Notice of Intent in the *Federal Register* on November 17, 2023. This notice included a project description, website address, and instructions on how to provide comments. The scoping period lasted 30 days, concluding on December 16, 2023. The public was able to provide comments on the scope of the Supplemental EIS/OEIS during the scoping period via the project website or by mail.

M.2.1 PUBLIC SCOPING NOTIFICATION

The Action Proponents made significant efforts to notify the public to ensure maximum public participation during the scoping process. A summary of these efforts follows.

M.2.1.1 Notification Letters

Notice of Intent and Scoping Notification letters were distributed at the beginning of the scoping period (November 17, 2023) to federally recognized tribes; state-elected officials; and federal, regional, and state agencies. Entities that received the Scoping Notification letter can be found in Table M.2-1 and an example of the letter can be found in Figure M.2-1.

Table M.2-1: Entities that Received the Scoping Notification Letter

Federally Recognized Tribes	
Absentee Shawnee Tribe of Indians of Oklahoma	Mohegan Indian Tribe of Connecticut
Alabama-Coushatta Tribe of Texas	Nansemond Indian Nation
Aroostook Band of Micmacs	Narragansett Indian Tribe of Rhode Island
Catawba Indian Nation	Oneida Nation of New York
Cayuga Nation of New York	Onondaga Nation of New York
Chickahominy Indian Tribe	Passamaquoddy Tribe of Indian Township
Chickahominy Indian Tribe - Eastern Division	Penobscot Nation
Chitimacha Tribe of Louisiana	Poarch Band of Creek Indians of Alabama
Coushatta Tribe of Louisiana	Saint Regis Mohawk Tribe
Delaware Nation	Seminole Tribe of Florida
Delaware Tribe of Indians	Seneca Nation of Indians
Eastern Band of Cherokee Indians of North Carolina	Shawnee Tribe of Oklahoma
Houlton Band of Maliseet Indians	Shinnecock Indian Nation
Jena Band of Choctaw Indians	Stockbridge-Munsee Band of the Mohicans
Kickapoo Traditional Tribe of Texas	Tonawanda Band of Seneca Indians of New York
Mashantucket Pequot Indian Tribe	Tunica-Biloxi Indian Tribe of Louisiana
Mashpee Wampanoag Indian Tribe	Tuscarora Nation of New York
Miccosukee Tribe of Indians of Florida	Wampanoag Tribe of Gay Head of Massachusetts
Mississippi Band of Choctaw Indians	Ysleta del Sur Pueblo of Texas

Alabama	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Alabama Department of Environmental Management Alabama Historical Commission
Connecticut	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Connecticut Commission on Culture and Tourism, State Historic Preservation Office Connecticut Department of Energy and Environmental Protection, Land and Water Resources Division
Delaware	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Delaware Department of Natural Resources and Environmental Control, Delaware Coastal Programs Delaware Division of Historical and Cultural Affairs
Florida	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Florida Department of Environmental Protection, Coastal Management Program, Office of Resilience and Coastal Protection Florida Department of Environmental Protection, State Clearinghouse Florida Division of Historical Resources
Georgia	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Georgia Historic Preservation Division Georgia Department of Natural Resources, Coastal Zone Management Program
Louisiana	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Louisiana Department of Natural Resources Louisiana Office of Cultural Development, Division of Historic Preservation
Maine	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Maine Coastal Programs Maine Historic Preservation Commission

Table M.2-1: Entities that Received the Scoping Notification Letter (continued)

Maryland	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Maryland Department of Natural Resources Maryland Department of Natural Resources, Chesapeake and Coastal Service Maryland Department of Natural Resources, Wetlands and Waterways Maryland Historical Trust
Massachusetts	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Massachusetts Executive Office of Environmental Affairs, Office of Coastal Zone Management Massachusetts Historical Commission
Mississippi	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Mississippi Department of Archives and History, Historic Preservation Division, Federal and State Project Review Mississippi Department of Marine Resources, Coastal Programs
New Hampshire	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	New Hampshire Department of Environmental Services, Coastal Program New Hampshire Division of Historical Resources
New Jersey	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	New Jersey Department of Environmental Protection, Coastal Management Program New Jersey Historic Preservation Office
New York	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	New York Department of State, Office of Planning, Development, and Community Infrastructure New York Office of Parks, Recreation, and Historic Preservation
North Carolina	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	North Carolina Department of Cultural Resources North Carolina Division of Coastal Management North Carolina Division of Coastal Management, Coastal Area Management Act
Rhode Island	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Rhode Island Coastal Resources Management Council Rhode Island Historical Preservation and Heritage Commission
South Carolina	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	South Carolina Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management South Carolina State Historic Preservation Office

Table M.2-1: Entities that Received the Scoping Notification Letter (continued)

Texas	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Texas General Land Office, Coastal Resources Division Texas Historical Commission
Virginia	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Virginia Department of Environmental Quality, Coastal Program, Environmental Impact Review and Long Range Priorities Virginia Department of Historic Resources Virginia Department of Wildlife Resources
U.S. Virgin Islands	
Department of Planning and Natural Resources, Coastal Zone Management Program State Historic Preservation Office	
Federal Agencies	
Gray's Reef National Marine Sanctuary Florida Keys National Marine Sanctuary National Marine Fisheries Service National Marine Fisheries Service; Greater Atlantic Regional Fisheries Office National Marine Fisheries Service, Southeast Regional Office National Marine Fisheries Service, Office of Protected Resources National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries U.S. Fish and Wildlife Service U.S. Fish and Wildlife Service, Chesapeake Bay Ecological Services Field Office U.S. Fish and Wildlife Service, Eastern North Carolina Ecological Services U.S. Fish and Wildlife Service, Florida Ecological Services U.S. Fish and Wildlife Service, South Carolina Ecological Services U.S. Fish and Wildlife Service, Virginia Ecological Services	

M.2.1.2 Scoping Email

On November 17, 2023, emails were sent to recipients on the project mailing list, including individuals, nonprofit organizations, and for-profit organizations. The emails provided information on the Proposed Action, methods for commenting, and the project website address to obtain more information. The text of the email is shown in Figure M.2-2.

M.2.1.3 Newspaper Advertisements

To announce the scoping period, advertisements were placed in the listed newspapers in the following cities on the dates indicated in Table M.2-2. The advertisements included a description of the Proposed Action, the address of the project website, the duration of the comment period, and information on how to provide comments. An example of the advertisement is shown in Figure M.2-3.

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/XXX
November 17, 2023

Dear Sir or Madam:

This letter is to inform you that the United States (U.S.) Department of the Navy (Navy), jointly with the U.S. Coast Guard, is in the beginning stages of preparing a Supplemental Environmental Impact Statement (Supplemental EIS)/Overseas Environmental Impact Statement (OEIS) for Atlantic Fleet Training and Testing (AFTT) activities in the seaspace and the airspace over areas of the western Atlantic Ocean along the east coast of North America, the Gulf of Mexico, and portions of the Caribbean Sea.

The U.S. Navy and U.S. Coast Guard are requesting your comments on the scope, content, and issues to be considered during the development of the AFTT Supplemental EIS/OEIS. This document will assess training and testing activities which are proposed to be conducted at levels that support military readiness requirements beginning in November of 2025 and into the reasonably foreseeable future. Such activities will also accommodate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the fleet, thereby ensuring critical military readiness requirements are met.

The purpose of the Proposed Action is to maintain a ready force, which is needed to ensure the peacetime promotion of the national security interests and prosperity of the United States and for prompt and sustained combat incident to operations at sea and to meet the needs of war, consistent with Title 10, section 8062, of the United States Code.

You may send written comments to the following address:
Naval Facilities Engineering Systems Command Atlantic
6506 Hampton Boulevard Building A
Norfolk, Virginia 23508-1278
ATTN: Code EV22 AFTT SEIS Project Manager

Comments also can be submitted electronically via the project website at:
https://www.nepa.navy.mil/aftteis.

All Comments must be postmarked or received by December 16, 2023 to be considered in the Draft Supplemental EIS/OEIS. For additional information about the AFTT Supplemental EIS/OEIS, please visit the project website.

We appreciate your comments on this important project. My point of contact for this matter is Mr. Todd Kraft at (757) 836-2943 or todd.m.kraft.civ@us.navy.mil.

Sincerely,

AGUAYO.MARIA.LORETO.1157276731
Digitally signed by AGUAYO.MARIA.LORETO.1157276731
Date: 2023.11.14 17:19:57 -05'00'

M. L. AGUAYO
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Figure M.2-1: Stakeholder Scoping Notification Letter

You previously requested to receive information regarding the Department of the Navy's Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). This email provides an update on the project an and ways to participate in the planning process.

Navy to Begin Supplemental EIS/OEIS for Atlantic Fleet Training and Testing

The Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps), jointly with the U.S. Coast Guard (hereafter referred to as Action Proponents), announces its intent to prepare a supplement to the 2018 Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS).

In the Supplemental EIS/OEIS, the Action Proponents will assess the potential environmental effects associated with ongoing and future at-sea military readiness activities conducted within the AFTT EIS/OEIS Study Area (Study Area) beyond 2025, and will include an analysis of these activities using new information that became available after the release of the 2018 Final EIS/OEIS.

Activities that will be assessed in the Supplemental EIS/OEIS are consistent with those analyzed in the 2018 Final EIS/OEIS and are representative of training and testing activities the Action Proponents have been conducting in the Study Area for decades. In addition, the Study Area remains consistent with what was described in the 2018 Final EIS/OEIS with the addition of some inland waters within the Gulf of Mexico coast.

How to Participate in the Planning Process

The 30-day public scoping period begins November 17, 2023 and ends December 16, 2023. The scoping process is used to identify the full range of issues including public concerns and local issues to be considered during the development of the Draft Supplemental EIS/OEIS.

All interested persons and organizations are encouraged to provide substantive comments on environmental resources and areas of concern that the commenter believes the Action Proponents should consider during the scoping period. To learn more, and to submit a comment, please visit the project website at https://www.nepa.navy.mil/aftteis.

Next Steps

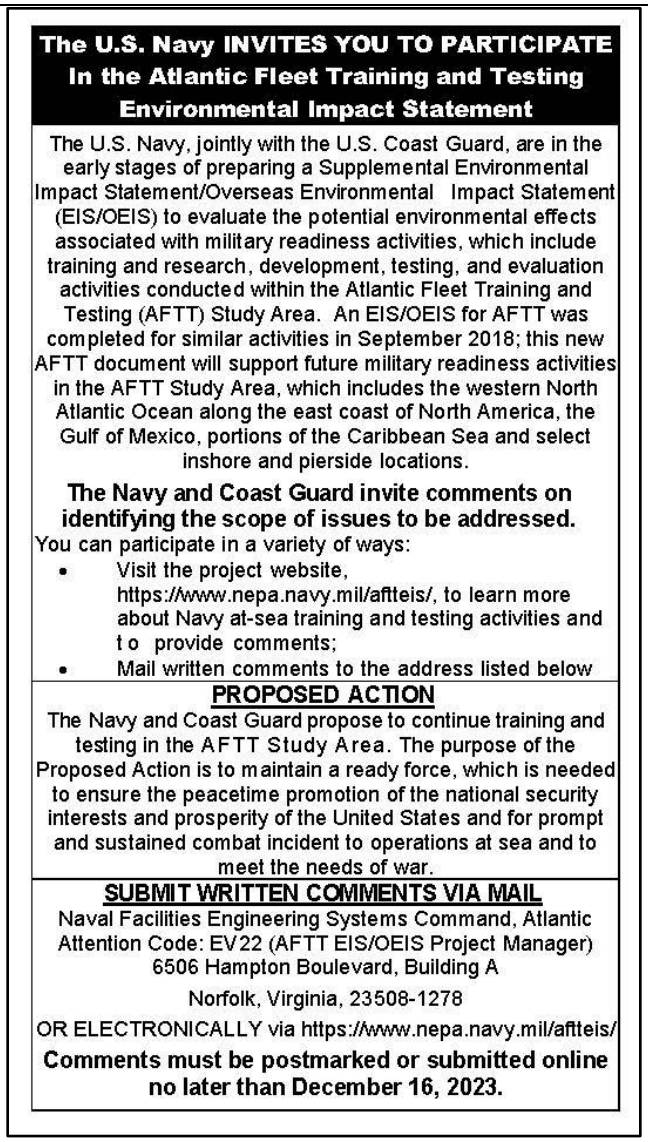
After the scoping period the Action Proponents will coordinate with participating and cooperating agencies to develop a Draft Supplemental EIS/OEIS. The Draft Supplemental EIS/OES is anticipated to be available for public review in the fall of 2024. The Final Supplemental EIS/OEIS is anticipated to be released in the fall of 2025.

Figure M.2-2: Stakeholder Scoping Email

Table M.2-2: Newspaper Announcements of Scoping Period

Bath, ME *The Times Record* November 19, 2023 November 20, 2023 November 21, 2023	**Portland, ME** *The Portland Press Herald* November 18, 2023 November 19, 2023 November 21, 2023	**New Bedford, MA** *The Standard Times* November 19, 2023 November 20, 2023 November 21, 2023
Boston, MA *The Boston Herald* November 19, 2023 November 20, 2023 November 21, 2023	**Providence, RI** *The Providence Journal* November 19, 2023 November 20, 2023 November 21, 2023	**Newport, RI** *The Newport Daily News* November 17, 2023 November 18, 2023 November 20, 2023
Salisbury, MD *The Daily Times* November 19, 2023 November 20, 2023 November 21, 2023	**Norfolk, VA** *The Virginian-Pilot* November 19, 2023 November 20, 2023 November 21, 2023	**Newport News, VA** *The Daily Press* November 19, 2023 November 20, 2023 November 21, 2023
Manteo, NC *Coastland Times* November 19, 2023 November 22, 2023 November 26, 2023	**Jacksonville, NC** *Jacksonville Daily News* November 21, 2023 November 23, 2023 November 25, 2023	**Wilmington, NC** *Wilmington Star News* November 19, 2023 November 20, 2023 November 21, 2023
Charleston, SC *Charleston Post and Courier* November 19, 2023 November 20, 2023 November 21, 2023	**Savannah, GA** *Savannah Morning News* November 19, 2023 November 20, 2023 November 21, 2023	**Jacksonville, FL** *Florida Times Union* November 19, 2023 November 20, 2023 November 21, 2023
Fort Lauderdale, FL *Florida Sun Sentinel* November 19, 2023 November 20, 2023 November 21, 2023	**Brevard, FL** *Florida Today* November 19, 2023 November 20, 2023 November 21, 2023	**Panama City, FL** *Panama City News Herald* November 19, 2023 November 20, 2023 November 21, 2023
Pensacola, FL *Pensacola News Journal* November 19, 2023 November 20, 2023 November 21, 2023	**Biloxi, MS** *Sun Herald* November 21, 2023 November 22, 2023 November 24, 2023	**New Orleans, LA** *Times-Picayune* November 19, 2023 November 20, 2023 November 21, 2023
Galveston, TX *Galveston Daily News* November 19, 2023 November 20, 2023 November 21, 2023	**Corpus Christi, TX** *Caller-Times*[1] November 19, 2023 November 20, 2023 November 21, 2023	

Notes: [1] Advertisement was also run in Spanish.



The U.S. Navy INVITES YOU TO PARTICIPATE In the Atlantic Fleet Training and Testing Environmental Impact Statement

The U.S. Navy, jointly with the U.S. Coast Guard, are in the early stages of preparing a Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) to evaluate the potential environmental effects associated with military readiness activities, which include training and research, development, testing, and evaluation activities conducted within the Atlantic Fleet Training and Testing (AFTT) Study Area. An EIS/OEIS for AFTT was completed for similar activities in September 2018; this new AFTT document will support future military readiness activities in the AFTT Study Area, which includes the western North Atlantic Ocean along the east coast of North America, the Gulf of Mexico, portions of the Caribbean Sea and select inshore and pierside locations.

The Navy and Coast Guard invite comments on identifying the scope of issues to be addressed.

You can participate in a variety of ways:

- Visit the project website, https://www.nepa.navy.mil/aftteis/, to learn more about Navy at-sea training and testing activities and to provide comments;
- Mail written comments to the address listed below

PROPOSED ACTION

The Navy and Coast Guard propose to continue training and testing in the AFTT Study Area. The purpose of the Proposed Action is to maintain a ready force, which is needed to ensure the peacetime promotion of the national security interests and prosperity of the United States and for prompt and sustained combat incident to operations at sea and to meet the needs of war.

SUBMIT WRITTEN COMMENTS VIA MAIL

Naval Facilities Engineering Systems Command, Atlantic
Attention Code: EV22 (AFTT EIS/OEIS Project Manager)
6506 Hampton Boulevard, Building A
Norfolk, Virginia, 23508-1278

OR ELECTRONICALLY via https://www.nepa.navy.mil/aftteis/

Comments must be postmarked or submitted online no later than December 16, 2023.

Figure M.2-3: Newspaper Announcement of Scoping

M.2.2 PUBLIC SCOPING COMMENTS

The scoping comments could be submitted via the project website or by mail. The Action Proponents received comments from federal agencies, state agencies, non-governmental organizations, and individuals. A total of 15 scoping comments were received. The comments provided agency input; urged the consideration of impacts to the North Atlantic right whale, Rice's whale, and marine mammals in general; requested the use of updated sea turtle data for impact analysis; and provided general support for the Proposed Action. The scoping comments submitted during the public scoping period are provided in Table M.2-3 and relevant and substantive comments were considered during the development of the Draft Supplemental EIS/OEIS. Comments received through the project website are shown in Table M.2-3. Hard copy comments received by mail, comments received via email, and the attachments provided with website comments are shown in Figure M.2-4 through Figure M.2-14.

Table M.2-3: Scoping Comments

Commenter	*Date*	*Comment*
Private Individual (1)	November 19, 2023	WHAT IS THE BREAKING SYSTERM IN USE FOR ANY AND ALL OF YOUR SHIP'S?
Virginia Department of Environmental Quality	November 20, 2023	Virginia Department of Environmental Quality, Office of Environmental Impact Review Scoping Comments (Figure M.2-4)
Federal Aviation Administration	November 21, 2023	Comment email (Figure M.2-5)
Private Individual (2)	November 24, 2023	It is critically important for the continued security of the United States of America that the U.S. Navy proceeds with the proposed action to continue training and testing in the AFTT Study Area. Other countries, particularly the USSR and China, are building up their naval capabilities, and are posing a greater and greater threat to our national security. Proceed without delay!!!!
Private Individual (3)	November 25, 2023	Hard copy comment (Figure M.2-6)
Texas Historical Commission	November 28, 2023	Comment email (Figure M.2-7)
Virginia Department of Health, Office of Drinking Water	November 30, 2023	VDH – Office of Drinking Water has reviewed the above project and has no comments to submit at this time.
Private Individual (4)	December 1, 2023	Hard copy comment (Figure M.2-8)
Private Individual (5)	December 4, 2023	As a boat captain and frequent fisherman in the Gulf of Mexico with many friends that are boat captains, we strongly support the Navy and Coast Guard training and testing in the Gulf. Current efforts to shut down large areas of the northern Gulf to "protect" the recently identified Right Whale would severely hurt our fishing in the Gulf and would likely adversely impact the Navy and Coast Guards training and testing to maintain a ready force. We believe the concerns about the whale are unjustified. Therefore we strongly support approval of this EIS.
New Jersey Department of Environmental Protection, Office of Permitting and Project Navigation	December 15, 2023	Comment provided as attachment (Figure M.2-9)

Table M.2-3: Scoping Comments (continued)

Commenter	*Date*	*Comment*
Congressman Seth Moulton	December 15, 2023	As the U.S. Navy and U.S. Coast Guard undertake a Supplemental Environmental Impact Statement (Supplemental EIS)/Overseas Environmental Impact Statement (OEIS) for Atlantic Fleet Training and Testing (AFTT) activities, I urge consideration of the impact on North Atlantic right whales. North Atlantic right whales are on the brink of extinction. As noted by the National Oceanic and Atmospheric Administration, there are approximately 360 individuals remaining of this endangered species in Atlantic waters, including fewer than 70 reproductively active females. Vessel strikes are a leading cause of mortality for North Atlantic right whales and increased ocean noise levels may interfere with their communication, stress levels, navigation, and ability to find food. Ensuring critical military readiness is of paramount importance when developing the AFTT Supplemental EIS/OEIS. When considering the environmental impacts of AFTT activities, informed decisions regarding impacts on North Atlantic right whales will be important for helping to conserve this endangered species. Thank you for your attention to this critical matter. I commend the U.S. Navy and U.S. Coast Guard's stalwart dedication to ensuring our national security interests and welcome your commitment to safeguarding the North Atlantic right whale. (Figure M.2-10)
Private Individual (6)	December 16, 2023	Hard copy comment (Figure M.2-11)
Maine Historic Preservation Commission	December 16, 2023	Hard copy comment (Figure M.2-12)
New Hampshire Division of Historical Resources	December 16, 2023	Comment email (Figure M.2-13)
Turtle Island Restoration Network	December 16, 2023	Comment provided as attachment (Figure M.2-14)

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

1111 E. Main Street, Suite 1400, Richmond, Virginia 23219
P.O. Box 1105, Richmond, Virginia 23218
(800) 592-5482 FAX (804) 698-4178
www.deq.virginia.gov

Travis A. Voyles
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director
(804) 698-4020

November 20, 2023

Naval Facilities Engineering Systems Command, Atlantic
6506 Hampton Boulevard, Building A
Norfolk, Virginia, 23508–1278
ATTN: EV22, AFTT SEIS Project Manager

RE: Scoping Comments, Notice of Intent To Prepare a Supplement to the September 2018 Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement for Continuation of Navy Atlantic Fleet Training and Testing Activities

To Whom it May Concern:

This letter is in response to the scoping request for the above-referenced project.

As you may know, the Department of Environmental Quality, through its Office of Environmental Impact Review (DEQ-OEIR), is responsible for coordinating Virginia's review of federal environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) and responding to appropriate federal officials on behalf of the Commonwealth. Similarly, DEQ-OEIR coordinates Virginia's review of federal consistency documents prepared pursuant to the Coastal Zone Management Act which applies to all federal activities which are reasonably likely to affect any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the enforceable policies Virginia Coastal Zone Management (CZM) Program.

DOCUMENT SUBMISSIONS

In order to ensure an effective coordinated review of the environmental documents, notification should be sent directly to OEIR. We request that you submit one electronic to eir@deq.virginia.gov (25 MB maximum) or make the documents available for download at a website, file transfer protocol (ftp) site or the VITA LFT file share system (Requires an "invitation" for access. An invitation request should be sent to eir@deq.virginia.gov.). We request that the review of these documents be done concurrently, if possible.

The environmental documents should include U.S. Geological Survey topographic maps as part of their information. We strongly encourage you to issue shape files with the NEPA document. In addition, project details should be adequately described for the benefit of the reviewers.

Figure M.2-4: Virginia Department of Environmental Quality Comment

ENVIRONMENTAL REVIEW UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT: PROJECT SCOPING AND AGENCY INVOLVEMENT

As you may know, NEPA (PL 91-190, 1969) and its implementing regulations (Title 40, *Code of Federal Regulations*, Parts 1500-1508) requires a draft and final Environmental Impact Statement (EIS) for federal activities or undertakings that are federally licensed or federally funded which will or may give rise to significant impacts upon the human environment. An EIS carries more stringent public participation requirements than an Environmental Assessment (EA) and provides more time and detail for comments and public decision-making. The possibility that an EIS may be required for the proposed project should not be overlooked in your planning for this project. Accordingly, we refer to "NEPA document" in the remainder of this letter.

While this Office does not participate in scoping efforts beyond the advice given herein, other agencies are free to provide scoping comments concerning the preparation of the NEPA document. Accordingly, we are providing notice of your scoping request to several state agencies and those localities and Planning District Commissions, including but not limited to:

Department of Environmental Quality:
- DEQ Regional Office*
- Air Division*
- Office of Wetlands and Stream Protection*
- Office of Local Government Programs*
- Division of Land Protection and Revitalization
- Office of Stormwater Management*

Department of Conservation and Recreation
Department of Health*
Department of Agriculture and Consumer Services
Department of Wildlife Resources*
Virginia Marine Resources Commission*
Department of Historic Resources
Department of Mines, Minerals, and Energy
Department of Forestry
Department of Transportation

Note: The agencies noted with a star (*) administer one or more of the enforceable policies of the Virginia CZM Program.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the federal Coastal Zone Management Act of 1972, as amended, and its implementing regulations in Title 15, *Code of Federal Regulations*, Part 930, federal activities, including permits, licenses, and federally funded projects, located in Virginia's Coastal Management Zone or those that can have reasonably foreseeable effects on Virginia's coastal uses or coastal resources must be conducted in a manner which is consistent, to the maximum extent practicable, with the Virginia CZM Program.

Additional information on the Virginia's review for federal consistency documents can be found online at Federal Consistency | Virginia DEQ

2

Figure M.2-4: Virginia Department of Environmental Quality Comment (continued)

DATA BASE ASSISTANCE

Below is a list of databases that may assist you in the preparation of a NEPA document:

- DEQ Online Database: Virginia Environmental Geographic Information Systems
  Information on Permitted Solid Waste Management Facilities, Impaired Waters, Petroleum Releases, Registered Petroleum Facilities, Permitted Discharge (Virginia Pollution Discharge Elimination System Permits) Facilities, Resource Conservation and Recovery Act (RCRA) Sites, Water Monitoring Stations, National Wetlands Inventory:
  - www.deq.virginia.gov/ConnectWithDEQ/VEGIS.aspx

- DEQ Virginia Coastal Geospatial and Educational Mapping System (GEMS)
  Virginia's coastal resource data and maps; coastal laws and policies; facts on coastal resource values; and direct links to collaborating agencies responsible for current data:
  - https://www.deq.virginia.gov/?splash=https%3a%2f%2fgaia.vcu.edu%2fportal%2fapps%2fsites%2f%23%2fgemsmaps&___isexternal=true

- MARCO Mid-Atlantic Ocean Data Portal
  The Mid-Atlantic Ocean Data Portal is a publicly available online toolkit and resource center that consolidates available data and enables users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites, among others.
  - http://portal.midatlanticocean.org/visualize/#x=-73.24&y=38.93&z=7&logo=true&controls=true&basemap=Ocean&tab=data&legends=false&layers=true

- DHR Data Sharing System.
  Survey records in the DHR inventory:
  - www.dhr.virginia.gov/archives/data_sharing_sys.htm

- DCR Natural Heritage Search
  Produces lists of resources that occur in specific counties, watersheds or physiographic regions:
  - www.dcr.virginia.gov/natural_heritage/dbsearchtool.shtml

- Wetland Condition Assessment Tool (WetCAT)
  - https://www.deq.virginia.gov/our-programs/water/wetlands-streams/wetcat

- DWR Fish and Wildlife Information Service
  Information about Virginia's Wildlife resources:
  - http://vafwis.org/fwis/
- Total Maximum Daily Loads Approved Reports
  - https://www.deq.virginia.gov/programs/water/waterqualityinformationtmdls/tmdl/tmdldevelopment/approvedtmdlreports.aspx

- Virginia Outdoors Foundation: Identify VOF-protected land

3

Figure M.2-4: Virginia Department of Environmental Quality Comment (continued)

- http://vof.maps.arcgis.com/home/index.html

- Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Database: Superfund Information Systems
  Information on hazardous waste sites, potentially hazardous waste sites and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL:
  - www.epa.gov/superfund/sites/cursites/index.htm

- EPA RCRAInfo Search
  Information on hazardous waste facilities:
  - www.epa.gov/enviro/facts/rcrainfo/search.html

- Total Maximum Daily Loads Approved Reports
  - https://www.deq.virginia.gov/our-programs/water/water-quality/tmdl-development/approved-tmdls

- EPA Envirofacts Database
  EPA Environmental Information, including EPA-Regulated Facilities and Toxics Release Inventory Reports:
  - www.epa.gov/enviro/index.html

- EPA NEPAssist Database
  Facilitates the environmental review process and project planning:
  http://nepaassisttool.epa.gov/nepaassist/entry.aspx

If you have questions about the environmental review process and/or the federal consistency review process, please feel free to contact me (telephone (804) 659-1915 or e-mail bettina.rayfield@deq.virginia.gov).

I hope this information is helpful to you.

Sincerely,

Bettina Rayfield, Program Manager
Environmental Impact Review and
Long-Range Priorities

4

Figure M.2-4: Virginia Department of Environmental Quality Comment (continued)

From: Riegert, Michael W (FAA) <Michael.W.Riegert@faa.gov>
Sent: Tuesday, November 21, 2023 8:19 AM
To: Kraft, Todd M CIV USN (USA) <todd.m.kraft.civ@us.navy.mil>
Cc: Williams, Reginald (FAA) <Reginald.Williams@faa.gov>; Favors, Lisa (FAA) <Lisa.Favors@faa.gov>
Subject: [Non-DoD Source] FW: Notice of Intent To Prepare a Supplement to the September 2018 Final Atlantic Fleet Training and Testing EIS/OEIS

Good morning Mr. Kraft,

My name is Michael Riegert with FAA, I am an Environmental protection specialist for FAA ECINA group specifically working with airspace environmental impacts. I am contacting you regarding the supplemental EIS for AFTT study area. Our management received the auto generated email below from your office and want to follow up regarding any support needed for this action from FAA. I have reviewed the website and have some questions regarding the upcoming supplemental EIS.

1-Can you provide some clarity on changes to current operations and existing foot prints for airspace within the AFTT study area?

2-Will you be expanding any airspace to include lateral or vertical changes for future training needs?

3-Has there been a request for FAA cooperating agency in support of airspace changes or modifications?

4-Is this supplemental primarily focused on impacts to marine mammals or will it also address changes to training requirements?

V/r,

Michael W. Riegert (PMP)
Environmental Protection Specialist, CI & NAS Analytics
Eastern Service Center, Operations Support Group (AJV-E25)
Phone 404-305-5962
Cell 404-861-2099

MissionSupport

1

Figure M.2-5: Federal Aviation Administration Comment

Proposed Action

The United States (U.S.) Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) and the U.S. Coast Guard (hereinafter jointly referred to as the "Action Proponents") propose to continue to conduct military readiness training and research, development, testing, and evaluation (hereinafter referred to as "testing") activities in the Atlantic Fleet Training and Testing (AFTT) Study Area, as represented in Figure 1. These military readiness activities include the use of active sonar and explosives, primarily within existing range complexes and testing ranges that are comprised of operating areas (sea space) and warning areas (airspace) located in the Atlantic Ocean along the eastern coast of North America, the Gulf of Mexico, and portions of the Caribbean Sea, at select Navy pierside locations, within port transit channels, and some inland waters.

In order to achieve and maintain military readiness, the Action Proponents propose to:

- Adjust training and testing activities from current levels to levels required to support U.S. Navy (Navy), U.S. Marine Corps (USMC), and U.S. Coast Guard (USCG) military readiness requirements beginning November 2025 and into the reasonably foreseeable future.
- Accommodate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and eventual introduction of new weapon systems and platforms (vessels, aircraft) into the fleet.

This analysis of the environmental impacts of the Proposed Action supports the Action Proponents' request for incidental takes of marine mammals from military readiness activities as required by the Marine Mammal Protection Act (MMPA). The analysis also supports the Action Proponents' requirements to consult with NMFS and the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA). Since the Proposed Action for the fourth phase is largely similar to training and testing activities analyzed in the third phase, the Action Proponents are preparing a supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), referred to hereinafter as the Supplemental. The Supplemental will be updated with new information to include new acoustic criteria, updated acoustic and explosive modeling, and updated marine species data.

The following range complexes fall within the AFTT Study Area:

- Northeast Range Complexes;
- Virginia Capes (VACAPES) Range Complex;
- Navy Cherry Point Range Complex;
- Jacksonville (JAX) Range Complex;
- Key West Range Complex; and
- Gulf of Mexico (GOMEX) Range Complex.

Testing ranges in the AFTT Study Area include:

- Naval Undersea Warfare Center Division, Newport Testing Range;
- Naval Surface Warfare Center, Panama City Division Testing Range; and
- Naval Surface Warfare Center Carderock Division, South Florida Ocean Measurement Facility Testing Range.

While most military readiness activities will take place in open ocean operating and warning areas, some activities, such as sonar maintenance and gunnery exercises, are conducted concurrent with normal transits and occur outside of these areas, but still within the Study Area.

The pierside testing locations and associated port transit channels are located at the following Navy ports and naval shipyards:

- Portsmouth Naval Shipyard, Kittery, Maine;
- Naval Submarine Base New London, Groton, Connecticut;
- Naval Station Newport, Newport, Rhode Island;
- Naval Station Norfolk, Norfolk, Virginia;
- Joint Expeditionary Base Little Creek-Fort Story, Virginia Beach, Virginia;

2

Figure M.2-5: Federal Aviation Administration Comment (continued)

- Norfolk Naval Shipyard, Portsmouth, Virginia;
- Naval Submarine Base Kings Bay, Kings Bay, Georgia;
- Naval Station Mayport, Jacksonville, Florida; and
- Port Canaveral, Cape Canaveral, Florida.

In addition, Navy-contractor pierside testing locations in the following cities, along with their associated port transit channels and inshore waters (such as bays and rivers) are in the AFTT Study Area:

- Bath, Maine;
- Groton, Connecticut;
- Newport News, Virginia;
- Pascagoula, Mississippi;
- North Bay, Florida;
- New Orleans, Louisiana; and
- Mobile, Alabama.

For decades, the Navy has been conducting military readiness activities in the AFTT Study Area. During this time, the tempo and types of military readiness activities in the Study Area have evolved due to changing requirements, the introduction of new technologies, the dynamic nature of international events, advances in warfighting doctrine and procedures, and force structure changes.

Figure M.2-5: Federal Aviation Administration Comment (continued)

JOHN STELLA
[redacted]

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATTN.: EV22 (AFTT EIS/OEIS PROJECT MANAGER)
6506 HAMPTON BLVD BLDG A
NORFOLK, VA. 23508-1278

NOV. 25 , 2023

DEAR SIR :

I SUPPORT THE U.S. NAVY TO WORK WITH U.S. COAST GUARD FOR TRAINING AND TESTING IN THE AFTT STUDY AREA FROM MAINE COAST TO BOSTON COAST TO CAPE COD COAST TO RHODE ISLAND COAST .

MOST IMPORTANTLY THE U.S. NAVY SHOULD WORK WITH U.S. COAST GUARD TO TRAIN AND TEST ON BOSTON HARBOR COAST WHERE THE FORMER U.S. ARMY BASE BLACK FALCON PIER AND THE FORMER BOSTON NAVAL SHIPYARD AND FORMER BOSTON NAVAL STATION.

THANK YOU FOR YOUR CONSIDERATION .

SINCERELY,

JOHN STELLA

1

Figure M.2-6: Private Individual (3) Comment

From: noreply@thc.state.tx.us <noreply@thc.state.tx.us>
Sent: Monday, December 18, 2023 3:48 PM
To: Kraft, Todd M CIV USN (USA) <todd.m.kraft.civ@us.navy.mil>; reviews@thc.state.tx.us
Subject: [Non-DoD Source] Atlantic Fleet Training and Testing



TEXAS HISTORICAL COMMISSION
real places telling real stories

Re: Project Review under Section 106 of the National Historic Preservation Act
THC Tracking #202402738
Date: 12/18/2023
Atlantic Fleet Training and Testing
Western Atlantic Ocean North Am E Coast and Gulf

Description: Beginning stages of preparing a Supplemental EIS /OEIS for Atlantic Fleet Training and Testing activities.

1

Figure M.2-7: Texas Historical Commission Comment

Dear Todd Kraft:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff, led by Amy Borgens, Caitlin Brashear and Alexander Shane, has completed its review and has made the following determinations based on the information submitted for review:

We have the following comments: The Texas Historical Commission thanks the Department of the Navy for the invitation to comment on the Draft Supplemental EIS.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: amy.borgens@thc.texas.gov, caitlin.brashear@thc.texas.gov, Alexander.Shane@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,



for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

2

Figure M.2-7: Texas Historical Commission Comment (continued)

December 1 2023

[redacted]

Location peninsula on Boston Harbor , formerly Lawley Naval Shipyard. Atlantic Ocean inlet

Response invitation re Atlantic Fleet Training / environmental impact statement

November 21 2023 posting date. Response 12-1 -2023

Purpose : proposed action to maintain a ready force which is necessary to ensure the peacetime promotion of the national security interests of the United States and for prompt and sustained combat incident to operations at sea and meet the needs of war .

Comments : Naval facilities engineering systems command Atlantic
Attention code : EV22 (AFTT EIS / OEIS Project manager), 6506 Hampton Blvd, Building A , Norfolk , Va 23508-1278

Electronic via https:// : https www.navy .mil/ attteis/

Greetings : Nav facities engineering systems command Atlantic .

Attach pls. find resume of my lifes work including US Navy Active service , under contract , enlisted in the design and construction team USNavy NAVSEC Hyattsville Md. Dec 1972 Nov 1972 .for Project : design and construction force full time for the effort to deliver the quick turnaround of a number of vessels to be built by US naval shipyard contractors ; competive bidders in Washington State , Pascagoula Miss. And Bath Maine . full delivery . Patrol Frigate project , designed for operations in the Mekong River theatre , republic of Vietnam . Asia.

I am a semi retired registered Architect In Massachusetts who is interested in being part of our nations efforts as a part of Americas Ready force to enforce the peacetime promotion of America's national security interests. A resume will be available if requested. I may be contacted by phone :
[redacted]

John Edward Roche

Architect Massachusetts

Figure M.2-8: Private Individual (4) Comment

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Office of Permitting and Project Navigation
401 East State Street, Mail Code 401-07J, P.O. Box 420
Trenton, New Jersey 08625-0420
Phone: (609) 292-3600 Fax: (609) 292-1921
dep.nj.gov/oppn

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

SHAWN M. LaTOURETTE
Commissioner

December 15, 2023

Naval Facilities Engineering Systems Command Atlantic
6506 Hampton Blvd. Building A
Norfolk, VA 23508-1278
ATTN: Code EV22 AFTT SEIS Project Manager

RE: **Comments for the NEPA Supplemental EIS/OEIS**
U.S. Navy/U.S. Coast Guard Atlantic Fleet Training and Testing
Location: Offshore in the Western Atlantic Ocean

Dear Maria L. Aguayo,

The New Jersey Department of Environmental Protection's (Department) Office of Permitting and Project Navigation (OPPN) has distributed, for review and comment, the information pertaining to the joint U.S. Navy/U.S. Coast Guard (Action Proponents) Atlantic Fleet Training and Testing (AFTT) proposed activities in support of the preparation of a National Environmental Policy Act (NEPA) required Supplemental Environmental Impact Statement (Supplemental EIS)/Overseas Environmental Impact Statement (OEIS). The proposed action includes conducting military readiness training and research, development, testing, and evaluation activities in the AFTT Study Area. These military readiness activities include the use of active sonar and explosives, primarily within existing range complexes and testing ranges that are comprised of operating areas (sea space) and warning areas (airspace) located in the Atlantic Ocean along the eastern coast of North America, the Gulf of Mexico, and portions of the Caribbean Sea, at select Navy pierside locations, within port transit channels, and some inland waters.

The Department offers the following comments for your consideration: A Federal Consistency Determination is required from the State of New Jersey Division of Land Resource Protection (DLRP) for the proposed activities. Federal Consistency requests should be submitted to lurfederalconsistency@dep.nj.gov. If you have any questions regarding this information, please contact Colleen Keller at Colleen.Keller@dep.nj.gov.

Thank you for giving the Department the opportunity to provide comments for the preparation of the Supplemental EIS/OEIS for the proposed action. Please contact Ryan Carter at Ryan.Carter@dep.nj.gov or at (609) 940-5616, or contact OPPN at (609) 292-3600 if you have any questions.

Sincerely,

David Pepe, Director
Office of Permitting and Project Navigation

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Figure M.2-9: New Jersey Department of Environmental Protection, Office of Permitting and Project Navigation Comment

SETH MOULTON
SIXTH DISTRICT, MASSACHUSETTS

COMMITTEE ON ARMED SERVICES

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SELECT COMMITTEE ON STRATEGIC COMPETITION BETWEEN THE UNITED STATES AND THE CHINESE COMMUNIST PARTY

UNITED STATES
HOUSE OF REPRESENTATIVES

1126 LONGWORTH BUILDING
WASHINGTON, D.C. 20515
202.225.8020

21 FRONT STREET
SALEM, MA 01970
978.531.1669

moulton.house.gov
@REPMOULTON

December 15, 2023

As the U.S. Navy and U.S. Coast Guard undertake a Supplemental Environmental Impact Statement(Supplemental EIS)/Overseas Environmental Impact Statement (OEIS) for Atlantic Fleet Training and Testing (AFTT) activities, I urge consideration of the impact on North Atlantic right whales.

North Atlantic right whales are on the brink of extinction. As noted by the National Oceanic and Atmospheric Administration, there are approximately 360 individuals remaining of this endangered species in Atlantic waters, including fewer than 70 reproductively active females. Vessel strikes are a leading cause of mortality for North Atlantic right whales and increased ocean noise levels may interfere with their communication, stress levels, navigation, and ability to find food.

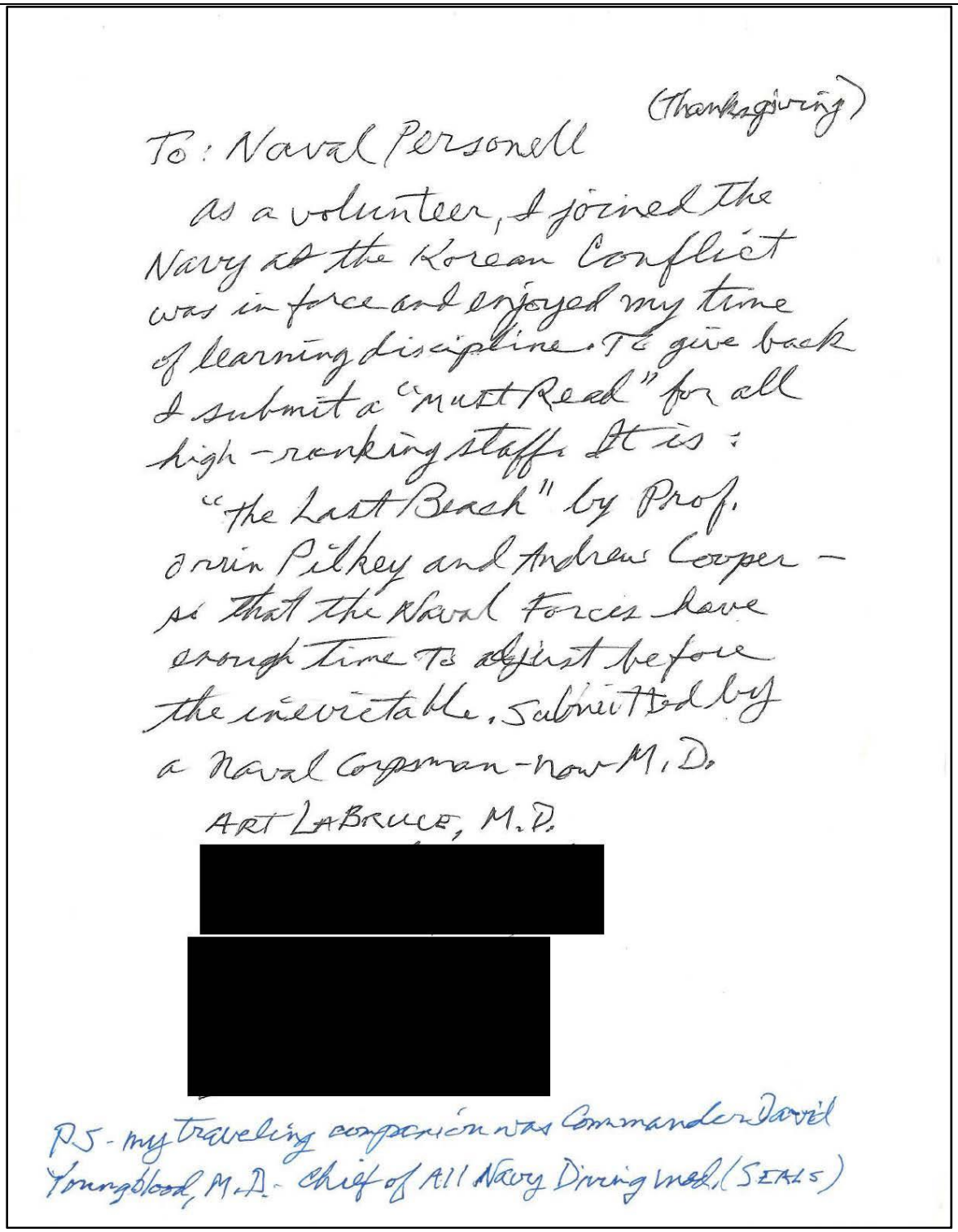
Ensuring critical military readiness is of paramount importance when developing the AFTT Supplemental EIS/OEIS. When considering the environmental impacts of AFTT activities, informed decisions regarding impacts on North Atlantic right whales will be important for helping to conserve this endangered species.

Thank you for your attention to this critical matter. I commend the U.S. Navy and U.S. Coast Guard's stalwart dedication to ensuring our national security interests and welcome your commitment to safeguarding the North Atlantic right whale.

Sincerely,

Congressman Seth Moulton
Sixth District, Massachusetts

Figure M.2-10: Congressman Seth Moulton Comment



(Thanksgiving)

To: Naval Personell

as a volunteer, I joined the Navy at the Korean Conflict was in force and enjoyed my time of learning discipline. To give back I submit a "must Read" for all high-ranking staff. It is:

"the Last Beach" by Prof. Orrin Pilkey and Andrew Cooper — so that the Naval Forces have enough time to adjust before the inevitable. Submitted by a Naval Corpsman-now M.D.

ART LABRUCE, M.D.

[redacted]

[redacted]

PS - my traveling companion was Commander David Youngblood, M.D. - Chief of All Navy Diving Med. (SEALS)

Figure M.2-11: Private Individual (6) Comment

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

RECEIVED
NOV 22 2023
By 1784-23

5090
Ser N46/020
November 14, 2023

Dear Sir or Madam:

This letter is to inform you that the United States (U.S.) Department of the Navy (Navy), jointly with the U.S. Coast Guard, is in the beginning stages of preparing a Supplemental Environmental Impact Statement (Supplemental EIS)/Overseas Environmental Impact Statement (OEIS) for Atlantic Fleet Training and Testing (AFTT) activities in the seaspace and the airspace over areas of the western Atlantic Ocean along the east coast of North America, the Gulf of Mexico, and portions of the Caribbean Sea.

The U.S. Navy and U.S. Coast Guard are requesting your comments on the scope, content, and issues to be considered during the development of the AFTT Supplemental EIS/OEIS. This document will assess training and testing activities which are proposed to be conducted at levels that support military readiness requirements beginning in November of 2025 and into the reasonably foreseeable future. Such activities will also accommodate evolving mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels, aircraft, and weapon systems) into the fleet, thereby ensuring critical military readiness requirements are met.

The purpose of the Proposed Action is to maintain a ready force, which is needed to ensure the peacetime promotion of the national security interests and prosperity of the United States and for prompt and sustained combat incident to operations at sea and to meet the needs of war, consistent with Title 10, section 8062, of the United States Code.

You may send written comments to the following address:
Naval Facilities Engineering Systems Command Atlantic
6506 Hampton Boulevard Building A
Norfolk, Virginia 23508-1278
ATTN: Code EV22 AFTT SEIS Project Manager

Comments also can be submitted electronically via the project website at:
https://www.nepa.navy.mil/aftteis.

All comments must be postmarked or received by December 16, 2023 to be considered in the Draft Supplemental EIS/OEIS. For additional information about the AFTT Supplemental EIS/OEIS, please visit the project website.

We appreciate your comments on this important project. My point of contact for this matter is Mr. Todd Kraft at (757) 836-2943 or todd.m.kraft.civ@us.navy.mil.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney

12/12/23

Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission

Date

Sincerely,

AGUAYO.MARIA.LORETO.1157276731

Digitally signed by AGUAYO.MARIA.LORETO.1157276731
Date: 2023.11.14 17:19:57 -05'00'

M. L. AGUAYO
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Figure M.2-12: Maine Historic Preservation Commission Comment

From: Schneible, Elizabeth <Elizabeth.A.Schneible@dncr.nh.gov>
Sent: Thursday, December 7, 2023 12:42 PM
To: Kraft, Todd M CIV USN (USA) <todd.m.kraft.civ@us.navy.mil>
Subject: [Non-DoD Source] Supplemental EIS/OEIS for AFTT activities

Dear Mr. Kraft,

We received the attached letter regarding the Supplemental EIS/OEIS for AFTT activities. If there is a Section 106 component to this project, we need to be able to comment in official capacity, which means completing a Request for Project Review. I have attached the Request for Project Review (RPR) form and instructions here for your convenience. Please let me know if you have any questions about this process.

Sincerely,

Liz Schneible
DHR Program Specialist
NH Division of Historical Resources
NH Dept of Natural & Cultural Resources
172 Pembroke Road, Concord, NH 03301
Elizabeth.a.schneible@dncr.nh.gov

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

1

Figure M.2-13: New Hampshire Division of Historical Resources Comment

TURTLE ISLAND RESTORATION NETWORK
FIGHTING FOR A BLUE-GREEN PLANET

December 15, 2023

Submitted Electronically

Naval Facilities Engineering Systems Command, Code EV22SG (AFTT Project Manager)
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

Dear U.S. Department of the Navy and U.S. Coast Guard,

The United States Department of the Navy (including both the U.S. Navy and the U.S. Marine Corps) and the U.S. Coast Guard have proposed they continue military readiness testing and training exercises in predetermined locations in the North Atlantic, the Gulf of Mexico, and portions of the Caribbean Sea, at select Navy pierside locations, within port transit channels, and some inland waters, as seen in **Figure 1**.



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Figure M.2-14: Turtle Island Restoration Network Comment

Figure 1: The map of the Atlantic Fleet Testing and Training area.

[1]

Different exercises are expected to be conducted involving the use of sonar, explosives, and other weaponry. Exercises will be focused on different warfare communities, including aviation, surface, submarine, and expeditionary.[2]

Turtle Island Restoration Network (TIRN) respectfully submits the following comments in regards to the notice of intent to prepare a draft supplemental environmental impact statement (SEIS) for the Atlantic Fleet Training and Testing (AFTT) study area.

1. In light of marine mammal data developments and Unusual Mortality Events (UME) along the Atlantic Coast, careful consideration must be given to the testing locations and exercises carried out.

The Atlantic coast of the United States is home to several diverse species of marine mammals. Unfortunately, many of these species are at risk due to threats associated with human activity.[3]

Humpback Whales

Humpback whales (*Megaptera novaeangliae*) along the Atlantic coast have been experiencing an UME since 2016.[4] As seen below in **Figure 2**, a large amount of humpback whale strandings associated with the UME have been located near the AFTT study area in the North Atlantic.

[1] US Department of the Navy. Available at: https://www.nepa.navy.mil/Current-Projects/At-Sea-Ranges/Atlantic-Fleet-Training-and-Testing-Phase-IV/Proposed-Action/
[2] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299472/-1/-1/1/2.0%20AFTT%20FEIS%20DESCRIPTION%20OF%20PROPOSED%20ACTION%20AND%20ALTERNATIVES.PDF Page 2-1.
[3] Waring, G. T., Palka, D. L., & Evans, P. G. (2009). North Atlantic marine mammals. In *Encyclopedia of marine mammals* (pp. 773-781). Academic Press.
[4] NOAA Fisheries. 2016–2023 Humpback Whale Unusual Mortality Event Along the Atlantic Coast. Available at: https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2023-humpback-whale-unusual-mortality-event-along-atlantic-coast

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)



Figure 2: A map showing the humpback whale strandings associated with the ongoing UME in the area of the AFTT location.

[5]

Necropsies have not been able to be conducted on every whale due to different factors, including location and condition of the body. However, a large percentage of the whales that were able to be necropsied presented with injuries associated with human interaction, specifically vessel strike injuries and entanglement in fishing gear. Some of the whales presented with pre-mortem vessel strike injuries indicative of being struck by a moving vessel while still alive.[6] The 2018 Final Environmental Impact Statement (FEIS) indicates that the US Navy accurately reports all collisions with whales and has historically had interactions with humpback whales.[7] With the current exercises being conducted within the AFTT study area following the 2018 FEIS, it must be considered that an increase of vessel traffic related to training and testing exercises could be having a significant impact on humpback whale populations in the North Atlantic along the east coast of the United States. As a result, the data presented within the 2018 FEIS is outdated and cannot effectively be used to pass blame to other vessels operating near the AFTT study area.

[5] NOAA Fisheries. 2016-2023 Humpback Whale Unusual Mortality Event along the Atlantic Coast Dead Animal Locations. Available at: https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=f9eef8e52fc84144b1bfc84e931ba54c

[6] NOAA Fisheries. 2016–2023 Humpback Whale Unusual Mortality Event Along the Atlantic Coast. Available at: https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2023-humpback-whale-unusual-mortality-event-along-atlantic-coast

[7] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF Page 3.7-25.

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)

North Atlantic Right Whales

The North Atlantic Right Whale (*Eubalaena glacialis*) is approaching extinction after an UME was officially declared in 2017. Unfortunately, vessel strike injuries are a leading cause of mortality.[8] Critical habitat for the North Atlantic Right Whale has been established in areas of the North Atlantic, as seen below in **Figure 3**. The location of the critical habitat is just east of the AFTT study area.



Figure 3: A map showing the critical habitat of North Atlantic Right Whales in the North Atlantic that is located east of the AFTT location.[9]

North Atlantic Right Whales travel up the coast to feed in the waters around New England during the winter and early spring, as defined by the critical habitat.[10] North Atlantic Right Whales do not follow the boundaries of a map. Once they are outside the boundaries of the critical habitat, they are at an increased risk of experiencing anthropogenic threats. The AFTT study area is far too close to this critical habitat and increases the risk of vessel strike injuries as North Atlantic Right Whales migrate along the coast. The 2018 FEIS specifically highlights that

[8] NOAA Fisheries. 2017–2023 North Atlantic Right Whale Unusual Mortality Event. Available at: https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2023-north-atlantic-right-whale-unusual-mortality-event

[9] NOAA Fisheries. North Atlantic Right Whale Critical Habitat Map and GIS Data. Available at: https://www.fisheries.noaa.gov/resource/map/north-atlantic-right-whale-critical-habitat-map-and-gis-data

[10] Parks, S. E., Warren, J. D., Stamieszkin, K., Mayo, C. A., & Wiley, D. (2012). Dangerous dining: surface foraging of North Atlantic right whales increases risk of vessel collisions. *Biology letters*, 8(1), 57-60.

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)

despite strict regulations regarding vessel speed and routing, there have been no measurable effects on reducing the number of marine mammal mortalities associated with vessel strike injuries.[11] As North Atlantic Right Whales remain critically endangered, it is vital that the SEIS is revised to contain recent data associated with North Atlantic Right Whale population distribution and vessel strike injuries.

We ask that the US Department of the Navy and the US Coast Guard consider halting training and testing exercises within these critical areas in light of the ongoing UMEs associated with both humpback and North Atlantic Right Whales.

2. All species of marine mammals are put at risk due to the type of training and testing exercises conducted within the marine environment.

Numerous species of marine mammals inhabit the waters within the AFTT study area and are at risk of disruption, injury, or death as a result of the training and testing exercises. A majority of the proposed exercises involve the use of sonar, explosives, and other weaponry.

Acoustic Stressors

In the 2018 FEIS, acoustic stressors were associated with sonar and other transducers, air guns, pile driving, vessel noise, aircraft noise, and weapons noise.[12] Marine mammals rely on sound to communicate and move around within their environment. Some species of marine mammals also use echolocation to feed. Underwater noise has the potential to disrupt essential life functions of marine mammals, such as feeding, mating, nursing, resting, and migrating.[13] Over the course of history, military training exercises have been considered to be a substantial threat to marine mammals, even suspected of leading to mass stranding events. Following a mass stranding event in the Bahamas in the 2000s after a military exercise, the US government acknowledged sonar as a potential contributing factor.[14] With many vulnerable and endangered marine mammal populations in decline, it is concerning that the continuation of testing and training exercises that will contribute significantly to noise pollution is even being considered.

Explosive, Energy, and Physical Stressors

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[11] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF Page 3.7-25.
[12] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF Page 3.7-105.
[13] Erbe, C., Dunlop, R., & Dolman, S. (2018). Effects of noise on marine mammals. Effects of anthropogenic noise on animals, 277-309.
[14] Simmonds, M. P., Dolman, S. J., Jasny, M., Parsons, E. C. M., Weilgart, L., Wright, A. J., & Leaper, R. (2014). Marine noise pollution-increasing recognition but need for more practical action.

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)

In the 2018 FEIS, explosive stressors were associated with explosions in-air and in-water, while energy stressors were associated with in-water electromagnetic devices and lasers. Physical stressors are related to vessels and in-water devices, military expended materials, and seafloor devices.[15] With an increase of vessel traffic associated with training and testing exercises, we can expect an increase in human interaction with marine mammals. Many marine mammals are often struck by moving vessels while they are at the surface feeding, as seen in a study conducted on vessel strike related mortalities in humpback whales.[16] Further research is necessary to reduce the likelihood of vessel interaction with marine mammals.

Entanglement and Ingestion

In the 2018 FEIS, entanglements were associated with wires and cables, decelerators/parachutes, and biodegradable polymer, while ingestion was associated with military expended materials–munitions and military expended materials other than munitions.[17] Some marine mammal entanglements have historically been associated with underwater cables. While technological advances have decreased the likelihood of such entanglements,[18] the risk is still present. Different types of marine debris related to the training and testing exercises are also considered to be a risk factor for entanglements among marine mammals. Marine debris can also be ingested by marine mammals, leading to impairment of gastrointestinal functionality and even death.[19]

Secondary Stressors

In the 2018 FEIS, secondary stressors were associated with impacts on habitat and prey availability.[20] Different training and testing exercises will have varying effects on the marine ecosystem as a whole. If the trophic cascade of an ecosystem is disrupted, we can expect to see different behavioral changes amongst large marine megafauna populations, including marine

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[15] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF Page 3.7-105.
[16] Stepanuk, J. E., Heywood, E. I., Lopez, J. F., DiGiovanni Jr, R. A., & Thorne, L. H. (2021). Age-specific behavior and habitat use in humpback whales: implications for vessel strike. Marine Ecology Progress Series, 663, 209-222.
[17] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF Page 3.7-105.
[18] Taormina, B., Bald, J., Want, A., Thouzeau, G., Lejart, M., Desroy, N., & Carlier, A. (2018). A review of potential impacts of submarine power cables on the marine environment: Knowledge gaps, recommendations and future directions. Renewable and Sustainable Energy Reviews, 96, 380-391.
[19] Simmonds, M. P. (2012). Cetaceans and marine debris: the great unknown. Journal of Marine Sciences, 2012.
[20] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF Page 3.7-105.

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)

mammals. Marine mammal populations can be influenced by both abiotic and biotic factors. Biotic factors, including prey availability, can be considered a significant driver of marine mammal distribution and behavior.[21]

With so many different areas of military training and testing coupled with a diverse array of marine mammal species, it is imperative that updated marine mammal population and strandings data be a significant part of the SEIS.

3. Updated sea turtle data is needed for the SEIS to accurately determine the threat of different activities and exercises to vulnerable and endangered sea turtle species.

Different species of sea turtles can be found throughout the AFTT study area, including green sea turtles (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), Kemp's ridley turtle (*Lepidochelys kempii*), leatherback turtle (*Dermochelys coriacea*), and loggerhead turtle (*Caretta caretta*). According to the 2018 FEIS, some sea turtle species, like the hawksbill sea turtle, have critical habitat that is located within the AFTT study area.[22] The endangered Kemp's Ridley sea turtle has a smaller range within the Gulf of Mexico,[23] but is still at risk due to the training and testing exercises in the Gulf. In a majority of the individual species backgrounds presented in the 2018 FEIS, vessel strike injuries were not necessarily considered to be a significant threat to their populations. A multi-year study focused along the Florida coast found vessel strike related mortality in sea turtles to be a significant threat among several species.[24] We can expect to see increased vessel traffic related to testing and training exercises within the AFTT study area and, as a result, sea turtle populations are at a heightened risk of vessel strike related mortality.

In the 2018 FEIS, different types of marine debris were touched upon and discussed their overall impacts to sea turtles. Marine debris can lead to entanglements and ingestion in sea turtles. The 2018 FEIS references a study in which juvenile sea turtles were more likely to ingest marine debris than adults.[25] Different types of marine debris related to training and testing exercises are

[21] Kiszka, J. J., Heithaus, M. R., & Wirsing, A. J. (2015). Behavioural drivers of the ecological roles and importance of marine mammals. Marine Ecology Progress Series, 523, 267-281.
[22] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299481/-1/-1/1/3.08%20AFTT%20FEIS%20REPTILES.PDF Page 3.8-22.
[23] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299481/-1/-1/1/3.08%20AFTT%20FEIS%20REPTILES.PDF Page 3.8-28.
[24] Foley, A. M., Stacy, B. A., Hardy, R. F., Shea, C. P., Minch, K. E., & Schroeder, B. A. (2019). Characterizing watercraft-related mortality of sea turtles in Florida. The Journal of Wildlife Management, 83(5), 1057-1072.
[25] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299481/-1/-1/1/3.08%20AFTT%20FEIS%20REPTILES.PDF Page 3.8-15.

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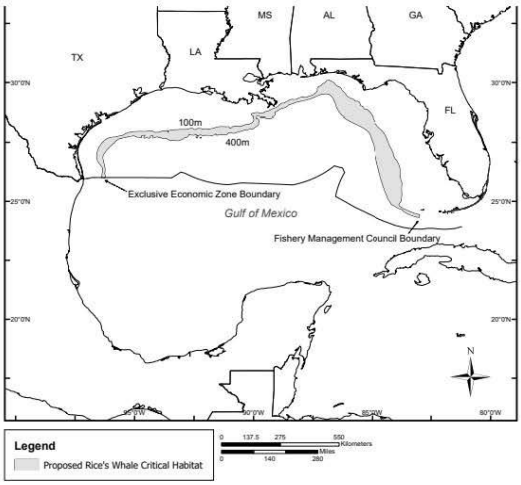
Figure M.2-14: Turtle Island Restoration Network Comment (continued)

expected to impact sea turtle populations within the AFTT study area. A more dynamic study is necessary to determine the full extent at which sea turtles would be exposed to entanglement and ingestion stressors as a result of marine debris.

To fully understand how the training and testing activities will impact sea turtle populations within the AFTT study area, the SEIS will need to analyze updated data related to strandings and population distribution in conjunction to potential stressors.

4. With less than 100 individuals remaining, the critically endangered Rice's whale is at risk of extinction.

At the time of the 2018 FEIS, the Rice's whale (*Balaenoptera ricei*) had not been identified as its own species.[26] Therefore, this species was technically not a part of the 2018 FEIS and had not been accurately assessed for potential stressors caused by training and testing exercises in the Gulf of Mexico. Recently, NOAA Fisheries proposed critical habitat designation for the Rice's whales in response to their incredibly small population size and limited distribution range. The proposed critical habitat for the Rice's whale can be seen below in **Figure 4**. A portion of the critical habitat overlaps with the AFTT study area in the Gulf of Mexico.



[26] Soldevilla, M. S., Ternus, K., Cook, A., Hildebrand, J. A., Frasier, K. E., Martinez, A., & Garrison, L. P. (2022). Acoustic localization, validation, and characterization of Rice's whale calls. The Journal of the Acoustical Society of America, 151(6), 4264-4278.

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)

Figure 4: A map showing the proposed critical habitat of Rice's Whales in the Gulf of Mexico.

[27]

As with other marine mammals, the Rice's whales are at risk of the same stressors as identified in item 2. The Rice's whale is protected under both the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). This species is considered to be depleted under the MMPA, heightening the need to further protect this species from anthropogenic threats.[28] We recommend all military training and testing be immediately stopped within the Gulf of Mexico to ensure the protection and survival of the critically endangered Rice's whale.

Final Thoughts

In light of ongoing UMEs, increased anthropogenic pressure, and declining species populations, it is vital that the SEIS further examines the impact training and testing exercises will have on the marine ecosystem. The data used in the 2018 FEIS is outdated and unreliable as the ocean is a dynamic system and always changing. We recommend that all exercises be stopped until an updated analysis becomes available to reduce the impact on our oceans and marine life.

Thank you for your consideration,

Todd Steiner
Executive Director

[27] NOAA Fisheries. Proposed Rice's Whale Critical Habitat. Available at: https://www.fisheries.noaa.gov/s3/2023-07/Rices-Whale-Proposed-CH-Map-508-Final.pdf
[28] NOAA Fisheries. Rice's Whale. Available at: https://www.fisheries.noaa.gov/species/rices-whale

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Figure M.2-14: Turtle Island Restoration Network Comment (continued)

M.3 Notification of Availability of Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

The public comment period on the Draft Supplemental EIS/OEIS began with the issuance of the Notice of Availability and a Notice of Public Meetings in the *Federal Register* on September 20, 2024 (Appendix N, Federal Register Notices). The *Federal Register* notices included notification of the availability of the Draft Supplemental EIS/OEIS and where it can be accessed; an overview of the Proposed Action and its purpose and need; public commenting information; and the locations, dates, and times of public meetings. The purpose of the public meetings was to inform the public about the Proposed Action and to solicit public comments on the environmental issues addressed and analyzed in the Draft Supplemental EIS/OEIS. The Draft Supplemental EIS/OEIS public review and comment period lasted 60 days, concluding on November 21, 2024. Comments were accepted by mail, through the Supplemental EIS/OEIS website at https://www.nepa.navy.mil/aftteis/, and at the public meetings.

M.3.1 Notification of Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and Public Meetings

The Action Proponents made significant efforts to distribute information about the project and notify the public to ensure maximum public participation during the public comment period. A summary of these efforts follows.

M.3.1.1 Notification Letters

Letters were sent to federally recognized tribes; state-elected officials; and federal, regional, and state agencies. The letters provided a description of the Proposed Action, address of the project website, duration of the comment period, and information on the public meetings. Entities that received the notification letters are listed in Table M.3-1. Figure M.3-1 provides an example letter.

Table M.3-1: Entities that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Notification Letter

Federally Recognized Tribes	
Absentee Shawnee Tribe of Indians of Oklahoma	Mohegan Indian Tribe of Connecticut
Alabama-Coushatta Tribe of Texas	Nansemond Indian Nation
Aroostook Band of Micmacs	Narragansett Indian Tribe of Rhode Island
Catawba Indian Nation	Oneida Nation of New York
Cayuga Nation of New York	Onondaga Nation of New York
Chickahominy Indian Tribe	Passamaquoddy Tribe of Indian Township
Chickahominy Indian Tribe - Eastern Division	Penobscot Nation
Chitimacha Tribe of Louisiana	Poarch Band of Creek Indians of Alabama
Coushatta Tribe of Louisiana	Saint Regis Mohawk Tribe
Delaware Nation	Seminole Tribe of Florida
Delaware Tribe of Indians	Seneca Nation of Indians
Eastern Band of Cherokee Indians of North Carolina	Shawnee Tribe of Oklahoma
Houlton Band of Maliseet Indians	Shinnecock Indian Nation
Jena Band of Choctaw Indians	Stockbridge-Munsee Band of the Mohicans
Kickapoo Traditional Tribe of Texas	Tonawanda Band of Seneca Indians of New York
Mashantucket Pequot Indian Tribe	Tunica-Biloxi Indian Tribe of Louisiana
Mashpee Wampanoag Indian Tribe	Tuscarora Nation of New York
Miccosukee Tribe of Indians of Florida	Wampanoag Tribe of Gay Head of Massachusetts
Mississippi Band of Choctaw Indians	Ysleta del Sur Pueblo of Texas
Alabama	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Alabama Department of Environmental Management Alabama Historical Commission
Connecticut	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Connecticut Commission on Culture and Tourism, State Historic Preservation Office Connecticut Department of Energy and Environmental Protection, Land and Water Resources Division
Delaware	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Delaware Department of Natural Resources and Environmental Control, Delaware Coastal Programs Delaware Division of Historical and Cultural Affairs
Florida	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Florida Department of Environmental Protection, Coastal Management Program, Office of Resilience and Coastal Protection Florida Department of Environmental Protection, State Clearinghouse Florida Division of Historical Resources
Georgia	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Georgia Historic Preservation Division Georgia Department of Natural Resources, Coastal Zone Management Program
Louisiana	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Louisiana Department of Natural Resources Louisiana Office of Cultural Development, Division of Historic Preservation

Table M.3-1: Entities that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Notification Letter (continued)

Maine	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Maine Coastal Programs Maine Historic Preservation Commission
Maryland	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Maryland Department of Natural Resources Maryland Department of Natural Resources, Chesapeake and Coastal Service Maryland Department of Natural Resources, Wetlands and Waterways Maryland Historical Trust
Massachusetts	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Massachusetts Executive Office of Environmental Affairs, Office of Coastal Zone Management Massachusetts Historical Commission
Mississippi	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Mississippi Department of Archives and History, Historic Preservation Division, Federal and State Project Review Mississippi Department of Marine Resources, Coastal Programs
New Hampshire	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	New Hampshire Department of Environmental Services, Coastal Program New Hampshire Division of Historical Resources
New Jersey	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	New Jersey Department of Environmental Protection, Coastal Management Program New Jersey Historic Preservation Office
New York	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	New York Department of State, Office of Planning, Development, and Community Infrastructure New York Office of Parks, Recreation, and Historic Preservation
North Carolina	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	North Carolina Department of Cultural Resources North Carolina Division of Coastal Management, Coastal Area Management Act
Rhode Island	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Rhode Island Coastal Resources Management Council Rhode Island Historical Preservation and Heritage Commission
South Carolina	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	South Carolina Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management South Carolina State Historic Preservation Office

Table M.3-1: Entities that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Notification Letter (continued)

Texas	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Texas General Land Office, Coastal Resources Division Texas Historical Commission
Virginia	
State-Elected Officials	***State Agencies***
Office of the Governor Congressional Delegates	Virginia Department of Environmental Quality, Coastal Program, Environmental Impact Review and Long Range Priorities Virginia Department of Historic Resources Virginia Department of Wildlife Resources
U.S. Virgin Islands	
Department of Planning and Natural Resources, Coastal Zone Management Program State Historic Preservation Office	
Federal Agencies	
Gray's Reef National Marine Sanctuary Florida Keys National Marine Sanctuary National Marine Fisheries Service National Marine Fisheries Service; Greater Atlantic Regional Fisheries Office National Marine Fisheries Service, Southeast Regional Office National Marine Fisheries Service, Office of Protected Resources National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries U.S. Fish and Wildlife Service U.S. Fish and Wildlife Service, Chesapeake Bay Ecological Services Field Office U.S. Fish and Wildlife Service, Eastern North Carolina Ecological Services U.S. Fish and Wildlife Service, Florida Ecological Services U.S. Fish and Wildlife Service, South Carolina Ecological Services U.S. Fish and Wildlife Service, Virginia Ecological Services	

DEPARTMENT OF THE NAVY
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK VA 23551-2487

5090
Ser N46/032
September 16, 2024

The Honorable Brian Kemp
Governor of Georgia
State Capitol
206 Washington Street Suite 203
Atlanta, GA 30334

Dear Governor Kemp:

The Department of the Navy (DON) and the U.S. Coast Guard (Coast Guard) have jointly prepared a Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) (ID# SEIS-007-17-USN-1723491961) that evaluates the reasonably foreseeable effects on the human environment of Navy, Marine Corps, and Coast Guard training and testing activities conducted within the Atlantic Fleet Training and Testing (AFTT) Study Area. DON and Coast Guard are requesting your comments on the Draft Supplemental EIS/OEIS.

Three in-person public meetings in the form of an open house will be held to inform the public about the proposed action and alternatives and about the opportunity to provide written and oral comments on the Draft Supplemental EIS/OEIS. The in-person public meetings will be held as follows:

Tuesday, October 8, 2024, 5:00 p.m. to 7:00 p.m.
New Bedford Whaling Museum
18 Johnny Cake Hill
New Bedford, MA 02740

Thursday, October 10, 2024, 5:00 p.m. to 7:00 p.m.
Silver Spring Civic Building at Veterans Plaza
1 Veterans Pl
Silver Spring, MD 20910

Wednesday, October 16, 2024, 5:00 p.m. to 7:00 p.m.
New Orleans Marriott Metairie at Lakeway
3838 N Causeway Blvd
Metairie, LA 70002

Figure M.3-1: Stakeholder Letter for the Notification of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

5090
Ser N46/032
September 16, 2024

Two virtual public meetings in the form of a webinar and question and answer session will also be held for the public to learn about the proposed action and alternatives. The virtual public meetings will be held:

Tuesday, October 22, 2024, 6:00 p.m. to 7:00 p.m. ET

Thursday, October 24, 2024, 2:00 p.m. to 3:00 p.m. ET

Registration for the virtual public meetings is available at the project website at www.nepa.navy.mil/aftteis/. Recordings of the virtual public meetings will be posted to the project website at www.nepa.navy.mil/aftteis/ for the public to view following their completion.

The 60-day public comment period begins on September 20, 2024, and ends November 21, 2024. Comments can be submitted at one of the in-person public meetings, online at the project website www.nepa.navy.mil/aftteis/, or by U.S. mail to the following address:

Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG (AFTT EIS Project Managers)
6506 Hampton Blvd
Norfolk, VA 23508-1278

All comments must be postmarked or received electronically by 11:59 p.m. ET on November 21, 2024, for consideration in the Final Supplemental EIS/OEIS. Enclosure (1) contains a project description and study area map. The complete Draft Supplemental EIS/OEIS and additional information are available on the project website at www.nepa.navy.mil/aftteis/.

Sincerely,

J. R. CUADROS
Director, Fleet Installations and Environment
and Deputy Chief of Staff

Enclosure: AFTT Supplemental EIS/OEIS Project Description and Study Area Map

2

Figure M.3-1: Stakeholder Letter for the Notification of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (continued)

ATLANTIC FLEET TRAINING AND TESTING (AFTT) SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT (EIS/OEIS) (ID# SEIS-007-17-USN-1723491961) PROJECT DESCRIPTION AND STUDY AREA MAP

Proposed Action and Alternatives:

The Proposed Action is to conduct training and testing activities, which may include the use of active sonar and explosives, primarily within existing range complexes, operating areas, and testing ranges within the Atlantic Ocean along the eastern coast of North America, portions of the Caribbean Sea, in the Gulf of Mexico at Navy pierside locations and port transit channels, near civilian ports, and inland waters (e.g., the lower Chesapeake Bay). These military readiness activities are generally consistent with those analyzed in the AFTT EIS/OEIS completed in 2018 and are representative of training and testing that the Navy has been conducting in the AFTT Study Area for decades.

The purpose of the Proposed Action is to ensure the Action Proponents, including the Coast Guard, are able to organize, train, and equip service members and personnel to meet their respective national defense missions in accordance with their Congressionally mandated requirements.

No Action Alternative – Under the No Action Alternative, the Proposed Action would not take place (i.e., the Navy would not conduct proposed training and testing activities in the AFTT Study Area). For National Marine Fisheries Service (NMFS), denial of an application for an incidental take authorization constitutes the NMFS No Action Alternative, which is consistent with NMFS' statutory obligation under the Marine Mammal Protection Act (MMPA) to grant or deny requests for take incidental to specified activities. The resulting environmental effects from taking no action will be compared with the effects of the Proposed Action.

Alternative 1 – Alternative 1 is the preferred alternative. Under this alternative, the Navy, Marine Corps, and Coast Guard propose to conduct military readiness training and testing activities into the reasonably foreseeable future, as necessary to meet current and future readiness requirements. These military readiness training activities include new activities as well as activities subject to previous analysis that are currently ongoing and have historically occurred in the Study Area. These activities account for force structure (organization of ships, weapons, and personnel) changes and include training and testing with new aircraft, vessels, unmanned/autonomous systems, and weapon systems that will be introduced to the fleets after November 2025.

Alternative 1 reflects a representative year of training to account for the natural fluctuations of training cycles and deployment schedules. Using representative years rather than a maximum tempo of training activity in every year reduces the amount of hull-mounted mid-frequency active sonar estimated to be necessary to meet training requirements. In addition, this alternative would not include a contingency for augmenting some weapon systems tests, and assumes and accepts a stable threat environment, where military readiness requirements would not require increased levels of annual testing of anti-submarine warfare and mine warfare systems.

Enclosure (1)

Figure M.3-1: Stakeholder Letter for the Notification of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (continued)

Alternative 2 – Under Alternative 2, the Navy, Marine Corps, and Coast Guard would meet the highest levels of required military readiness by conducting a total of four carrier strike group Composite Training Unit Exercises every year and accomplishing all unit-level training requirements using dedicated, discrete training events. Alternative 2 reflects the maximum number of training and testing activities that could occur within a given year and assumes that the maximum level of activity would occur every year over any 7-year period. This allows for the greatest capacity for the Navy to maintain readiness when considering potential changes in the national security environment, fluctuations in training and deployment schedules, and potential in-theater demands. Both unit-level training and major training exercises are assumed to occur at a maximum level every year.

This alternative also includes the contingency for augmenting some weapon systems tests in response to potential increased world conflicts and changing U.S. leadership priorities as the result of a direct challenge from a naval opponent that possesses near-peer capabilities. Therefore, this alternative would include the provision for higher levels of annual testing of certain anti-submarine warfare and mine warfare systems to support expedited delivery of these systems to the fleet.

Environmental Analysis:

This Supplemental EIS/OEIS analyzes potential impacts on environmental resources resulting from activities under the alternatives. Resource areas analyzed in detail include air quality, sediments and water quality, vegetation, invertebrates, marine habitats, marine fishes, marine mammals, marine reptiles, and birds and bats.

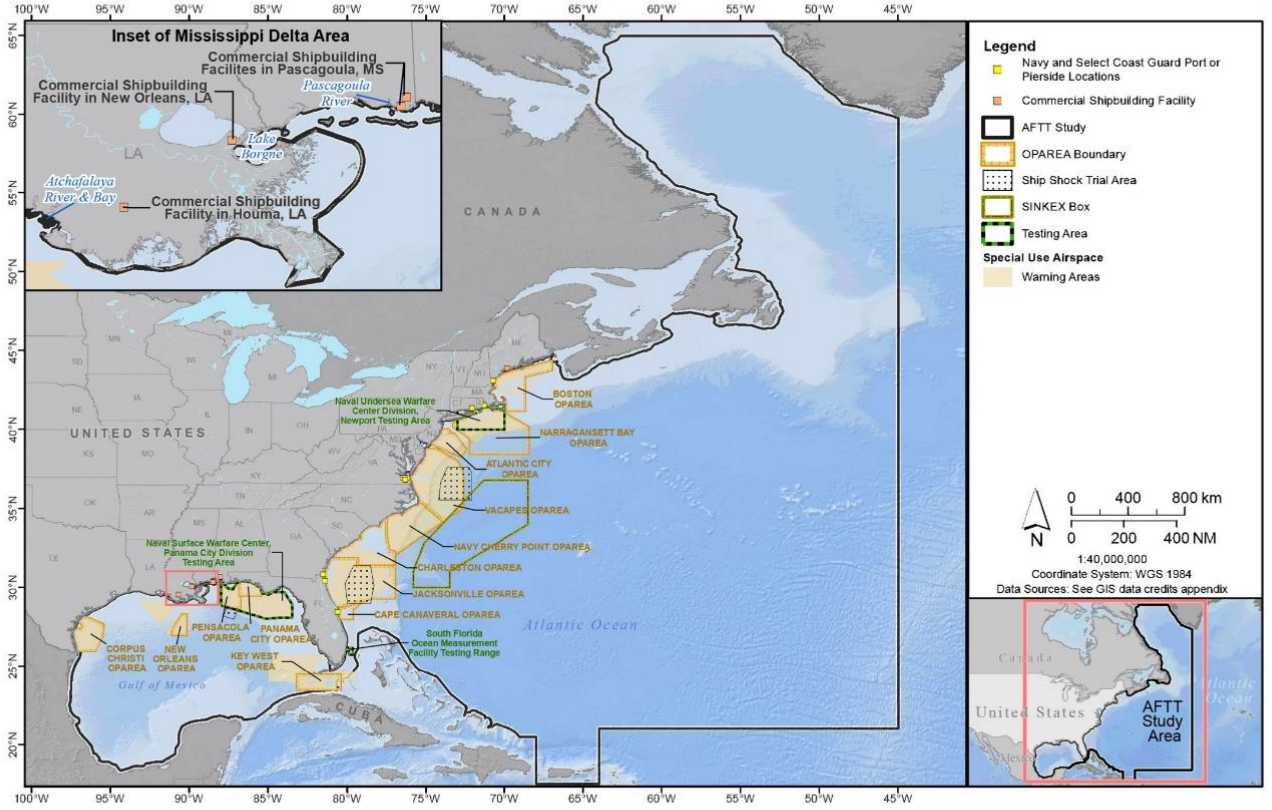
AFTT Study Area:

The Study Area shown in Figure 1 covers approximately 2.6 million square nautical miles of ocean area and includes designated Navy range complexes and testing ranges. The Study Area includes only the in-water components of the range complexes and testing ranges; land components associated with the range complexes and testing ranges are not included in the Study Area and no activities on these land areas are included as part of the Proposed Action. The Study Area also includes various bays, harbors, inland waterways, and pierside locations which are within the boundaries of the range complexes.

Enclosure (1)

Figure M.3-1: Stakeholder Letter for the Notification of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (continued)

Figure 1: Atlantic Fleet Training and Testing EIS/OEIS Study Area



Enclosure (1)

Figure M.3-1: Stakeholder Letter for the Notification of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (continued)

M.3.1.2 Stakeholder Postcard

Postcards were mailed to recipients on the project mailing list, including individuals, nonprofit organizations, and for-profit organizations. The postcards acted as formal notification of the Notice of Availability of the Draft Supplemental EIS/OEIS and announcement of public meetings. An example of the postcard is shown in Figure M.3-2.

M.3.1.3 Newspaper Advertisements

To announce the Notification of Availability of the Draft Supplemental EIS/OEIS and public meetings, advertisements were placed in the listed newspapers on the dates indicated in Table M.3-2. The advertisements included a description of the Proposed Action, the project website, the duration of the comment period, and information on how to provide comments. An example of the advertisement is shown in Figure M.3-3.

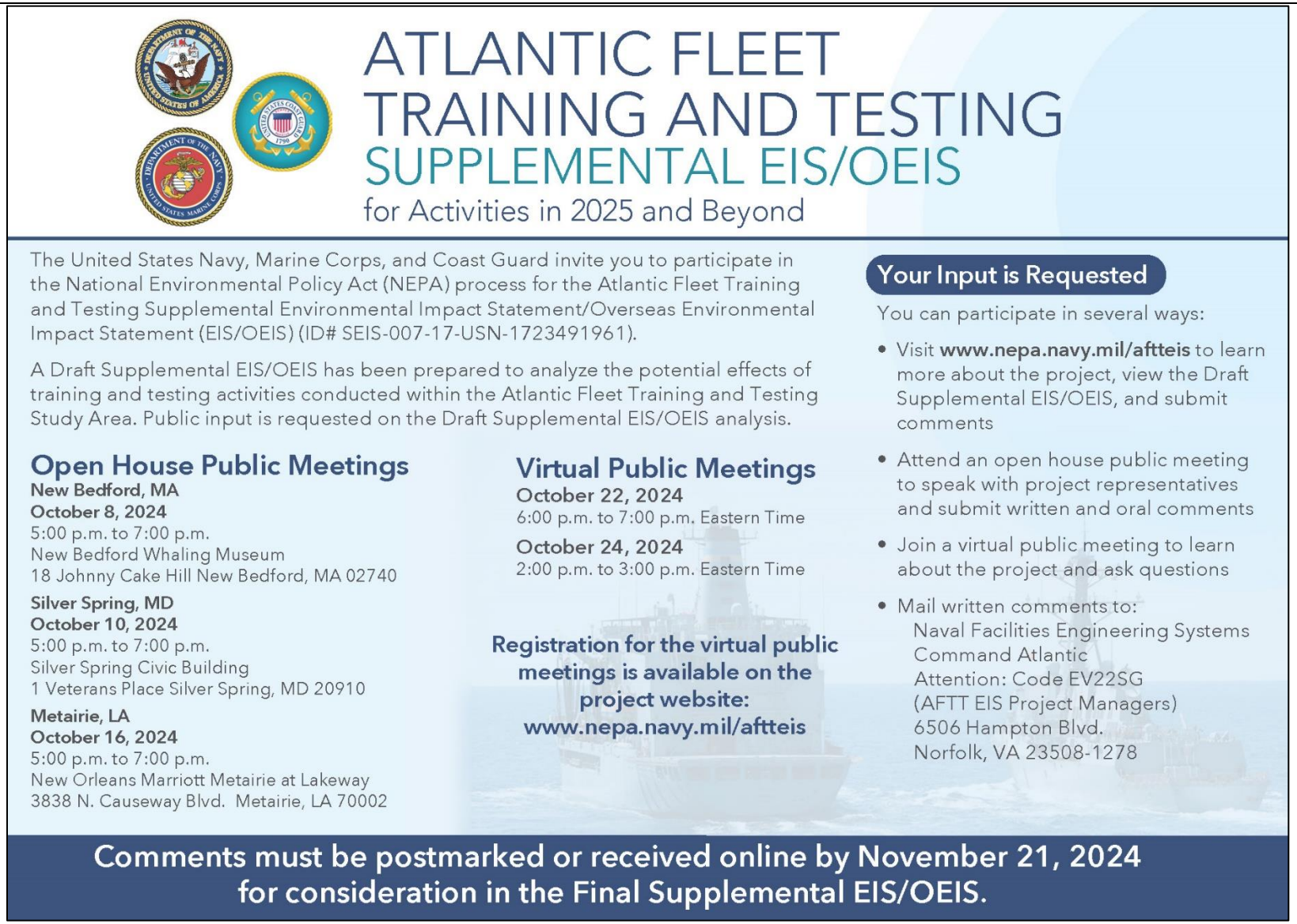


Figure M.3-2: Stakeholder Postcard

Proposed Action

The United States Navy, Marine Corps, and Coast Guard propose to continue conducting training and testing activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. Proposed activities would continue training and testing with active sonar and explosives and are similar to the types of activities that have been occurring for decades in the Study Area.

The Proposed Action is needed to prepare the Navy, Marine Corps, and Coast Guard Forces to respond to world events, including large-scale conflict response, maritime security, and humanitarian assistance and disaster relief.



Naval Facilities Engineering Systems
Command Atlantic
Attention: Code EV22SG
(AFTT EIS Project Managers)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

Figure M.3-2: Stakeholder Postcard (continued)

Table M.3-2: Newspaper Announcements of Notification of Availability of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and Announcement of Public Meetings

Bath, ME *The Times Record* September 20, 2024 September 24, 2024 September 27, 2024	**Portland, ME** *The Portland Press Herald* September 20, 2024 September 21, 2024 September 22, 2024	**New Bedford, MA** *The Standard Times* September 22, 2024 September 23, 2024 September 24, 2024
Boston, MA *The Boston Herald* September 22, 2024 September 23, 2024 September 24, 2024	**Providence, RI** *The Providence Journal* September 22, 2024 September 23, 2024 September 24, 2024	**Newport, RI** *The Newport Daily News* September 22, 2024 September 23, 2024 September 24, 2024
Salisbury, MD *The Daily Times* September 22, 2024 September 23, 2024 September 24, 2024	**Norfolk, VA** *The Virginian-Pilot* September 22, 2024 September 23, 2024 September 24, 2024	**Newport News, VA** *The Daily Press* September 22, 2024 September 23, 2024 September 24, 2024
Manteo, NC *Coastland Times* September 22, 2024 September 23, 2024 September 24, 2024	**Jacksonville, NC** *Jacksonville Daily News* September 24, 2024 September 26, 2024 September 28, 2024	**Wilmington, NC** *Wilmington Star News* September 22, 2024 September 23, 2024 September 24, 2024
Charleston, SC *Charleston Post and Courier* September 22, 2024 September 23, 2024 September 24, 2024	**Savannah, GA** *Savannah Morning News* September 22, 2024 September 23, 2024 September 24, 2024	**Jacksonville, FL** *Florida Times Union* September 22, 2024 September 23, 2024 September 24, 2024
Fort Lauderdale, FL *Florida Sun Sentinel* September 22, 2024 September 23, 2024 September 24, 2024	**Brevard, FL** *Florida Today* September 22, 2024 September 23, 2024 September 24, 2024	**Panama City, FL** *Panama City News Herald* September 22, 2024 September 23, 2024 September 24, 2024
Pensacola, FL *Pensacola News Journal* September 22, 2024 September 23, 2024 September 24, 2024	**Biloxi, MS** *Sun Herald* September 22, 2024 September 25, 2024 September 29, 2024	**New Orleans, LA** *Times-Picayune* September 22, 2024 September 23, 2024 September 24, 2024
Galveston, TX *Galveston Daily News* September 22, 2024 September 23, 2024 September 24, 2024	**Corpus Christi, TX** *Caller-Times*[1] September 22, 2024 September 23, 2024 September 24, 2024	

Notes: [1] Advertisement was also run in Spanish.



The Navy, Marine Corps, and Coast Guard INVITE YOU TO PARTICIPATE In the Atlantic Fleet Training and Testing Supplemental Environmental Impact Statement

The U.S. Navy, Marine Corps, and Coast Guard have prepared a Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) (ID# SEIS-007-17-USN-1723491961) that evaluates the reasonably foreseeable effects on the human environment of Navy, Marine Corps, and Coast Guard training and testing activities conducted within the Atlantic Fleet Training and Testing (AFTT) Study Area. Public input is requested on the Draft Supplemental EIS/OEIS analysis.

Your input is requested

You can participate in several ways:

- Visit www.nepa.navy.mil/aftteis to learn more about the project, view a copy of the Draft Supplemental EIS/OEIS, and submit comments.
- Mail written comments to the address listed below.
- Attend an open house public meeting to speak with project representatives and submit written and oral comments.
- Join a virtual public meeting to learn about the project and ask questions.

Open House Public Meetings – 5:00 to 7:00 p.m. local time

New Bedford, MA:
October 8, 2024
New Bedford Whaling Museum
18 Johnny Cake Hill
New Bedford, MA 02740

Silver Spring, MD:
October 10, 2024
Silver Spring Civic Building
1 Veterans Place
Silver Spring, MD 20910

Metairie, LA:
October 16, 2024
New Orleans Marriott, Metairie at Lakeway
3638 N. Causeway Blvd.
Metairie, LA 70002

Virtual Public Meetings:

October 22 Virtual public meeting 6 – 7 p.m. ET
October 24 Virtual public meeting 2 – 3 p.m. ET

Registration for the virtual public meetings is available on the project website:
www.nepa.navy.mil/aftteis

Proposed Action

The Navy, Marine Corps, and Coast Guard propose to continue conducting and testing in the AFTT Study Area. The purpose of the Proposed Action is to ensure that the Navy, Marine Corps, and Coast Guard Forces are prepared to respond to world events including large-scale conflict response, maritime security, and humanitarian assistance and disaster relief.

Submit Written Comments to:

Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG
(AFTT EIS Project Managers)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

All comments must be postmarked or received online by November 21, 2024, for consideration in the Final Supplemental EIS/OEIS.

Submit Comments Online at:
www.nepa.navy.mil/aftteis

For project details or information about accessing a copy of the Draft Supplemental EIS/OEIS, visit www.nepa.navy.mil/aftteis. ***The Navy, Marine Corps, and Coast Guard appreciate your input!***

Figure M.3-3: Newspaper Announcement of Notification of Availability of the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and Announcement of Public Meetings

M.3.2 Public Meetings

Three in-person public meetings were held on the following dates in the listed cities:

- October 8, 2024 in New Bedford, Massachusetts
- October 10, 2024 in Silver Spring, Maryland
- October 16, 2024 in Metairie, Louisiana

The meetings were structured in an open-house format, presenting informational posters and written materials and handouts, with Navy staff and project experts available to answer participants' questions.

Additionally, two virtual public meetings were held via Zoom.gov on the following dates:

- October 22, 2024
- October 24, 2024

The virtual meetings began with a presentation and were followed by a question and answer session with Navy staff and project experts.

M.3.3 Distribution of Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

The Draft Supplemental EIS/OEIS was made available on the project website at https://www.nepa.navy.mil/aftteis/. Electronic copies of the Draft Supplemental EIS/OEIS were also delivered to the repositories listed in Table M.3-3 along with hard copies of the Executive Summary.

Table M.3-3: Repositories that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

Maine
Portland Public Library 5 Monument Square Portland, ME 04101
Massachusetts
New Bedford Free Public Library Casa da Saudade Branch 58 Crapo Street New Bedford, MA 02740
Rhode Island
Providence Public Library 150 Empire St. Providence, RI 02903
Maryland
Brigadier General Charles E. McGee Library 900 Wayne Ave. Silver Spring, MD 20910
North Carolina
Jacksonville Main Library 58 Doris Avenue East Jacksonville, NC 28540
Georgia
Camden County Public Library 1410 Highway 40 East Kingsland, GA 31548

Table M.3-3: Repositories that Received the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (continued)

Florida
Broward County Main Library 100 S. Andrews Ave. Ft. Lauderdale, FL 33301
West Florida Public Library, Southwest Branch 12248 Gulf Beach Highway Pensacola, FL 32507
Louisiana
East Bank Regional Library 4747 West Napoleon Ave. Metairie, LA, 70001
Texas
Corpus Christi Public Library La Retama Central Library 805 Comanche Corpus Christi, TX 78401

M.3.4 Comments on the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

The Action Proponents would like to thank the elected officials, Native American tribes and nations, federal regulatory and state resource agencies, business and community leaders, organizations, and individuals for taking the time to review the Draft Supplemental EIS/OEIS, attend the public meetings, and submit comments. Public informational meetings and public participation are an essential aspect of the environmental review process.

Comments on the Draft Supplemental EIS/OEIS were received from three federal agencies, five state agencies, one nongovernmental organization and two private individuals for a total of 11 comment submissions.

The 11 comment submissions were reviewed and categorized according to topic. Longer comments were broken down into multiple separate categories to properly and fully capture all of the different points within the letter (i.e., a comment may contain more than one theme within it).

M.3.4.1 Comment Response Process

The Action Proponents considered and responded to all comments received on the Draft Supplemental EIS/OEIS. Comments were assessed and responded to as described below.

The project team carefully reviewed all comments and categorized them. Each comment was assigned to one or more resource-specific specialists from the interdisciplinary team for review. Substantive comments, defined as those that provided new information or analysis or remarked on the methodology, data, or conclusions of the Draft Supplemental EIS/OEIS, were identified for further consideration. The Final Supplemental EIS/OEIS analysis was updated as warranted based on the review of substantive comments. Comment responses were developed for every comment based on the above-described comment review and Final Supplemental EIS/OEIS update process. These responses identify sections of the Final Supplemental EIS/OEIS where revisions were made or provide details on where additional information can be found.

Substantive comments on the Draft Supplemental EIS/OEIS and responses are provided in **Error! Not a valid bookmark self-reference.**. The original copy of each comment submission is shown in Figure M.3-4 through Figure M.3-13.

Table M.3-4: Public Comments and Responses

Category	*Comment*	*Response*
Virginia Department of Environmental Quality (DEQ) (Figure M.3-4) (note: Virginia DEQ consolidated and submitted comments from all Virginia state agencies)		
Mitigation	[Department of Conservation and Recreation's Division of Natural Heritage (DCR)] recommends restricting any activities from April until August near the Parramore Island, Wreck Island, and False Cape Natural Area Preserves during migration/nesting activities for Sea Turtles and Migratory Birds.	The only activity that occurs near these islands is aircraft overflight. The Virginia Capes Bird Mitigation Area (a continuation from the 2018 Final EIS/OEIS) establishes a year-round requirement for rotary-wing aircraft to maintain shoreline standoff distances from important nesting habitats within the Virginia Capes Range Complex. While the protection focus is Endangered Species Act (ESA)-listed and other birds, nesting sea turtles would also benefit from this year-round restriction.
ESA Consultation	Due to the legal status of many of these species, DCR also recommends continued coordination with the Virginia Department of Wildlife Resources (DWR), the United States Fish and Wildlife Service (USWFS) and the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) for information regarding the possible impacts and to ensure compliance with protected species legislation.	Thank you for your review. The Navy consulted with NMFS and USFWS. The Navy will continue to comply with its obligations under applicable laws and regulations, including reinitiating consultation as required.
Section 106 Consultation	The Department of the Navy or its agents must consult directly with [Department of Historic Resources (DHR)] pursuant to Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations codified at 36 CFR Part 800 which require Federal agencies to consider the effects of their undertakings on historic properties.	Thank you for your review. The Action Proponents consulted with the State Historic Preservation Office for Virginia, as required by Section 106 of the National Historic Preservation Act and its implementing regulations. Consultation has also been conducted with State Historic Preservation Offices from all other potentially impacted States.
Permitting	Permanent or temporary impacts to surface waters and wetlands may require DEQ authorization under §401 of the Clean Water Act, Virginia Code §62.1-44.15:20, and Virginia Administrative Code 9 VAC 25-210-10 et seq. Provided that any and all necessary permits are obtained and complied with, the project will be consistent with DEQ program requirements.	The Action Proponents will comply with applicable laws and regulations.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Pollution Prevention	We have several pollution prevention recommendations that may be helpful in operations, as applicable: Consider development of an effective Environmental Management System (EMS)…Consider environmental attributes when purchasing materials…Consider contractor' commitment to the environment when choosing contractors....Integrate pollution prevention techniques into facility maintenance and operations to include inventory control for centralized storage of hazardous materials.	While the AFTT Supplemental EIS/OEIS focuses on training and testing activities conducted at sea, we recognize the importance of environmental stewardship in all Navy operations. Regarding DEQ's specific recommendations: EMS: The Department of the Navy maintains a robust EMS program, as directed by the Department of Defense, to ensure environmental compliance and readiness at Navy shore installations. This program aligns with many of the principles outlined by DEQ's Virginia Environmental Excellence Program (VEEP). Purchasing & Contractors: The U.S. Navy, in accordance with federal mandates (e.g., Federal Acquisition Regulation) and sustainability goals, actively incorporates environmental considerations into its procurement processes. This includes evaluating factors such as recycled content, toxicity levels, and packaging when selecting materials and engaging contractors. These requirements are embedded in contracts, solicitations, and certifications, and the Navy tailors its approach to address specific operational needs while promoting environmental responsibility. Pollution Prevention Techniques: The Navy is committed to integrating pollution prevention (P2) principles into its operations. This includes minimizing waste generation through source reduction, material substitution, conservation practices, and reuse initiatives, particularly for hazardous materials. The Navy also prioritizes proper waste management, including for solid waste, plastics, and ozone-depleting substances, and provides training on responding to and mitigating accidental releases. The Navy is committed to minimizing the environmental footprint of its activities. We will continue to explore opportunities to incorporate pollution prevention principles and best practices wherever feasible within the scope of the proposed AFTT activities. For a more complete description of the Navy's various Afloat and Ashore environmental compliance programs, view the Chief of Naval Operations Environmental Readiness and Program Manual (OPNAV M-5090.1) available online.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Pollution Prevention	DEQ encourages all projects to implement pollution prevention principles, including: The reduction, reuse and recycling of all solid wastes generated; and the minimization and proper handling of hazardous wastes.	The Navy complies with all applicable laws and regulations governing solid and hazardous waste. The Navy actively reduces, reuses, and recycles solid wastes generated, prioritizing waste reduction at the source and actively pursuing reuse and recycling opportunities, both onboard vessels and at shore installations. The Navy also minimizes the generation of hazardous waste and ensures its proper handling, storage, and disposal in accordance with all applicable regulations. While this Supplemental EIS/OEIS focuses on training and testing activities conducted at sea, these pollution prevention principles are integrated into all aspects of Navy operations to minimize environmental impacts.
Marine Mammal Commission (Figure M.3-5)		
Criteria & Threshold Science	The Commission recommends that the Navy review the data from Kastelein et al. (2024a) and determine whether inclusion of the data would alter the weighting function and/or thresholds for very high-frequency cetaceans and if so, whether those modifications are sufficient to warrant revision of the current weighting function and associated thresholds for non-impulsive sources as stimulated in Department of the Navy (2024a).	The Marine Mammal Commission (Commission) notes that while the Navy's Phase IV criteria (Department of Navy, 2024a) align with the thresholds recommended in Finneran (2024), Kastelein et al. (2024a) presents more recent data that could influence these calculations. The Navy acknowledges that data sharing for ongoing research is at the discretion of the researchers and funding agencies. Because the specific data from Kastelein et al. (2024a) were not shared with the Navy prior to peer review and publication, it could not be incorporated into the development of the Phase IV Criteria and Thresholds. However, the Navy's current approach, using the existing Phase IV criteria, remains conservative even when compared to the findings of Kastelein et al. (2024a). Specifically, incorporating the temporary threshold shift (TTS) onset value of 169 decibels (dB) sound exposure level (SEL) reported by Kastelein et al. (2024a) would raise the very high frequency (VHF) non-impulse exposure function by 4 dB. Thus, the current function is more protective. The impact on other impulsive and non-impulsive exposure functions is negligible (1 dB or less). Therefore, the Navy concludes that revisions to the Phase IV Criteria and Thresholds are not warranted at this time.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science	[T]he Commission recommends that the Navy specify whether the [low frequency (LF)] weighting function has been shifted far enough to the higher frequencies to reflect that 32 [kilohertz (kHz)] was the most sensitive frequency testing in minke whales, determine whether use of the [Phocid Composite Weighting (PCW)] composite audiogram, weighting function, and threshold parameters are more representative of [very low frequency (VLF)] and LF cetaceans than medians and means of the five other functional hearing groups, and revise the VLF and LF composite audiograms, weighting functions and thresholds as needed for impulsive and non-impulsive sources for the [Final] EIS and [Letter of Authorization (LOA)] application.	The Navy disagrees that wholesale adoption of the PCW parameters or shifting the LF weighting function solely based on the 32 kHz sensitivity of minke whales is scientifically justified. There is no scientific evidence to support the exclusive use of the PCW composite audiogram and weighting function parameters for the LF and VLF groups. Adolescent minke whales were tested by Houser et al. (2024) specifically because of their small size compared to other baleen whales. Smaller head size generally facilitates hearing at higher frequencies, so a shift of the entire LF curve to a center frequency of 32 kHz is not likely representative of most baleen whales, which are larger in size compared to adolescent minke whales. Therefore, the Navy maintains, based on the weight of the evidence, that the existing LF weighting function and the use of medians and means from multiple functional hearing groups provide a more representative and protective approach for assessing acoustic impacts on VLF and LF cetaceans. This approach incorporates data from a broader range of species and avoids overreliance on data from a single species or functional hearing group.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science	Justification was not provided regarding why the upper bound of the [behavioral response functions (BRFs)] increased from 185 to 200 [decibel referenced to one micropascal (dB re 1 µPa)] for Phase IV. • None of the raw behavioral data include exposures above 185 dB re 1 µPa (see Table E-1 in Department of the Navy 2024a). • Although the upper bound was set by subject matter experts for Phase III (Department of the Navy 2017a), it appears arbitrary for Phase IV. Such a change would result in the Phase IV functions moving farther to the right toward high received levels, the 50 percent probabilities occurring at high received levels, the slopes of the functions being less steep, and the overall BRFs for odontocetes and mysticetes being less precautionary as compared to Phase III (see figure 42 in Department of the Navy 2024a and note the flat slope between 185 and 200 dB re 1 µPA on all BRFs for Phase III). • Additionally, the Department of the Navy (2024a) indicated that the 50 percent probability of a behavioral response was estimated to occur at 185 dB re 1 µPA for the mysticete BRF, 8dB higher than the TTS threshold for LF and VLF cetaceans.	The Navy adjusted the upper bound of the BRFs in Phase IV to more accurately reflect observed behavioral data, particularly at higher received levels. For example, sonar received levels between 170 and 182 dB re 1 µPa for humpback whales during 3S2 and between 175 and 186 dB re 1 µPa for sperm whales during 3S3 did not elicit observable responses. Please see Table E-1 in the revised technical report *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase IV)* (herein referred to as the Criteria and Thresholds Technical Report) (Department of Navy 2025a). Extending the upper bound to 200 dB re 1 µPa allows the BRFs to account for this lack of response at higher received levels. This adjustment does not arbitrarily shift the entire curve to the right, as the Commission suggests. For groups like pinnipeds, where responses are consistently observed at lower received levels, the BRF approaches 100 percent response probability at 185 dB re 1 µPa. Therefore, the upper bound adjustment primarily impacts the odontocete and mysticete BRFs, reflecting the observed data at higher exposures. It is also important to note that the BRFs were extended to 90 dB re 1 µPa in Phase IV (compared to the 100 dB re 1 µPa lower limit used in Phase III), further demonstrating that the adjustments were not solely focused on increasing the upper bound. The Commission's observation of a flat slope between 185 and 200 dB re 1 µPa for the Phase III BRFs shown in Figure 42 (Department of the Navy 2024a) was a result of anchoring the Phase III BRFs at 185 dB re 1 µPa and then extending them to 200 dB re 1 µPa for plotting purposes. Finally, regarding the point that the upper level of the mysticete BRF exceeds the TTS onset, it's important to emphasize that auditory and behavioral criteria are not directly linked. The Navy recognizes the evolving nature of acoustic science and will continue to refine its effects criteria as new data and understanding become available.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science	None of the Southall et al. (2018, 2019, 2020, 2021, 2022, 2023) data for the Atlantic behavioral response study (BRS) involving beaked whales and other odontocetes were included. However, 'in prep' data were included for auditory thresholds, and data that were underlying but not specifically included in the publications were used for the BRFs. This information may have been particularly useful to [assess] whether the less sensitive BRFs that were developed for Phase IV would have been supported by the Atlantic BRS data.	The Commission notes that data from the BRS conducted by Southall et al. (spanning 2018 to 2023) were not included in the development of the Phase IV BRFs. The Commission suggests that this information, particularly regarding beaked whales and other odontocetes, may have been valuable in assessing the appropriateness of the Phase IV BRFs. The Navy develops its BRFs using the best available scientific data. While data from the Atlantic BRS cited by the Commission were collected during the timeframe referenced, these data were not available for use in the development of the behavioral risk functions for Phase IV. These functions are always developed in close consultation with scientists conducting BRS/CEE studies, but when the data are not yet published, it is up to the researchers whether they are ready to share their raw data with the Navy. The Atlantic BRS scientists were working on their analysis methodologies and did not feel that their behavioral response results were ready to be shared in time for the development of the Navy risk thresholds. The Navy remains committed to incorporating the best available scientific data into its impact assessments and will revisit its BRFs as new information, including the published results of the Atlantic BRS, becomes available.
Criteria & Threshold Science	The odontocete BRF incorporated 30 random samples from the dose-response function developed for just the moderate and severe responses of captive bottlenose dolphins (Houser et al. 2013b) to give equal weighting to the field and captive studies. • Houser et al. (2013b) included dose-response functions derived from all of the raw data. It is unclear why the Navy used only the moderate and severe responses to derive a new dose-response function for captive bottlenose dolphins, as this would skew the subsequent odontocete BRF to the right, particularly at the lower response probabilities and lower received levels, as seen in Figure 42 in Department of the Navy (2024a). • Further, there are more than 30 exposures for the field studies, so equal weighting of field to captive studies was not achieved as specified in Department of the Navy (2024a).	All the data from Houser et al. (2013a, 2013b) were included in the modified risk functions developed for subsampling in the Navy's BRFs. However, low-severity responses were classified as "non-responses" when deriving the BRFs. This approach, consistent with Phase III, reflects that low-severity behavioral responses are not considered "harassment" under the Marine Mammal Protection Act (MMPA) during military readiness activities. To balance field and captive study data, a subsampling method was used. This involved creating modified risk functions incorporating the new scoring values (classifying low-severity responses as non-responses) at different received levels. Thirty data points were then randomly selected from the bottlenose dolphin risk function generated using this method.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science (continued)		This subsampling approach, similar to that used for beaked whale data in both Phase III and Phase IV, ensures each individual animal from the captive study receives equal weight, comparable to individuals from field studies. This allows for a more comprehensive consideration of exposures and responses for each species, unlike Phase III's selection of a single response level per individual. This methodology is clarified in the revised Criteria and Thresholds Technical Report.
Criteria & Threshold Science	The sensitive species BRF[16] incorporated 10 random samples from the generalized additive models (GAMs) that were developed from passive acoustic monitoring data in Moretti et al. (2014) and Jacobson et al. (2022) and that ranged from 120 to 180 dB re 1 µPa. • Department of the Navy (2024a) did not specify how the 10 random samples were allocated between the GAMs nor did it specify how it handled the fact that the Jacobson et al. (2022) GAM went to only 165 dB re 1 µPa and was based on the decrease in the probability of a group vocal period (GVP; i.e., foraging dive), while the Moretti et al. (2014) GAM went to 180 dB re 1 µPa and included GAMs for both the decrease in the probability of a GVP and probability of disturbance. • Jacobson et al. (2022) specifically stated that they did not make an inference on sonar received levels above 165 dB re 1 µPa, because no GVPs were observed above this received level. Since the 10 random samples used for the BRFs were not included in Table 21 of Department of the Navy (2024a), it is unclear whether those samples could be causing the lesser sensitivity at the higher received levels in the sensitive species BRF as compared to the Phase III BRF. • It also is unclear why similar passive acoustic monitoring data were not used for beaked whales at the Southern California Acoustic Range and minke whales at [Pacific Missile Range Facility (PMRF)], since those data have been collected and reported on as part of the Navy's Marine Species Monitoring Program for Phase III.	While the GAM published in Jacobson et al. (2022) only extended to 165 dB, the Navy requested that authors rerun their model to 200 dB to create a new curve that could be subsampled for the Navy Phase IV risk function; the same was done for the Moretti et al. (2014) data. Therefore, the two beaked whale range-based risk functions extended to the same bandwidth as the Navy BRF and the subsampling matched the rest of the data. The Criteria and Thresholds Technical Report has been updated to reflect that the published GAMs were rerun with the broader bandwidth. The Navy is committed to ensuring scientific integrity in datasets used for BRF development. Using data that do not meet these criteria could result in unreliable or misleading risk assessments. A risk function has not yet been fit to Southern California Anti-Submarine Warfare Range (SOAR) data for beaked whales, nor has one been fit for minke whales at PMRF. The BRFs in Phase IV utilized only individual response-RL data outside of the four pre-existing risk functions that were subsampled. There were not individual response-RL data available for beaked whales at SOAR nor for minke whales at PMRF, therefore those data were not used in the Phase IV BRFs. As the science continues to evolve, the Navy will continue to refine its effects criteria. The Navy remains committed to incorporating new data and analyses, including those from SOAR and PMRF, as they become available and meet the rigorous standards required for robust BRF development.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science (continued)	[16] Department of the Navy (2024a) indicated that, for harbor porpoises, a large enough aggregation of controlled exposure studies involving captive animals existed such that a risk function could be developed. The Commission understands that the Navy was referring to development of the actual BRF, not a separate harbor porpoise dose-response function that was used for other captive studies. This should be clarified in Department of the Navy (2024a).	As requested in footnote to this comment (#16), the statement in the revised Criteria and Thresholds Technical Report regarding the use of harbor porpoise data in behavioral response function development has been clarified.
Criteria & Threshold Science	For harbor porpoises, multiple received levels were noted for the same individual exposed to the same sound source (i.e., high-frequency active sonar (HFAS)) in table E-1. Since the specific Kastelein et al. references were not provided, it is unclear whether the experimental scenarios differed enough that the data were considered independent or whether only the lowest received level for each individual should have been used.	When the same individuals were tested at multiple received levels for the same source within a single study, only the lowest received level eliciting a response was included in the Kastelein data used for BRF development. However, in some studies Kastelein tested the same sources using different parameters, such as an upsweep versus a downsweep signal (e.g., Kastelein et al. 2014b, where both low frequency and mid frequency active sonar signals were tested as both a downsweep and upsweep), or as a continuous versus pulsed active sonar signal (e.g. Kastelein et al. 2018b). In that case, the response to both signal parameters would have been used in the BRF as those would be considered different signals. The citations for the relevant Kastelein studies, previously provided in Tables 19 and 20, have been added to Table E-1 in the revised Criteria and Thresholds Technical Report.
Criteria & Threshold Science	The pinniped BRF incorporated 15 random samples from the dose-response function developed for just the moderate and severe responses of captive California sea lions (Houser et al. 2013a). • It is unclear why the captive dose-response function from Houser et al. (2013a) that was derived from all of the raw data was not used for subsampling.	The Navy confirms that all data from the Houser et al. (2013a) California sea lion controlled exposure experiment were considered in developing the Phase IV BRFs. However, as with the odontocete BRF, low-severity responses were classified as "non-responses" when deriving the BRF. This decision aligns with the Navy's approach to assessing potential harassment under the MMPA during military readiness activities, where low-severity responses are not considered indicative of harassment. The original curves developed by Houser et al. (2013a) were not used because they included the low-severity responses as responses. This approach is clarified in the revised Criteria and Thresholds Technical Report.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science	The executive summary, Tables 21-24, Figures 43-45, and accompanying text, as well as Table E-1 in Department of the Navy (2024a) included contradictory information regarding the range of received levels for both exposures and responses, distances at which the responses occurred, and the number of significant responses (see the Addendum herein). Further, Table E-1 does not appear to include the Blainville's beaked whale information from Tyack et al. (2011), Moretti et al (2014), and Jacobson et al. (2022). The table also appears to include only the raw data from Houser et al. (2013a, b), not the subsampled data from the re-derived dose-response functions that then were used for the BRFs. Absent consistent information, it is difficult to assess the appropriateness of the various BRFs and the Navy's cut-off distances. The Commission recommends that the Navy revise Department of the Navy (2024a) to clarify and address all of these points. The Commission further recommends that the Navy use the dose-response functions that were developed from all the raw data rather than those that were regenerated for only moderate and severe responses and refrain from extrapolating beyond the bounds of the underlying data when revising BRFs.	The Navy has carefully reviewed the discrepancies identified in the Commission's addendum and has made the necessary corrections to the revised Criteria and Thresholds Technical Report. These revisions ensure consistency in the reported ranges of received levels, distances, and significant responses across the executive summary, tables, figures, and accompanying text. Specifically, the Navy updated Table E-1 in the revised Criteria and Thresholds Technical Report to include data for Blainville's beaked whales from Tyack et al. (2011). The studies by Moretti et al. (2014) and Jacobson et al. (2022) involved aggregated and modeled data rather than individual animal responses and were therefore incorporated into the BRFs through a random subsampling process, as described in the Criteria and Thresholds Technical Report, rather than being presented directly in Table E-1, which focuses on individual-level data. Finally, the Navy confirms that it used the data from Houser et al. (2013a, 2013b) to develop the new risk functions. As noted earlier, low-severity responses were scored as "non-responses" within these functions to align with the Navy's approach to assessing potential harassment under the MMPA. These new risk functions were then subsampled using the same method applied to the beaked whale range risk functions in both Phase III and Phase IV, ensuring consistency in the Navy's treatment of such data. This subsampling approach, described in detail within those reports, ensures appropriate weighting of individual responses and contributes to the robustness of the Navy's BRFs.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Modeling	The Commission recommends that the Navy make a concerted effort to incorporate data that support criteria and threshold development more often than on a decadal cycle and revise [the Navy Acoustic Effects Model (NAEMO)] to implement the relevant criteria and thresholds at a true post-processing stage so that animate dosimeter data can be re-queried if thresholds change, rather than needing to remodel the animate-portion of NAEMO.	Navy Criteria and Thresholds are typically updated at the beginning of each at-sea Phase. This is a significant effort that involves collecting published data; working with marine mammal researchers to collect and understand emergent data; developing methods to incorporate the data; writing and publishing the technical report; and seeking approvals from Navy leadership and NMFS. Nevertheless, emergent data is continuously assessed against the current criteria and thresholds to ascertain whether it would create significant changes to the Navy's analysis. If so, the analysis would be altered to reflect this emergent data. The Navy is continuously reassessing and evolving its analysis methods including the need to more frequently update criteria and threshold and the feasibility for NAEMO to more rapidly incorporate such changes.
Criteria & Threshold Science	The Commission remains concerned that, following the development of the BRFs and consistent with Phase III, the Navy implemented various cut-off distances beyond which it considered the potential for significant behavioral responses to be unlikely (Table 4 in Department of the Navy 2024a). The Navy previously indicated that the context of the exposure is likely more important than the amplitude at large distances (Department of the Navy 2017a)—that is, the context-based response dominates the level-based response. The Commission agrees with that notion but notes that the Bayesian BRFs specifically are intended to incorporate those factors. Thus, including additional cut-off distances would contradict the data underlying the Bayesian BRFs, negate the intent of the functions, and ultimately underestimate the numbers of takes.	The Phase IV approach represents a refinement in assessing potential behavioral impacts. It employs a probability of response condition for high source level exposures, addressing previous concerns from the Commission about potentially cutting off responses when the probability remained above 50 percent. This approach, combined with the distance cut-off, provides a more nuanced and protective assessment compared to the Phase III methodology, which relied solely on distance cut-offs. Therefore, directly comparing Phase III and Phase IV cut-off distances is not appropriate. The Navy is confident that this combined distance and probability threshold approach is well-substantiated by available data and effectively avoids underestimating potential behavioral responses to acoustic sources.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science (continued)	For Phase IV activities, the Navy did add a condition that if a take were to occur beyond the relevant cut-off distance but above the 50 percent probability for a given BRF (e.g., a bottlenose dolphin exposed at 18 km and at a received level where the probability of response was 65 percent), it would be considered a significant response. That condition was further qualified based on the Navy assuming that animats would avoid a sound source between the response probabilities of 50 to 90 percent (avoidance is discussed further herein). Regardless of how the cut-off distances were qualified, they remain unsubstantiated and are less than what the Navy used for Phase III activities. Regardless of how the cut-off distances were qualified, they remain unsubstantiated and are less than what the Navy used for Phase III activities.	To clarify, Section 3.1.4 (Dose and Contextual Responses) of the Criteria and Thresholds Technical Report explains that at low received levels, distance to the sound source or platform likely mediates the likelihood of a behavioral response. Although distance was investigated as a covariate in the Bayesian behavioral response function model, most behavioral response studies to date have used similar source levels making received level and source-receiver distance tightly correlated (see Section 3.1.9 [Behavioral Cut-off Conditions] of the Criteria and Thresholds Technical Report). Therefore, including distance in the model using the available response- received level data did not improve the behavioral response functions. Still, the Navy agrees that distance is an important contextual factor. Since it was not possible to directly account for distance in the Bayesian model at this time, the Navy incorporated the behavioral cut-off conditions, beyond which significant behavioral reactions are assumed to be unlikely. As described in Section 3.1.9 ([Behavioral Cut-off Conditions)] of the Criteria and Thresholds Technical Report, the distance cut-off conditions were conservatively estimated based on observations from multiple cited studies. Applying the distance cut-off condition is appropriate to reasonably estimate significant impacts. In addition, high source level exposures are addressed using a probability of response condition rather than the dual distance cut-off applied in Phase III. This method was devised in part to address public comments, including those from the Commission, received in Phase III that were concerned with cutting off behavioral responses, in some cases, where the probability of response was still above 50 percent. The concurrent application of this probability of response condition in Phase IV increases the prediction of significant impacts beyond the distance cut-off in some instances.
Criteria & Threshold Science	Further, Figures 43–45 in Department of the Navy (2024a) are missing certain data that were specified in Table E-1 and in some instances have depicted the data incorrectly in terms of response, range, received level, and/or sample size relative to Table E-1. These inconsistencies make it difficult to assess the Navy's assumptions regarding cut-off distances similar to the BRFs.	Appendix E in the Navy's Criteria and Thresholds Technical Report has been revised to correct these discrepancies.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science	As another example, a sperm whale stopped resting and had a moderate change in its dive profile that occurred for a shorter duration than the exposure. It is unclear how long the response lasted but it did occur nearly 38 km from the sound source and at a received level of approximately 114 dB re 1 µPa (Table E-1 in Department of the Navy 2024a)—the cut-off distance for odontocetes is 15 [kilometers (km)] and the received level for the 50-percent probability of response is 168 dB re 1 µPa. Although this animal was incorrectly denoted as having a significant behavioral response in Table E-1 of Department of the Navy (2024a) due to the length of response, it highlights that responses do occur at larger distances and lower received levels than the cut-off distances and 50-percent probability of response portray. For harbor porpoises and pinnipeds, there currently are no data on a wild animal's response and relative distance to Navy acoustic sound sources.	As described in Section 3.1.9 (Behavioral Cut-off Conditions), the cut-off conditions are applied to predict significant behavioral responses. As the Commission points out, data to support distant cut-offs is not absent. The data used to inform the behavioral response functions includes observations beyond 10 km, as do other studies cited in Section 3.1.9 (Behavioral Cut-Off Conditions) in the Navy's Criteria and Thresholds Technical Report. This includes data on exposures to other sound sources which is informative when data on exposure to sonars is limited. The cut-off conditions encompass the data (where distance and received level are known) used to develop the behavioral response functions. Although behavioral responses are predicted beyond the cut-off conditions, these are not expected to rise to the level of harassment under the MMPA as defined for military readiness activities. Finally, the Commission raises a separate point about a mysticete response; however, this example refers to a bottlenose whale, which falls under the Sensitive Species group (including beaked whales). This response, occurring at 16.8 km and 128 dB re 1 µPa, falls within the established cut-off conditions for this group. The error in the entry for the sperm whale in Table E-1 of the Criteria and Thresholds Technical Report has been addressed.

Table M.3-4: Public Comments and Responses (continued)

Criteria & Threshold Science	The Commission again recommends that the Navy refrain from using cut-off distances in conjunction with the Bayesian BRFs and re-estimate the numbers of marine mammal takes based solely on the Bayesian BRFs for the [Final Supplemental EIS/OEIS] and LOA application.	The Navy acknowledges the Commission's perspective but maintains that the combined use of cut-off distances and BRFs provides a more accurate and realistic assessment of potential behavioral impacts, particularly for military readiness activities. While Tyack and Thomas (2019) cautioned against using step functions anchored to the 50 percent response level of dose-response curves, the Navy's methodology does not employ such an approach. Instead, the cut-off distances, informed by the farthest observed distances of significant behavioral reactions in the available data (including those exceeding 10 km), serve as a threshold for identifying responses reasonably likely to rise to the level of harassment under the MMPA as applied to military readiness activities. This approach prevents underestimation of significant impacts while acknowledging that responses occurring beyond these distances, while possible, are less likely to reach this level of concern. The Navy's Phase IV approach, incorporating both BRFs and scientifically informed cut-off distances, offers a more nuanced and realistic assessment of potential behavioral impacts compared to relying solely on BRFs. This approach balances the statistical probabilities derived from the BRFs with empirical observations of behavioral responses in the field. The Navy is confident that this combined approach, while still incorporating conservatism to account for uncertainty, does not underestimate potential Level B takes under the MMPA during military readiness activities and provides a more accurate representation of potential impacts. Therefore, the Navy believes that re-estimating marine mammal takes solely based on BRFs is not warranted. As the science related to marine mammal behavior advances, the Navy will continue to work with NMFS to refine consideration of contextual factors, such as distance, in its assessment of behavioral responses. Currently, the Navy's behavioral response functions with the cut-off conditions provide the public and regulators with a more realistic (but still conservative where uncertainties exist) estimate of impacts and potential takes under military readiness for the Proposed Action. Because the Navy's estimations were realistic and conservative where uncertainties exist, it is not necessary for the Navy to re-estimate marine mammal takes.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Criteria & Threshold Science	The Commission recommends that the Navy include behavior takes of marine mammals during all explosive activities, including those that involve single detonations and gunnery exercises that have several detonations occurring with a few seconds, in the [Final Supplemental EIS/OEIS] and LOA application and invest additional resources in conducting behavioral response studies on marine mammals' responses, including pinnipeds, to underwater detonations for the derivation of explosive BRFs.	There is limited information upon which to estimate behavioral response thresholds specific to explosives. Therefore, as described in the Criteria and Thresholds Technical Report, the behaviors exhibited by animals exposed to brief intense tones in the Schlundt et al. (2000) study continue to inform the behavioral response threshold for explosives. Some of the observed behaviors in that study would be considered moderate severity for captive animals with trained behaviors and thus may be potentially significant. Appropriate threshold metrics are applied for this criterion given the supporting data. Additionally, root-mean-square sound pressure levels are not a preferred metric for explosives due to the challenge of identifying the appropriate time window. Most explosive activities, including all explosive gunnery activities, analyzed in this Supplemental EIS/OEIS include multiple detonations. For these activities, significant behavioral responses are assumed to occur if the cumulative sound exposure levels are equal to or greater than 5 dB less than the threshold for onset of TTS. For single detonations, the analysis in Appendix E (Acoustic and Explosive Impact Analysis) assumes that any auditory impact (TTS or AINJ) may have a concurrent significant behavioral response. This assumption for single detonations has been clarified in the revised Criteria and Thresholds Technical Report.
Marine Mammal Science	Department of the Navy (2024b) did not justify why spherical spreading was used rather than the propagation loss resulting from NAEMO modeling for each individual event. The Commission recommends that the Navy use an avoidance swim speed of no more than 2 [meters per second (m/s)] for harbor porpoises and 1 m/s for pinnipeds and revise the NAEMO modeling and take estimates appropriately for the [Final Supplemental EIS/OEIS] and LOA application.	The avoidance method was newly integrated into the existing NAEMO software framework for Phase IV and was built into the post-processor stage. The post processor stage does not have access to the propagation loss data. Using a generalized spherical spreading propagation loss was most appropriate given the data available within the post processor and the design of the avoidance methods. Therefore, using a simplified propagation loss model for this specific analysis does not significantly impact the overall conservatism of the impact assessment.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Marine Mammal Science (continued)		The Navy acknowledges the importance of using appropriate swim speeds in the avoidance analysis, which assesses the potential for animals to mitigate high-intensity sound exposures that could lead to auditory injury. While baseline swim speeds can be informative, the Navy prioritizes data on swim behavior observed near and during anthropogenic disturbance. These data are considered more representative of how animals might respond to acoustic stimuli and potentially reduce injury risk. The Commission references a study by Kastelein et al. (2018) as support for a lower harbor porpoise swim speed. However, the cited 7.1 kilometers per hour (km/hr) (approximately 2 m/s) represents the sustained average speed of a single captive harbor porpoise in a relatively small pool during a pile driving playback study at exposures below those causing auditory injury. This specific observation does not accurately reflect the full range of harbor porpoise swim capabilities. As documented in Table 8 of the technical report, Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing, data from free-swimming harbor porpoises indicate swim speeds up to and exceeding 3 m/s, supporting the Navy's chosen value for modeling avoidance. For pinnipeds, the avoidance analysis uses a reasonable swim speed of 2 m/s for a limited duration (10 minutes), acknowledging the lack of observed data on their swim behavior during acoustic exposures. This assumption balances the need for a realistic representation of potential avoidance behavior with the limited data availability, contributing to a conservative assessment of potential impacts.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Modeling	Since NAEMO's current animat modeling and avoidance processes are not considered best available science, the Commission recommends that the Navy incorporate moving animates that can actively avoid sound sources based on species-specific dive profiles and swim speeds for Phase V activities and, if that is not feasible, incorporate species-specific swim speeds and the actual modeled sound propagation to simulate avoidance for a given event into NAEMO.	The Navy's approach to modeling impacts, as described in the Criteria and Thresholds Technical Report, is based on the best available science. In early NAEMO development, the Navy compared the number of exposures (i.e., >120 dB) using the Marine Mammal Movement and Behavior (3MB) model vs. horizontally stationary animats and concluded that there was no significant difference in behavioral exposures between the two distribution methods. Thus, horizontally stationary animats were selected for computational efficiency. The Navy recognizes the evolving nature of modeling techniques and acknowledges the Commission's desire for more dynamic and species-specific avoidance behaviors in future iterations of NAEMO. The Navy will consider species-specific swim speeds and potentially more complex movement models, as data availability and computational capabilities allow. Currently, however, detailed avoidance data for many species are limited, necessitating the use of surrogate data and generalized approaches, as is also the case with dive profiles. The Navy will continue to prioritize research and development efforts to enhance the accuracy of its impact modeling tools, ensuring the best available science informs its environmental assessments.
Modeling	To better assess repeated exposures of individuals and population-level consequences, the Commission recommends that the Navy use NAEMO to conduct modeling of both multi-day events and multiple single-day events to estimate the number of repeated exposures an individual is expected to incur.	While the assessment of the distribution of repeated takes amongst individuals may appear basic, calculating repeated takes is challenging to do at the scale required for the major Navy study areas. A credible assessment of the repeated takes due to the Navy's proposed action per the approach suggested in the comment would require treating animats as unique individuals over the course of a year's activity and across a large study area, while incorporating migration patterns and nomadic movement. Such an effort would be computationally intensive and likely infeasible given reasonable resources. In contrast, the action analyzed by Zeddies et al. was less complex than the Navy action. Thus, Zeddies et al. could assess repeated takes within spatially and temporally limited areas with undirected animal ingress/egress.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Modeling (continued)		Still, the Navy's analysis provides sufficient information to assess impacts to marine mammal populations. In addition to the ratio of takes to abundance presented in Appendix E (Acoustic and Explosive Impacts Analysis), the Navy has presented other information in its assessment that can inform the potential for repeated takes of individuals and impacts to each stock. This includes the geographic region in which impacts are predicted, whether impacts occur in cold or warm seasons, stock vulnerability factors (defined in Section 2.3.4 [Risks to Marine Mammal Populations] of Appendix E), and relevant information related to the population consequences of disturbance themes identified in Keen et al. (2021). The Navy will review the best available science and consider additional methods to assess repeated exposures in future updates to NAEMO software.
Modeling	The Commission recommends that the Navy conduct a rigorous comparison of [the Comprehensive Acoustic Simulation System using the Gaussian Ray Bundle model (CASS/GRAB)] and the similitude equation and the in situ measurements of the USS Ford ship shock trial from Seger et al. (2023) to fulfill the intent of the project.	The Navy plans to conduct a verification of the impulsive propagation methods in NAEMO using the Seger et al (2023) data.
Modeling	It is unclear why [the Range-dependent Acoustic Model/Parabolic Equation (RAM/PE)] was not used for underwater detonations that would occur in waters 50 m or less, where CASS/GRAB generally is not used. Further, Department of the Navy (2024b) specified that the similitude equation is valid only over a range of pressures equating to a NEW of up to 28.8 lbs. The Commission further recommends that the Navy use RAM/PE to model all underwater detonations for Phase IV activities for which modeling has not been completed and for all Phase V activities, until such time that CASS/GRAB and the similitude equation have been validated for the range of detonation sizes and environmental parameters (water depth and receiver range) in which it would be used.	The NAEMO impulsive modeling methods, as described in the technical report *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing* (Department of the Navy, 2024b), require arrival times, sound levels, and phases to be output from the propagation model. RAM/PE does not output the time information necessary for simulation and is thus not a suitable option for impulsive modeling in NAEMO. The limitations of the similitude equation are discussed in Section 4.1.3.2 of the technical report *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing,* and comparisons between the peak pressure computed at various ranges against the theoretical value based on the similitude equation showed agreement, providing confidence that the similitude equation was appropriate for use in NAEMO.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Modeling (continued)		The Navy is committed to ensuring the accuracy of its impulsive propagation models and recognizes the importance of ongoing validation efforts. While the similitude equation has been evaluated and demonstrated good agreement with measured data, as detailed in Section 4.1.3.2 of the technical report *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing*, the Navy is open to exploring alternative approaches to meet NAEMO's requirements.
Modeling	Thus, contrary to the Navy and NMFS's continued presumption, behavioral responses do in fact occur at ranges beyond TTS for single detonations.	The Navy clarifies that it does not presume that behavioral responses are absent beyond the TTS range for single detonations. Rather, the Navy assumes that any significant behavioral responses rising to the level of harassment under the MMPA for military readiness activities are unlikely to occur beyond the range to TTS. For most locations and animal classes, acoustic presence was not significantly different after the detonation compared to before the detonation. The researchers note that decreases in acoustic presence following the detonations could have been affected by natural diel or crepuscular cycles.
Modeling	The Commission recommends that the Navy review its previous monitoring reports for both construction activities and any pile-driving activities associated with AFTT Phase I, II, or III [Final EISs] to estimate the mean time an animal is expected to remain near a pile-driving activity and revise the accumulation time, range to effects, and numbers of takes accordingly for the [Final Supplemental EIS/OEIS] and LOA application.	The Navy's monitoring procedures for shoreline construction activities are often not able to ascertain residence time due to several factors. Although there are some cases where animals are reported near pile driving activities during monitoring efforts, this is often during pre- and post- monitoring periods or after a pile driving activity has been shut down (i.e., no sound). These instances are also reported while the animals are beyond any predicted AINJ or TTS range to effect. Time frames from these efforts therefore are not always indicative of typical sound exposure durations. The Navy's assumption is that most animals would avoid areas with higher sound levels that could cause injury over periods of time shorter than 5 minutes.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Modeling (continued)		Since pile driving occurs in relatively calm, shallow, coastal waters, and lookouts are on stationary platforms (e.g., elevated piers, bulkhead walls), there is a high likelihood that marine mammals would be sighted within or approaching the 100 yd shutdown zone and mitigation implemented preventing potential TTS or AINJ as all the predicted ranges for these effects are shorter than 100 yds. For individuals sighted within this zone during active pile driving training, even if the source was not immediately turned off, bottlenose dolphins (the only species with estimated impacts from pile driving activities) would be able to swim far beyond the estimated AINJ and TTS zones in less than 5 minutes (see the technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase IV Training and Testing* for nominal swim speeds). Furthermore, criteria for AINJ and TTS are already conservative in that they do not account for recovery of hearing effects during breaks in sound exposure (i.e., silent periods as the hammer is repositioned). This likely results in an over estimation of take under the current analysis. Regardless, additional data would be needed to justify an increased accumulation period, which currently is not available.
Mitigation	The Commission recommends that, in the [Final EIS] and LOA application, the Navy (1) ensure that the Gulf of Mexico Rice's Whale Mitigation Area encompasses the Rice's whale parent [biologically important area (BIA)], (2) consider the new delineations for the North Atlantic right whale feeding, migrating, and most importantly reproductive BIAs and expand the various North Atlantic Right Whale Mitigation Areas as needed, (3) ensure that the Ship Shock Trial Mitigation Areas are at least 5 nmi beyond the boundaries of the Rice's whale parent and child BIAs and all of the North Atlantic right whale BIAs, and (4) evaluate whether any of the draft BIAs for the other marine mammal species should inform expansion of or additional mitigation areas.	The Action Proponents have worked collaboratively with NMFS to develop mitigation areas, using the best available science described in Chapter 3 (Affected Environment and Environmental Consequences), marine species monitoring and density data, predicted activity impact footprints, and inputs from the operational community. A Biological Assessment and operational analysis of potential mitigation areas were completed throughout the entire Study Area. Even though the revised BIAs (BIA II) are not yet finalized or published, the Navy and NMFS have considered the best available science, which forms the basis of the BIA II effort, as part of our consultation process.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation (continued)		Rice's Whale: The Action Proponents' current Rice's Whale Mitigation Area fully encompasses the existing designated critical habitat and BIA for this species. This mitigation area was developed using the best available science, including the information used in the development of the BIA, ensuring that this important habitat is protected. As noted in Table 5.7-10, the Action Proponents repositioned the northern Gulf of America ship shock trial box so it is situated outside of the Rice's whale core distribution area identified by NMFS in 2019 (84 Federal Register 15446). Further repositioning of this box would have unacceptable impacts on the Action Proponents' ability to test new vessels. There are five of these events anticipated over the seven-year period and they have extensive mitigation measures. North Atlantic Right Whale: The Action Proponents' mitigation areas for North Atlantic right whales consider the currently designated critical habitat and BIAs. • The feeding and mating BIAs, as well as the foraging unit of the Critical Habitat, are contained wholly within the Gulf of Maine Mitigation Area, the Northeast NARW Mitigation Area, and the Northeast Major Training Exercise Planning Awareness Mitigation Area. • The migration BIA is contained wholly within the Dynamic North Atlantic Right Whale Mitigation Areas. • Much of the calving BIA and the calving unit of the Critical Habitat are contained within the Southeast NARW Mitigation Area. Extending this Mitigation Area to fully encompass the calving unit of the critical habitat was carefully evaluated in both Phase 3 and 4 of and was determined to have unacceptable impacts on the ability for the Action Proponents to continue meetings its mission requirements. See references 85, 119, and 214 on Table H.3-1 (Comment Response Matrix) of the 2018 Final EIS/OEIS. In 2018, the Action Proponents created the Southeast North Atlantic Right Whale Special Reporting Mitigation Area that does cover the entire unit of the critical habitat.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation (continued)		The mitigation measures identified in Section 5.7 (Geographic Mitigation) represent those considered safe and practical to implement, and balancing the potential environmental benefit with the impact on military readiness activities. Expanding mitigation areas further would ultimately prevent the Action Proponents from meeting critical training and testing objectives. Additional details regarding the operational impacts and impracticality of further expanding these mitigation areas are provided in Chapter 5 (Mitigation) and Table H.3-1 (Comment Response Matrix) of the 2018 Final EIS/OEIS. We remain committed to minimizing impacts on marine mammals while ensuring essential training and testing activities can be conducted effectively. We will continue to monitor the best available science, including updated BIAs, and adapt our mitigation strategies as appropriate.
Mitigation	Given that visual observations by Navy lookouts have proven to be ineffective (Oedekoven and Thomas 2022)—such that the Navy has removed any 'credit' for mitigation implementation from the Phase IV DEIS and other compliance documents—the Navy's currently proposed mitigation measure that still relies on a lookout's visual observations is insufficient.	The Navy maintains that visual observations by trained lookouts remain a valuable component of its multi-layered mitigation strategy. Lookouts provide a crucial real-time monitoring capability, enabling the Navy to respond promptly to potential marine mammal presence and implement adaptive mitigation measures when necessary. While biologist observer teams offer specialized expertise, their availability and deployment feasibility can be limited by factors such as cost, logistics, safety, security, and operational constraints.
Mitigation	The Commission recommends that the Navy use its instrumented ranges and sonobuoys to localize marine mammals and implement the relevant mitigation measures during active acoustic events for Phase IV activities, take a harder look at the technologies that the Canadian [Department of National Defense (DND)] use during its at-sea activities, and incorporate accordingly for other Phase IV [Draft EISs].	In the AFTT Study Area, a small subset of Navy training and testing takes place on the one instrumented range within the study area. Furthermore, Navy's instrumented ranges do not have the capabilities to be used effectively for mitigation. See Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2018 Final EIS/OEIS for further details.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation (continued)		Navy assets with passive acoustic monitoring capabilities (such as sonobuoys) that are already participating in an activity will continue to monitor for marine mammals, as described in Section 5.6 (Activity-based Mitigations). However, the fluidity and nature of military readiness activities (e.g., fast-paced and mobile readiness evolutions), as well as the limitations of these monitoring capabilities make it impractical for passive acoustic devices to be used as precise real-time indicators of marine mammal location for mitigation (e.g., active sonar power downs or shutdowns, ceasing use of explosives) without an accompanying visual sighting. The Action Proponents will continue to follow progress on and lessons learned from the Canadian DND's project seeking real-time detection of marine mammals during sonar operations, and consider whether any elements could be used to improve mitigation in AFTT.
Mitigation	The Commission recommends that the Navy include the use of passive acoustic monitoring prior to and during activities involving explosive sonobuoys, explosive torpedoes, sinking exercises, and ship shock trials for Phase IV activities in the [Final Supplemental EIS/OEIS] and its LOA application.	The Navy intends to continue to utilize passive acoustic monitoring prior to activities involving explosive sonobuoys and explosive torpedoes, and during sinking exercises, as required in Phase III. A change in terminology caused an omission of these requirements in the Draft Supplemental EIS/OEIS and a correction has been made for the Final Supplemental EIS/OEIS. These tables in the Final Supplemental EIS/OEIS are instead focused on "Mitigation Requirements" and the requirement for passive acoustic monitoring has been added to rows for activities involving explosive sonobuoys and explosive torpedoes, and for sinking exercises The requirement was removed because Clarke, 2005, in studying the 2001 Churchill full ship shock trial, found that passive acoustic monitoring did not contribute to effective mitigation even though it was the most expensive mitigation component to design and implement. No large whales (e.g. mysticetes or sperm whales) were heard or seen during the entire shock trial period. This is not unexpected since the time and location are selected specifically to minimize presence.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation	The Commission recommends that the Navy include a 600-yard and 1,000-yard mitigation zone for surface-to-surface activities using explosive medium- and large-caliber projectiles, respectively, in the [Final Supplemental EIS/OEIS] and its LOA application. The Commission again recommends that the Navy include the use of passive acoustic devices (i.e., DIFAR and other types of passive sonobuoys, operational hydrophones) prior to air-to-surface and surface-to-surface explosive bomb, missile, and rocket exercises to detect marine mammals and implement the necessary mitigation measures in the [Final Supplemental EIS/OEIS] and LOA application and, when sonobuoys are used, deploy them at the same time as the surface target.	The Navy does implement these recommended mitigation zones. These mitigations were unintentionally omitted from the Draft Supplemental EIS/OEIS Table 5.6-2 (Visual Observations for Explosives). They were included in an updated LOA application and in Table 5.6-2 (Activity-Based Mitigations for Explosives) of this Final Supplemental EIS/OEIS. The aircraft that are used in explosive bombing exercises are not the same aircraft that are used in anti-submarine warfare exercises (i.e. that have the capability to deploy sonobuoys) and these different types of aircraft are based in different locations. There are significant manpower and logistical constraints that make constructing and maintaining additional passive acoustic monitoring systems or platforms for additional training and testing activities impracticable. Additionally, diverting platforms that have passive acoustic monitoring capabilities would impact their ability to meet their Title 10 requirements and reduce the service life of those systems.
Mitigation	The Commission recommends that the Navy include the requirement to delay, relocate, or cease activities if floating vegetation or jellyfish are observed in the mitigation zone during activities involving active acoustic sources, pile driving, airguns, and explosives consistent with Phase III mitigation measures in the [Final Supplemental EIS/OEIS] and LOA application.	The Navy does implement this recommended mitigation measure. These requirements are stated in section 5.6.1 (Mitigation Specific to Acoustic Stressors, Explosives, and Non-Explosive Ordnance) of the Final Supplemental EIS/OEIS.
Mitigation	The Commission recommends that the Navy include the requirement that lookouts wear polarized sunglasses in the Inshore Manatee and Sea Turtle Mitigation Areas to better implement the required mitigation measures in the [Final Supplemental EIS/OEIS] and Biological Assessment submitted under the Endangered Species Act. The Commission recommends that the Navy cease any active acoustic, explosive, pile driving, or airgun activity if a marine mammal is observed to be injured or killed during or immediately after the activity and consult with NMFS to review or adapt the mitigation measures, as necessary.	In consultation with operators, this mitigation requirement, as previously written in Phase III, was determined to not be practicable. Rather than removing it altogether, Navy maintained it as a recommendation for all Lookouts regardless of location as described in Section 5.6 (Activity-Based Mitigations). Navy Marine Species Awareness Training also states that polarized sunglasses should be used whenever possible to help reduce sun glare.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation (continued)		Besides ship strike, the only training or testing activity that could result in injury or mortality is use of explosives. It has been Navy policy for many years to suspend the use of explosives if a marine mammal is visibly injured or killed as a result of detonation. However, since the publication of the Proposed Rule, the Action Proponents have explicitly added this requirement to the activity-based mitigations for all activities involving the use of explosives. It has also always been Navy policy and a requirement of the LOA that incident reporting procedures be followed.
U.S. Environmental Protection Agency (Figure M.3-6)		
MPRSA and SINKEX Program	The [Environmental Protection Agency (EPA)] recommends that the Navy incorporates additional details in Vol 1 about the [sinking exercise (SINKEX)] Program concerning the [Marine Protection, Research, and Sanctuaries Act] general permit, the decommissioned vessels that will be used for sinking exercises, the Navy's vessel clean-up procedures, and information about when and where sinking exercises may take place (including whether these exercises will always take place in the "SINKEX box" identified in most of the maps).	The Navy has incorporated more detail in Chapter 6, Table 6.1-1 of the Final Supplemental EIS/OEIS.
MPRSA and SINKEX Program	Additionally, EPA recommends adding a discussion of the potential localized impacts to the environment, including the seafloor specifically associated with SINKEX. Once provided, this information could then be referenced to other sections of the EIS/OEIS that discusses impacts from explosives more generally.	The Navy has incorporated more detail in Chapter 6, Table 6.1-1 of the Final Supplemental EIS/OEIS.
MPRSA and SINKEX Program	The EPA recommends adding the Marine Protection, Research and Sanctuaries Act to Table 6.1-1 (Summary of Environmental Compliance for the Proposed Action) with a brief statement about the status of compliance as similarly addressed for other applicable laws included in the table.	The Navy has incorporated more detail in Chapter 6, Table 6.1-1 of the Final Supplemental EIS/OEIS.
MPRSA and SINKEX Program	Additionally, Navy may consider adding a short text summary in Section 6.1 generally describing the Marine Protection, Research and Sanctuaries Act and the general permit authorizing SINKEX activities.	The Navy has incorporated more detail in Chapter 6, Table 6-1 of the Final Supplemental EIS/OEIS.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Environmental Justice	The EPA recommends that the Navy evaluate any areas (or incorporate by reference the analysis in any separate [National Environmental Policy Act (NEPA)] documents) that include inshore waters consistent with Executive Orders on environmental justice and NEPA regulations to determine whether there are disproportionate and adverse human health and environmental effects on communities with environmental concerns as appropriate. If any disproportionate and adverse effects to communities with [Environmental Justice (EJ)] concerns are identified, mitigation measures should be incorporated to address these effects.	Executive Order (EO) 14148, issued in January 2025, rescinded previous executive orders related to EJ, including EO 12898, EO 13985, EO 14031, and EO 14096. Therefore, a specific EJ evaluation focused on areas including inshore waters was not conducted for this Final Supplemental EIS/OEIS. However, the Action Proponents remain committed to considering potential impacts on all communities. The comprehensive impact analyses included in this document encompass a wide range of environmental and socioeconomic factors, providing a robust assessment of potential effects on all potentially affected populations. This includes a thorough evaluation of potential impacts on human populations in coastal areas, addressing concerns related to noise, visual impacts, and potential economic effects.
Social cost of greenhouse gas (SC-GHG)	EPA recommends that the climate damages from all reasonably foreseeable emissions be monetized using the best available estimates of the SC-GHG.	Analysis of SC-GHG is not required by law, regulation, or government policy. While NEPA requires the consideration of environmental impacts, it does not mandate the specific use of the SC-GHG methodology for quantifying climate damages. EO 14154, issued on January 20, 2025, explicitly revoked all SC-GHG guidance and instructions. This EO, titled "Unleashing American Energy," stated that "The calculation of the 'social cost of carbon' is marked by logical deficiencies, a poor basis in empirical science, politicization, and the absence of a foundation in legislation." As such, reliance on SC-GHG estimates would be inconsistent with current Executive Branch policy. On March 12, 2025, the EPA announced that it was revisiting the SC-GHG measurements. This announcement further underscores the uncertainty surrounding the SC-GHG estimates and suggests that the current values may not be the most reliable basis for decision-making.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Social cost of greenhouse gas (SC-GHG) (continued)		A comprehensive analysis of greenhouse gas (GHG) emissions has been provided. To help the public and decision-makers understand the potential climate change impacts associated with the Proposed Action, we have included a thorough analysis of GHG emissions. This analysis provides a sufficient basis for informed decision-making regarding the environmental impacts of the Proposed Action.
SC-GHG	EPA notes that there appears to be an error in the "Climate Change" section on page 4-11. It states, "For example, the estimated SC-GHG emissions from Alternative 1 and 2 are similar to that of electricity used by 197,000 and 232,100 average U.S. households annually (U.S. Environmental Protection Agency, 2024)." EPA recommends that the "SC-GHG emissions" be replaced with "greenhouse gas emissions."	This error was corrected in Section 4.3.1 (Air Quality) of this Final Supplemental EIS/OEIS
Spill Response	The draft Supplement EIS/OEIS briefly references ship-to-shore fuel transfer system training and major spill events. However, there is no discussion about refueling at sea. This includes both refueling a ship at sea (underway replenishments (UNREP)) and refueling an aircraft while at sea (Vertical replenishments (VERTREP)). There is a potential risk of oil spillage for each of these issues. EPA recommends that the final Supplement EIS/OEIS provide a discussion about spill response for each of these issues as appropriate.	UNREP and VERTREPs are not part of the proposed action. The Navy has plans and procedures for preventing, reporting, and responding to spills.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
U.S. Department of the Interior (Figure M.3-7)		
Consultation/ Mitigation	For any training activities occurring within a National Park Service (NPS) unit, the Navy shall coordinate with the affected NPS unit. Homestead Air Force Base regularly coordinates training activities within the Biscayne National Park (NP) boundary with park staff. A similar level of coordination with the Navy is requested to mitigate potential negative impacts to sensitive habitats and wildlife.	While the Navy is committed to minimizing impacts on sensitive habitats and wildlife within all NPS units, the dynamic and often unpredictable nature of Navy training and testing activities, which are essential for maintaining national security, necessitates a high degree of operational flexibility. Requiring pre-activity coordination with the NPS for activities in its vicinity would significantly hinder the Navy's ability to respond to evolving training needs and maintain operational readiness. The Navy already implements a comprehensive suite of mitigation measures designed to minimize impacts on marine resources. These measures, detailed in Section 5.6 (Activity-Based Mitigation) and Section 5.7 (Geographic Mitigation), encompass activity-based mitigation, which are specific procedures and protocols implemented during activities to reduce the potential for impacts, and geographic mitigation, which are designated areas where certain activities are restricted or modified to minimize impacts on sensitive habitats and species. The Action Proponents completed a full biological assessment and operational analysis of potential mitigation areas throughout the entire Study Area. This analysis considered the best available science, predicted activity impact footprints, and marine species monitoring and density data. Developing additional mitigation areas or establishing a formal coordination process specifically for NPS units would be impracticable due to implications for safety, sustainability, and the Action Proponents' ability to continue meeting its Title 10 requirements to successfully accomplish military readiness objectives. Notices to Airmen and notices to mariners will be posted prior to Navy training and testing activities and will provide information about what the Navy may be doing off the coast near Biscayne NP. These notices will help to inform the public, including Biscayne NP staff, about the general nature and location of Navy activities.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation	Extend the offshore mitigation area well beyond NPS unit boundaries. Biscayne NP is primarily a marine park whose boundary lies approximately 15 nautical miles (nm) offshore (60' isobath). Therefore, the Navy's standard mitigation practice of conducting activities greater than 12 nm from the coast, is not sufficient for Biscayne NP and potentially jeopardizes a significant portion of the park's marine resources	East of Biscayne NP, a NARW mitigation area, shallow-water coral reef mitigation area, and artificial reef, live hard bottom, shipwreck, or submerged aquatic vegetation mitigation area cover from 0-15 nm from shore to ensure the Navy activities do not jeopardize the park's marine resources (See Figure 5.7-5, Mitigation Areas off the Southeastern United States and in the Eastern Gulf of America). The Action Proponents avoid coral reefs, artificial reefs, live hard bottom, shipwrecks, and submerged aquatic vegetation in these mitigation areas. Chapter 6 (Regulatory Considerations) presents information on the national system of marine protected areas located in the Study Area, as well as the training and testing activities that could occur within each area and the marine protected area considerations at the local level. The Action Proponents will avoid or reduce impacts to the maximum extent practicable through activity-based mitigation (see Section 5.6, Activity-Based Mitigation) and mitigation areas (see Section 5.7, Geographic Mitigation). The Action Proponents completed a full biological assessment and operational analysis of potential mitigation areas throughout the entire Study Area. Developing additional mitigation areas beyond what is described in Section 5.7 (Geographic Mitigation) would be impracticable due to implications for safety, sustainability, and the Action Proponents' ability to continue meeting its Title 10 requirements to successfully accomplish military readiness objectives.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Louisiana Department of Energy and Natural Resources (Figure M.3-8)		
CZMA	Chapter 6, Regulatory Considerations, notes that the [Navy] will provide Louisiana with a consistency determination as required by the Coastal Zone Management Act [(CZMA)] of 1972, as amended. In preparing your consistency determination, please be aware that Louisiana' s approved coastal management program includes, in its list of federal agency activities, "Outer Continental Shelf activities adjacent to the coastal zone which are not subject to consistency review under other provisions of Section 307 of the CZMA." In practice, this encompasses any reasonably foreseeable coastal effects resulting from federal activities anywhere within the 200 mile Exclusive Economic Zone off Louisiana's coast, including the New Orleans [Operating Area] identified in the OEIS. Most of the proposed activities will take place far from Louisiana's coastal zone, and relatively few effects to the State's coastal resources are anticipated. Among the State' s coastal uses and resources for which there may be reasonably foreseeable impacts, are the offshore oil and gas industry, shipping, and commercial and recreational fishing. These uses have a significant presence in the Gulf, and may occur in proximity to Navy operations	The Navy prepared CZMA consistency determinations to ensure consistency with the enforceable policies of the applicable Coastal Zone Management Programs. Please see Section 6.1.1 (Coastal Zone Management Act Compliance) and Appendix L (Agency Correspondence) of the Final Supplemental EIS/OEIS for details.
Birds	Louisiana is host to large residential and migratory bird populations. It is noted that the National Marine Protected areas have been updated in this submission to mirror those of the International Union for Conservation of Nature. To the extent practicable, we request that overflights of the Louisiana coastal zone in any location should be managed to minimize potential adverse impacts.	The Navy prepared CZMA consistency determinations to ensure consistency with the enforceable policies of the applicable Coastal Zone Management Programs. Please see Section 6.1.1 (Coastal Zone Management Act Compliance) and Appendix L (Agency Correspondence) of the Final Supplemental EIS/OEIS for details. The Navy has implemented a comprehensive suite of mitigation measures and developed Standard Operating Procedures (SOPs), both of which contribute to minimizing potential impacts on birds. Details on these measures and SOPs can be found in Section 3.9 (Birds and Bats) and Appendix A, Section A.1.7 (Standard Operating Procedures) of this Final Supplemental EIS/OEIS.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Massachusetts Office of Coastal Zone Management (Figure M.3-9)		
DOPAA	The Massachusetts Office of Coastal Zone Management (CZM) has reviewed the Draft Supplemental Environmental Impact Statement (SEIS) for the Navy's Atlantic Fleet Training and Testing Phase IV (AFTT). CZM is supportive of the least environmentally harmful alternative that meets the purpose and need of the Proposed Action, which based on the SEIS appears to be Alternative 1.	The Navy prepared CZMA consistency determinations to ensure consistency with the enforceable policies of the applicable Coastal Zone Management Programs. Please see Section 6.1.1 (Coastal Zone Management Act Compliance) and Appendix L (Agency Correspondence) of the Final Supplemental EIS/OEIS for details.
Species Monitoring	CZM is also highly supportive of the Navy's continued support of research and monitoring of potentially impacted wildlife including marine mammals, sea turtles, and protected fish species. The data gathered through these research and monitoring studies is used not only to ensure impacts from Navy activities are mitigated, but also to increase the scientific understanding of the ecology of the ocean including the distributions, behaviors, and abundance of protected species. The knowledge gained through Navy-supported research and monitoring has contributed to CZM's responsible management of ocean resources for a variety of uses beyond the military, and we encourage the Navy to continue to support these efforts.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
New Hampshire Division of Historical Resources (comment received via website)		
Cultural Resources	The New Hampshire Division of Historical Resources is New Hampshire's State Historic Preservation Office. We have reviewed the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and do not have concerns with either above-ground or archaeological resources within the project area.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Turtle Island Restoration Network (Figure M.3-10)		
Marine Mammals	Given the recent developments in marine mammal data and the occurrence of Unusual Mortality Events (UME) along the Atlantic Coast, it is crucial to carefully evaluate the testing locations and the exercises being conducted…We urge the US Department of the Navy and the US Coast Guard to consider halting training and testing exercises within these critical areas in light of the ongoing UMEs associated with both humpback and North Atlantic Right Whales...However, with ongoing training and testing activities within the AFTT study area following the 2018 [Final EIS], it is important to consider that an increase in vessel traffic related to these exercises could be having a significant impact on humpback whale populations along the North Atlantic coast. Given this, the data in the 2018 [Final EIS/OEIS] is now outdated and cannot reliably be used to attribute blame to other vessels operating near the AFTT study area…As the North Atlantic Right Whales are still critically endangered, the testing boundaries should not be allowed to be located so close to their critical habitat.	This Supplemental EIS/OEIS builds upon the 2018 Final EIS/OEIS, updating the data, effects analysis, and underlying science. The Action Proponents' impact analysis is therefore based on the most current information, and the conclusions have been modified accordingly to reflect these updates. The Action Proponents are committed to minimizing impacts on marine mammals, particularly those experiencing UMEs and endangered species like the North Atlantic Right Whale. The analysis in the Supplemental EIS/OEIS demonstrates that the Proposed Action is not expected to have significant impacts on marine species, including those affected by UMEs. Chapter 3 (Affected Environment and Environmental Consequences) provides a detailed assessment of potential effects from training and testing activities, incorporating the latest available data and scientific understanding. The updated ship strike analysis can be found in Section 3.7.3.4. The Navy has consulted with NMFS who have determined that the Proposed Action will not jeopardize the continued existences of endangered species, including the North Atlantic Right Whale. Further, as described in Chapter 5 (Mitigation) of the Supplemental EIS/OEIS, the Action Proponents implement mitigation measures during training and testing activities. The Action Proponents have specific mitigation measures to reduce interactions with whales when vessels are transiting, as well as measures to avoid specific areas that have been determined to be important to certain marine mammal life functions (e.g. breeding). There has not been an increase in vessel traffic related to AFTT activities since the 2018 analysis. In fact, there has been a decrease in most areas and an overall decrease in the study area as a whole (see Table 3.0-9). Sonar and explosive use related to AFTT activities has also decreased significantly since the 2018 analysis. The volume of vessel traffic generated by Navy activities represents approximately 1 percent of the total vessel traffic within the AFTT study area. The vast majority of vessel traffic in this region is attributed to civilian activities, such as commercial shipping and recreational boating.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Marine Mammals (continued)		The request to reduce the size of the Study Area to exclude North Atlantic Right Whale critical habitat is not supportable. The Navy's operating areas are essential for ensuring effective training and testing while providing the flexibility required to meet evolving national security needs. The Action Proponents work closely with NMFS to minimize potential impacts within these boundaries through a comprehensive suite of mitigation measures, as detailed in Chapter 5 (Mitigation) of the Supplemental EIS/OEIS. These measures include specific protocols to reduce interactions with North Atlantic right whales during vessel movements, commensurate with the increased likelihood that whales may be present. See Section 5.7.10 (Northeast North Atlantic Right Whale Mitigation Area), Section 5.7.12 (Jacksonville Operating Area North Atlantic Right Whale Mitigation Area), Section 5.7.13 (Southeast North Atlantic Right Whale Mitigation Area), and Section 5.7.15 (Dynamic North Atlantic Right Whale Mitigation Area). The Navy also avoids conducting Major Training Exercises in more sensitive locations as part of its mitigation strategy agreed upon with NMFS. See Section 5.7.9 (Major Training Exercise Planning Awareness Mitigation Areas). The Action Proponents are confident that their comprehensive mitigation strategy, combined with the anticipated reduction in overall activity levels, will effectively minimize potential impacts on marine mammal populations, including those experiencing UMEs and endangered species like the North Atlantic Right Whale.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Marine Mammals	The type of training and testing activities will have negative impacts on the behavior, physiology, and communication of marine mammals. [The comment provides examples of how marine mammals rely on sound and are negatively impacted by anthropogenic noise, including specific examples of sonar-related strandings and behavioral disruptions for various species.] With so many different areas of military training and testing coupled with a diverse array of marine mammal species, it is imperative that testing and training should not be conducted near critical habitats of marine mammals.	All of the potential effects from training and testing activities were analyzed in Chapter 3 (Affected Environment and Environmental Consequences) and Appendix E (Acoustic and Explosives Impact Analysis) of the Final Supplemental EIS/OEIS. The current best available science indicates that potential sonar effects depend on how loud the sound is, how close the animal is to the sound source, and the duration of exposure. The Navy remains committed to researching the effects of sound and reducing potential impacts to marine mammals. Much of the research currently funded by the Navy is related to better understanding how marine mammals produce, receive, and process sound in an effort to reduce the potential for human generated sound impacts in the future. In addition, as described in Chapter 5 (Mitigation) of the Final Supplemental EIS/OEIS, the Action Proponents implement various mitigation measures to further reduce any potential impacts to marine mammals and have consulted with the National Marine Fisheries Service on all potential impacts to marine mammal critical habitats under the Endangered Species Act. After analysis of all training and testing activities, NMFS concurred with the Action Proponents that the proposed action will either have no effect or is not likely to adversely affect any marine mammal critical habitat.
Sea Turtles	The presence of military training and testing can negatively impact endangered and vulnerable sea turtle populations. [The commentor highlights the presence of various sea turtle species in the AFTT study area, including those with critical habitat, and expresses concern about vessel strikes and marine debris related to Navy activities.]	The analysis in the Supplemental EIS demonstrates that there is not a significant impact on marine species, including sea turtles. All of the potential effects from training and testing activities were analyzed in Chapter 3 (Affected Environment and Environmental Consequences) of the Final Supplemental EIS/OEIS. These included potential effects from all stressors, to include interactions with vessels and military expended materials. Also, as described in Chapter 5 (Mitigation) of the Final Supplemental EIS/OEIS, the Action Proponents implement mitigation measures during training and testing activities. In addition, the Action Proponents consulted with the National Marine Fisheries Service for sea turtles in the marine environment. It's important to note that vessel traffic associated with Navy activities constitutes less than 1 percent of the total vessel traffic within the AFTT study area, with the vast majority attributed to civilian activities like commercial shipping and recreational boating.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Marine Mammals	With nearly 50 individuals remaining, the critically endangered Rice's whale is at risk of extinction... [The commenter notes that Rice's whale was not recognized as a distinct species during the 2018 Final [Supplemental EIS/OEIS] and highlights the overlap between the proposed critical habitat and the AFTT study area.] We recommend all military training and testing be immediately stopped within the Gulf of [America] to ensure the protection and survival of the critically endangered Rice's whale, especially within the bounds of their proposed critical habitat.	Halting all training and testing activities in the Gulf of America is not a feasible option. These activities are essential for maintaining national security and ensuring the readiness of U.S. forces. The Action Proponents developed the alternatives considered in this Supplemental EIS/OEIS after careful re-evaluation by subject matter experts, including military units and commands that utilize the ranges, and environmental managers and scientists. The alternatives carried forward meet the Action Proponents' purpose and need (Chapter 1- Purpose and Need) to ensure that it can fulfill their statutory obligations under Title 10 of the United States Code. See Section 2.3 (Action Alternative Development) for more detailed information on the development of alternatives. The Navy has carefully considered the potential impacts of its activities on Rice's whales, as detailed in Chapter 3 (Affected Environment and Environmental Consequences) of this Supplemental EIS/OEIS. This analysis includes a thorough evaluation of all potential stressors, incorporating the latest available data and scientific understanding of this species. To minimize potential impacts, the Navy has implemented a comprehensive suite of mitigation measures, developed in consultation with NMFS, as described in Chapter 5 (Mitigation) of the Draft Supplemental EIS/OEIS. NMFS concurred with the Action Proponents that the proposed action will either have no effect or is not likely to adversely affect any marine mammal critical habitat.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Marine Mammals	In light of ongoing UMEs, increased anthropogenic pressure, and declining species populations, it is vital that the location of military training and testing be re-evaluated in an effort to protect vulnerable and endangered species. We recommend that all exercises be stopped until safer locations and practices can be determined.	Halting all training and testing activities is not a feasible option. These activities are essential for maintaining national security and ensuring the readiness of U.S. forces. The Action Proponents developed the alternatives considered in this Supplemental EIS/OEIS after careful re-evaluation by subject matter experts, including military units and commands that utilize the ranges, and environmental managers and scientists. The alternatives carried forward meet the Action Proponents' purpose and need (Chapter 1- Purpose and Need) to ensure that it can fulfill their statutory obligations under Title 10 of the United States Code. See Section 2.3 (Action Alternative Development) for more detailed information on the development of alternatives. The Navy has carefully considered the potential impacts of its activities on marine species, as detailed in Chapter 3 (Affected Environment and Environmental Consequences) of this Supplemental EIS/OEIS. This analysis includes a thorough evaluation of all potential stressors, incorporating the latest available data and scientific understanding, including information on UMEs and other anthropogenic pressures. To minimize potential impacts, the Navy has implemented a comprehensive suite of mitigation measures, developed in consultation with NMFS, as described in Chapter 5 (Mitigation) of the Draft Supplemental EIS/OEIS. NMFS concurred with the Navy that the proposed action will have either no effect or is not likely to adversely affect any listed species or designated critical habitat.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Florida State Clearinghouse (Figure M.3-11)		
Mitigation	Mitigation measures for right whales as described in the draft EIS/OEIS include not detonating explosives, not conducting ship shock training, and minimizing the use of sonar and north-south oriented vessel transits in the Jacksonville [Operating Area] and Southeast North Atlantic Right Whale Mitigation Area between 15 November and 15 April each year. Additionally, the Navy will consult Early Warning System (EWS) data when planning vessel transits and military readiness activities. [Fish and Wildlife Commission (FWC)] continues to commend the Navy's support and use of the EWS surveys. However, the EWS surveys, Lookouts, and other modes of detecting marine mammals and other marine wildlife have weaknesses, which includes marine wildlife cannot always be detected when present in an area. Additionally, airspace restrictions due to military activities have limited the EWS aerial surveys in the past, reducing their effectiveness as mitigation. FWC staff encourages the Navy to continue working with NOAA Fisheries to improve species detection and effectiveness of the EWS surveys.	The Action Proponents are committed to reducing impacts to the North Atlantic right whale and will continue to collaborate with NMFS to improve species detection and the effectiveness of the EWS surveys.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Mitigation	Time-area restrictions are the most effective form of mitigation measures given the challenges associated with detecting [North Atlantic Right Whale (NARW)] and other marine wildlife. The draft EIS/OEIS describes a time-area closure in the Southeast NARW Mitigation Area, which resembles the NARW critical habitat designated by NOAA Fisheries in 1994, and only reporting requirements in the larger Southeast NARW Special Reporting Mitigation Area, which covers the current NARW critical habitat established by NOAA Fisheries in 2016. The draft EIS/OEIS states that "the mitigation area is the largest area practical to implement within the North Atlantic right whale reproduction critical habitat". However, NARWs occur throughout and beyond the current critical habitat, and their distribution within the Southeast NARW Mitigation Area may be uneven (Roberts et al. 2024). If the area covered by mitigation is limited, FWC encourages the Navy to consult with NOAA Fisheries to consider modifying the configuration of the Mitigation Area in a way that provides the most risk reduction possible for NARW. If the area covered by mitigation can be increased, FWC encourages the Navy to consult with NOAA Fisheries on expanding the size of the Southeast NARW Mitigation Area to further reduce the risks posed to NARWs.	The Action Proponents have worked collaboratively with NMFS to develop mitigation areas using inputs from the operational community, the best available science discussed in Chapter 3 (Affected Environment and Environmental Consequences) of the Final Supplemental EIS/OEIS, published literature, predicted activity impact footprints, and marine species monitoring and density data. The Action Proponents completed a biological assessment and operational analysis of potential mitigation areas throughout the entire Study Area. The mitigation identified in Chapter 5 (Mitigation) of the Final Supplemental EIS/OEIS represents the maximum mitigation within the identified mitigation areas that is practicable to implement under the Proposed Action.
Marine Mammals	The draft EIS/OEIS describes mitigation measures for NARWs in the Southeastern and Northeastern United States. However, NARWs also occur in the mid-Atlantic where vessel strikes to NARWs have been documented. FWC encourages the Navy to consult with NOAA Fisheries on increasing situational awareness of and other mitigation measures for NARWs, particularly for activities east of the mouth of the Chesapeake Bay in the [Virginia Capes Operating Area], in the Atlantic City [Operating Area], and in the Narragansett Bay [Operating Area], where right whales have been observed in high densities in recent years.	The Action Proponents have worked collaboratively with NMFS to develop mitigation areas using inputs from the operational community, the best available science discussed in Chapter 3 (Affected Environment and Environmental Consequences) of the Final Supplemental EIS/OEIS, published literature, predicted activity impact footprints, and marine species monitoring and density data. Mitigation for the NARW in the Mid-Atlantic and Northeast (including east of the mouth of the Chesapeake Bay in the Virginia Capes Operating Area, in the Atlantic City Operating Area, and in the Narragansett Bay Operating Area) fall under the Dynamic Management Areas (shown in Figure 5.7-3) that could be applied as needed throughout the year. NMFS manages the Dynamic Management Areas program off the U.S. East Coast with the primary goal of reducing the likelihood of North Atlantic right whale vessel strikes from all mariners.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Protected/ Endangered Species	Protected Species Monitoring Programs in Florida are recommended for in-water or over-water activities that have been documented and determined to pose an increased risk of injury or death to a protected marine species. The FWC has created the Observer Guidelines for Protected Species Monitoring Programs in Florida State Waters manual for entities conducting these activities to determine if individuals have the recommended qualifications for the proposed activities. Please note that FWC staff recommend a 30-minute wait period, when feasible, to allow the animal to move out of the impact area.	The Action Proponents have developed a full suite of mitigation measures which can be found in Chapter 5 (Mitigation) of the Final Supplemental EIS/OEIS. Navy Lookouts must complete Lookout Training, which includes marine resource sighting cues and observation techniques, as well as the roles and responsibilities of Lookouts and the official in charge of an activity. Additionally, the Action Proponents have also developed Marine Species Awareness Training that is required for all personnel tasked with carrying out mitigation measures (See Section 5.3 of the Final Supplemental EIS/OEIS. Finally, the Action Proponents' mitigation measures include waiting periods for all activities following a sighting (see Tables 5.6-1, 5.6-2, and 5.6-3).
Protected/ Endangered Species	Any collision with or injury to a manatee, within Florida state waters, should be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida and emailed to FWC at ImperiledSpecies@MyFWC.com.	The Action Proponents comply with the reporting and response requirements for incidents involving ESA-listed species under USFWS' jurisdiction as outlined in the USFWS consultation documents, which would include immediately halting an event if harassment, injury, or death of a manatee is observed. See Section 5.4 (Reporting) for more information.
Protected/ Endangered Species	Inshore activities within Florida should adhere to all posted speed zones, including state Manatee Protection Zones, state Boating Restricted Areas, and local regulations. Maps identifying the location of these zones can be found on the FWC website at: https://myfwc.com/wildlifehabitats/wildlife/manatee/data-and-maps/.	As discussed in Chapter 5 (Mitigation) of the Final Supplemental EIS/OEIS, the Action Proponents implement mitigation to avoid vessel strikes throughout the Study Area. As described in Section 2.3.3 (Standard Operating Procedures) of the 2018 Final EIS/OEIS, vessels operate in accordance with the navigation rules established by the U.S. Coast Guard, which require that vessels proceed at a safe speed so that proper and effective action can be taken to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions.
Protected/ Endangered Species	Due to available foraging habitat and warm-water refuge sites, manatees are active near Port Canaveral and Tampa Bay year-round. To minimize impacts to manatees, FWC staff recommend limiting any in-water demolition, explosive, and/or other high impact activities occurring adjacent to Port Canaveral and Tampa Bay between November 15th and March 31st. Information on the location of identified warm-water sites in Florida can be found in the 2020 Manatee Warm-water Habitat Action Plan.	Demolition or explosive activities are not proposed for use in Port Canaveral or Tampa Bay under this proposed action.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Protected/ Endangered Species	Any collision with (or injury to) a marine turtle, within Florida state waters, should be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 888-404-3922 and to the Sea Turtle Stranding and Salvage Network (STSSN) at SeaTurtleStranding@MyFWC.com.	The Action Proponents comply with the reporting and response requirements for incidents involving ESA-listed species under NMFS' jurisdiction as outlined in the NMFS consultation documents, which would include immediately halting an event if harassment, injury, or death of a sea turtle is observed. See Section 5.4 (Reporting) for more information.
Habitat	The draft EIS/OEIS indicates that less than 2.2 acres of submerged aquatic vegetation will be affected annually by all military expended materials in all training and testing areas. To address these impacts, FWC staff recommend working with federal regulatory agencies to develop a mitigation plan to offset any impacts that satisfies federal requirements.	The Action Proponents are committed to minimizing military expended materials release and actively recover expended materials whenever practical and safe to do so. This includes capturing expended shells during gunnery exercises, recovering targets and parachutes, and removing unexploded ordnance. The Action Proponents will continue these efforts to minimize impacts on submerge aquatic vegetation. For context, the estimated impact of 2.2 acres is spread across the entire Study Area, and potential effects are thoroughly analyzed in the Essential Fish Habitat (EFH) analysis, where conservation recommendations are developed as part of the consultation process with NMFS.
Habitat	Several of the areas identified and proposed to mitigate habitat impacts from the proposed activities are already closed off and would be closed regardless of the proposed activities occurring, due to the presence of military equipment/cables or security measures. FWC staff recommend identification of alternative actions to mitigate for the proposed activities that do not include the identification of areas that are already closed for other purposes.	The Shallow-Water Coral Reef Mitigation Areas and Artificial Reef, Live Hard Bottom, Submerged Aquatic Vegetation, and Shipwreck Mitigation Areas are a continuation from the 2018 Final EIS/OEIS. The geographic database used to inform these mitigation areas identifies relevant habitat features independent of military equipment or security measures. It's important to note that the Navy utilizes this database to inform operators about all manner of seafloor conditions and sensitive areas, including those already closed for other reasons. This tool helps Navy operators avoid conducting training and testing activities that could potentially harm these sites, regardless of their existing closure status. This multi-layered approach ensures that the Navy proactively avoids sensitive habitats and resources, even those already subject to restrictions, further minimizing potential impacts.
Private Individual (1) (Figure M.3-12)		
Information	In today's Boston Herald The Navy is asking the Public for input about the Atlantic Fleet Training and Testing Supplemental Impact Statement.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table M.3-4: Public Comments and Responses (continued)

Category	*Comment*	*Response*
Private Individual (2) (Figure M.3-13)		
Mitigation	I viewed the videos and feel grateful for the partnership with agencies to protect aquatic wildlife. However, testing with explosives- though I understand its necessary for combat- seems contradictory to wildlife protection. how do you reconcile these two goals?	The Action Proponents are committed to the protection of marine species and health of ecosystems. Naval forces must be ready for a variety of military operations, which includes the use of explosives in training and testing activities. However, the Action Proponents recognize the potential impact of these activities on marine life and strives to strike a balance between operational readiness and environmental stewardship. This balance is achieved through the implementation of robust mitigation measures, as detailed in Table 5.6-2, designed to reduce impacts to marine species as much as practicable. Additionally, the Action Proponents consult extensively with regulatory agencies, such as the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, and obtain all necessary permits to ensure their activities comply with environmental regulations and minimize potential harm to marine life.

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Travis A. Voyles
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

October 31, 2024

Naval Facilities Engineering Systems
Command Atlantic
Attention: Code EV22SG
(AFTT EIS Project Managers)
6506 Hampton Blvd.
Norfolk, VA 23508-1278
Online: https://www.nepa.navy.mil/aftteis/

RE: Comments on the Draft Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement for Atlantic Fleet Training and Testing, Department of the Navy (DEQ 24-168F)

Dear Sir of Madam:

The Commonwealth of Virginia has completed its review of the Draft Supplemental Environmental Impact Statement (DSEIS)/ Overseas Environmental Impact Statement (OEIS) for the Atlantic Fleet Training and Testing. The Department of Environmental Quality (DEQ) is responsible for coordinating Virginia's review of federal environmental documents submitted under the National Environmental Policy Act (NEPA) and responding to appropriate federal officials on behalf of the Commonwealth. This is in response to the September 2024 DSEIS/OEIS submitted by the Department of the Navy for the above referenced project. The following agencies participated in the review of this proposal:

Department of Environmental Quality
Department of Conservation and Recreation (DCR)
Department of Historic Resources (DHR)
Department of Aviation (DOAV)
Department of Health (VDH)

Figure M.3-4: Virginia Department of Environmental Quality Comment

In addition, the Department of Wildlife Resources, Virginia Institute of Marine Science, Virginia Marine Resources Commission, Accomack-Northampton Planning District Commission (PDC), and the Hampton Roads PDC were invited to comment on the proposal.

PROJECT DESCRIPTION

The Department of the Navy (Navy) has developed a DSEIS/OEIS that evaluates the potential environmental effects associated with military readiness training and research, development, test, and evaluation activities conducted within the Atlantic Fleet Training and Testing (AFTT) Study Area. The Study Area includes areas of the western Atlantic Ocean along the east coast of North America, Gulf of Mexico, and portions of the Caribbean Sea. It also includes Navy and Coast Guard pierside locations and port transit channels, bays, harbors, inshore waterways, and civilian ports where training and testing activities occur as well as transits between homeports and operating areas. The Study Area encompasses approximately 2.6 million square nautical miles of ocean area and includes designated Navy operating areas and special use airspace. Virginia offshore and inland coastal waters in the study area includes the Virginia Capes (VACAPES) Range Complex and the lower Chesapeake Bay. VACAPES includes 250 miles along the coast from Delaware to North Carolina, from the shoreline to 150 NM seaward. The VACAPES Range Complex is associated with the following inshore waters: the Chesapeake Bay, James River and tributaries, Broad Bay, and the York River. The following pierside locations, civilian ports, and coast guard stations within Virginia are included within the study area: Portsmouth Naval Shipyard, Naval Station Norfolk, JEB Little Creek Fort Story, Norfolk Naval Shipyard, Hampton Roads, VA, Virginia Beach, VA, and Portsmouth, VA.

The Navy proposes to conduct training activities and research, development, testing, and evaluation (hereinafter referred to as "testing") activities in the Atlantic Fleet Training and Testing Study Area. Training and testing activities, also referred to as "military readiness activities," prepare the Navy to fulfill their mission to protect and defend the United States and its allies but have the potential to affect the environment.

In the DSEIS/OEIS, the Navy has analyzed military readiness activities that could potentially affect human and natural resources, especially marine mammals, sea turtles, and other marine resources. Since the completion of the 2018 Final EIS/OEIS, the best available science has been updated, the regulatory environment has changed, the Study Area has changed, and the Proposed Action has been refined. Proposed activities in this DSEIS/OEIS are consistent with those analyzed in the 2018 Final EIS/OEIS and are representative of the activities that the Action Proponents have been conducting in the Study Area for decades. Activities that comprise the Proposed Action are necessary to meet military readiness requirements beyond 2025 and into the reasonably foreseeable future.

The National Marine Fisheries Service (NMFS) is a cooperating agency because the Proposed Action and alternatives involve activities that have the potential to affect protected resources under the agency's jurisdiction and for which they have special expertise, including marine mammals, threatened and endangered species, and essential fish habitat.

Alternative 1 is the Preferred Alternative as well as the environmentally preferable Action

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Navy Atlantic Fleet Training and Testing
24-168F

Alternative. It reflects a representative year of training and testing to account for the natural fluctuations of training cycles, testing programs, and deployment schedules that generally limit the maximum level of training and testing that could occur in the reasonably foreseeable future.

DEQ previously reviewed the June 2017 Draft Environmental Impact Statement/Overseas Environmental Impact Statement for the Atlantic Fleet Training and Testing under DEQ #17-101F. Additionally, DEQ reviewed a Federal Consistency Determination for this project under DEQ 18-048F.

ENVIRONMENTAL IMPACTS AND MITIGATION

1. Natural Heritage Resources. The DSEIS (page 3.3-1) indicates there may be direct impacts on habitat features (water column, sandy shores, rocky bottoms) from the proposed action. This may include disturbance by explosives and other physical disturbances. The DSEIS notes that the surface area of bottom substrate affected over the short term would be a tiny fraction of the total training and testing area available in the Study Area.

1(a) Agency Jurisdiction.

1(a)(i) The Virginia Department of Conservation and Recreation's (DCR) Division of Natural Heritage (DNH). DNH's mission is conserving Virginia's biodiversity through inventory, protection and stewardship. The Virginia Natural Area Preserves Act (Virginia Code §10.1-209 through 217), authorized DCR to maintain a statewide database for conservation planning and project review, protect land for the conservation of biodiversity, and the protect and ecologically manage the natural heritage resources of Virginia (the habitats of rare, threatened and endangered species, significant natural communities, geologic sites, and other natural features).

1(a)(ii) Virginia Department of Agriculture and Consumer Services (VDACS): The Endangered Plant and Insect Species Act of 1979 (Virginia Code Chapter 39 §3.1-1020 through 1030) authorizes VDACS to conserve, protect and manage endangered and threatened species of plants and insects. Under a Memorandum of Agreement established between VDACS and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species.

1(b) Agency Findings. DCR's Division of Natural Heritage (DNH) searched its Biotics Data System (Biotics) for occurrences of natural heritage resources from the area outlined on the submitted map and identified natural heritage resources in the vicinity.

The Parramore Island, Wreck Island and False Cape Natural Area Preserves are adjacent to the project area and support several different populations of rare nesting birds including the Piping plover (*Charadrius melodus,* G3/S2B/S1N/LT/LT), Least tern (*Sternula antillarum,* G4/S2B/NL/NL), Black skimmer (*Rynchops niger,* G4/S2BS1N/NL/NL), and, at False Cape Natural Area Preserve, Loggerhead sea turtle (*Caretta caretta,* G3/S1B,S1N/LT/LT). In addition, several state and federally listed sea turtles, whales and other marine mammals are located in the project vicinity and may be affected by the proposed activities.

3

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

1(b)(i) State-listed Plant and Insect Species. The current activity will not affect any documented state-listed plants or insects.

1(b)(ii) State Natural Area Preserves. There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

1(c) Recommendation. Contact DCR-DNH to secure updated information on natural heritage resources if the scope of the project changes and/or six months has passed before it is utilized. New and updated information is continually added to the Biotics Data System.

DCR recommends restricting any activities from April until August near the Parramore Island, Wreck Island and False Cape Natural Area Preserves during migration/nesting activities for sea turtles and migratory birds. Due to the legal status of many of these species, DCR also recommends continued coordination with the Virginia Department of Wildlife Resources (DWR), the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) for information regarding the possible impacts and to ensure compliance with protected species legislation.

2. Historic Resources. The DSEIS (page 3.0-7) states that there are standard operating procedures to avoid shipwrecks and mitigation measures in place to minimize impacts to cultural and historic resources. In the event that there are inadvertent impacts to a submerged prehistoric site or historic resource, consultation would be conducted with the appropriate State Historic Preservation Officer(s).

2(a) Agency Jurisdiction. The Virginia Department of Historic Resources (DHR) conducts reviews of both federal and state projects to determine their effect on historic properties. Under the federal process, DHR is the State Historic Preservation Office, and ensures that federal undertakings - including licenses, permits, or funding - comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulation at 36 CFR Part 800. Section 106 requires federal agencies to consider the effects of federal projects on properties that are listed or eligible for listing on the National Register of Historic Places. Please see DHR's website for more information about applicable state and federal laws and how to submit an application for review: https://www.dhr.virginia.gov/programs/federal-state-review/.

2(b) Requirement. The Department of the Navy or its agents must consult directly with DHR pursuant to Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations codified at 36 CFR Part 800 which require Federal agencies to consider the effects of their undertakings on historic properties.

3. Aviation. The DSIES (page 3.0-7) states when military readiness activities are scheduled that require specific areas to be free of non-participating vessels and aircraft due to public safety concerns, the U.S. Coast Guard and Federal Aviation Administration issue Notices to Mariners and Notices to Air Missions, respectively, to warn the public of upcoming Navy activities. Many military readiness activities occur in established restricted areas or danger zones as published on navigational and aeronautical charts. Some frequently used areas have standing Notices to

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Mariners and Notices to Airmen to allow real-time, immediate use. The Navy will accommodate the needs of commercial and civilian aviation by maintaining a working relationship with the Federal Aviation Administration.

3(a) Agency Jurisdiction. The Virginia Department of Aviation is a state agency that plans for the development of the state aviation system; promotes aviation; grants aircraft and airports licenses; and provides financial and technical assistance to cities, towns, counties, other governmental subdivisions, and airport sponsors other governmental subdivisions for the planning, development, construction and operation of airports, and other aviation facilities.

3(b) Agency Findings. The DOAV reviewed the SEIS/OEIS and believes that the activities should not present any significant impacts given the existing operations at the facilities included in the Study Area.

4. Water Quality and Subaqueous Lands. The DSEIS (page ES-7) states that chemical and physical changes to sediment and water quality, as measured by the concentrations of explosives byproduct compounds, would not result in harmful effects on biological resources and habitats. The effects of releases from expended material or munitions to sediment and water quality may be measurable within the area adjacent to the metal object, but concentrations would be below applicable regulatory standards or guidelines for adverse effects' levels on biological resources and habitats. Chemical and physical changes to sediment and water quality, as measured by the concentrations of contaminants associated with the expended material, would likely be indistinguishable from conditions at reference locations.

4(a) Agency Jurisdiction.

4(a)(i) Virginia Department of Environmental Quality. The State Water Control Board promulgates Virginia's water regulations covering a variety of permits to include the Virginia Pollutant Discharge Elimination System Permit regulating point source discharges to surface waters, Virginia Pollution Abatement Permit regulating sewage sludge, storage and land application of biosolids, industrial wastes (sludge and wastewater), municipal wastewater, and animal wastes, the Surface and Groundwater Withdrawal Permit, and the Virginia Water Protection (VWP) Permit regulating impacts to streams, wetlands, and other surface waters. The VWP permit is a state permit which governs activities in state surface waters including wetlands, and certain surface water withdrawals, diversion, and impoundments. It also may serve as Section 401 Water Quality Certification of the federal licenses and permits under the Clean Water Act. The VWP Permit Program is under the Office of Wetlands and Stream Protection, within the DEQ Division of Water Permitting. Six DEQ regional offices perform permit application reviews and issue permits or coverages for the covered activities.

- Clean Water Act Sections 404 and 401 (33 U.S.C. § 1251 *et seq.*);
- Section 404(b)(i) Guidelines Mitigation Memorandum of Agreement (2/90) (40 CFR Part 230);
- State Water Control Law, Chapter 3.1 of Title 62.1 of the Code of Virginia; and
- State Water Control Board regulations 9VAC25-210 *et seq.*; 9VAC25-660 *et seq.*; 9VAC25-670 *et seq.*; 9VAC25-680 *et seq*; and 9VAC25-690 *et seq*.

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Navy Atlantic Fleet Training and Testing
24-168F

4(a)(ii) Virginia Marine Resources Commission. The Virginia Marine Resources Commission (VMRC) regulates encroachments in, on or over state-owned subaqueous beds as well as tidal wetlands pursuant to Virginia Code §28.2-1200 through 1400, as well as sharing jurisdiction for tidal wetlands with the Virginia Department of Environmental Quality. For nontidal waterways, VMRC states that it has been the policy of the Habitat Management Division to exert jurisdiction only over the beds of perennial streams where the upstream drainage area is 5 square miles or greater. The beds of such waterways are considered public below the ordinary high water line mark. However, in nontidal waters where a Virginia Water Protection (VWP) permit or coverage is obtained issued for in-stream activities, a VMRC permit is not required in certain circumstances (Memorandum of Agreement between VMRC and DEQ for Implementation of 2023 Va. Acts Chs. 258 and 259 Regarding Permitting in Non-tidal Waters of the Commonwealth (Amd 8/23)).

4(b) Agency Findings.

4(b)(i) DEQ. Permanent or temporary impacts to surface waters and wetlands may require DEQ authorization under §401 of the Clean Water Act, Virginia Code §62.1-44.15:20, and Virginia Administrative Code 9 VAC 25-210-10 *et seq*. Provided that any and all necessary permits are obtained and complied with, the project will be consistent with DEQ program requirements. For additional information, contact Jeff Hannah, DEQ-TRO at (757)407-2510.

4(b)(ii) VMRC. The VMRC did not respond to the request for comments on this proposal.

5. Pollution Prevention. DEQ's Office of Pollution of Prevention hosts a number of programs and initiatives that serve for non-regulatory assistance to businesses, institutions, and communities including the Virginia Environmental Excellence Program and Virginia Green.

5(a) Recommendations. We have several pollution prevention recommendations that may be helpful in operations, as applicable:

- Consider development of an effective Environmental Management System (EMS). An effective EMS will ensure that the proposed facility is committed to complying with environmental regulations, reducing risk, minimizing environmental impacts, setting environmental goals, and achieving improvements in its environmental performance. DEQ offers EMS development assistance and recognizes facilities with effective Environmental Management Systems through its Virginia Environmental Excellence Program (VEEP). VEEP provides recognition, annual permit fee discounts, and the possibility for alternative compliance methods.
- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered and can be specified in purchasing contracts.
- Consider contractors' commitment to the environment when choosing contractors. Specifications regarding raw materials and construction practices can be included in contract documents and requests for proposals.

6

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Navy Atlantic Fleet Training and Testing
24-168F

- Integrate pollution prevention techniques into facility maintenance and operation, to include inventory control for centralized storage of hazardous materials. Maintenance facilities should have sufficient and suitable space to allow for effective inventory control and preventive maintenance.

DEQ's Office of Pollution Prevention provides information and technical assistance relating to pollution prevention techniques and EMS. For more information, contact DEQ's Office of Pollution Prevention, Meghann Quinn at (804) 774-9076.

6. Solid and Hazardous Waste Management. The DSEIS (page 3.1-19) notes that the proposed training and testing activities would emit hazardous pollutants, mainly due to the combustion of fuels in vessels and aircraft. Training and testing activities also would produce negligible to minor increases of ambient concentrations of hazardous pollutants at any onshore location. The DSEIS does not indicate that significant solid or hazardous wastes will be produced by the training exercises.

6(a) Agency Jurisdiction. On behalf of the Virginia Waste Management Board, the DEQ Division of Land Protection and Revitalization is responsible for carrying out the mandates of the Virginia Waste Management Act (Virginia Code §10.1-1400 et seq.), as well as meeting Virginia's federal obligations under the Resource Conservation and Recovery Act and the Comprehensive Environmental Response Compensation Liability Act , commonly known as Superfund. The DEQ Division of Land Protection and Revitalization also administers those laws and regulations on behalf of the State Water Control Board governing Petroleum Storage Tanks (Virginia Code §62.1-44.34:8 et seq.), including Aboveground Storage Tanks (9VAC25-91 et seq.) and Underground Storage Tanks (9VAC25-580 et seq. and 9VAC25-580-370 et seq.), also known as Virginia Tank Regulations, and § 62.1-44.34:14 et seq. which covers oil spills.

Virginia:

- Virginia Waste Management Act, Virginia Code § 10.1-1400 et seq.
- Virginia Solid Waste Management Regulations, 9VAC20-81
  - (9VAC20-81-620 applies to asbestos-containing materials)
- Virginia Hazardous Waste Management Regulations, 9VAC20-60
  - (9VAC20-60-261 applies to lead-based paints)
- Virginia Regulations for the Transportation of Hazardous Materials, 9VAC20-110.

Federal:

- Resource Conservation and Recovery Act (RCRA), 42 U.S. Code sections 6901 et seq.
- U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 Code of Federal Regulations, Part 107
- Applicable rules contained in Title 40, Code of Federal Regulations.

7

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Navy Atlantic Fleet Training and Testing
24-168F

6(b) Requirements.

6(b)(i) Waste Management. Any soil that is suspected of contamination or wastes that are generated during the action must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations. All construction and demolition debris must be characterized in accordance with the *Virginia Hazardous Waste Management Regulations* prior to disposal at an appropriate facility. It is the generator's responsibility to determine if solid waste meets the criteria of hazardous waste and as a result be managed as such.

6(b)(ii) Petroleum Releases and Contaminated Soils. If evidence of a petroleum release is discovered during implementation of this project, it must be reported to DEQ, as authorized by Virginia Code § 62.1-44.34.8 through 9 and 9 VAC 25-580-10 *et seq*. Petroleum contaminated soils generated during this project must be characterized and disposed of properly.

6(b)(iii) Petroleum Storage Tanks. Installation, operation, removal, or relocation of any regulated petroleum storage tank(s) either AST or UST must also be conducted in accordance with the Virginia Regulations 9 VAC 25-91-10 et seq and / or 9 VAC 25-580-10 et seq. Documentation and / or questions should be submitted to TRO Tanks at Tidewater Regional Office – 5636 Southern Blvd., Virginia Beach, VA 23462. tro.tanks@deq.virginia.gov.

6(c) Agency Recommendation. DEQ encourages all projects to implement pollution prevention principles, including:

- the reduction, reuse and recycling of all solid wastes generated; and
- the minimization and proper handling of generated hazardous wastes.

REGULATORY AND COORDINATION NEEDS

1. Natural Heritage Resources. Contact DCR-DNH, Rene Hypes at (804) 371-2708, to secure updated information on natural heritage resources if the scope of the project changes and/or six months has passed before the project is implemented, since new and updated information is continually added to the Biotics Data System.

The DWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed at https://services.dwr.virginia.gov/fwis/ or contact Hannah Schul at Hannah.Schul@dwr.virginia.gov.

The U.S. Fish and Wildlife Service (USFWS) utilizes an online project review process (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process) to facilitate compliance with the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended. The process enables users to 1) follow step-by-step guidance; 2) access information that will allow them to identify threatened and endangered species, designated critical habitat, and other Federal trust resources that may be affected by their project; and 3) accurately reach determinations regarding the potential effects of their project on these

8

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

resources as required under the ESA. If you have questions regarding the online review process, please contact Jackie Luu at jackie_luu@fws.gov.

2. Historic Resources. Consult with DHR (Jenny Bellville-Marrion at Jennifer.Bellville-Marrion@dhr.virginia.gov) pursuant Section 106 of the National Historic Preservation Act, which requires federal agencies to consider the impacts of their projects on historic properties.

3. Solid and Hazardous Wastes. All solid waste, hazardous waste, and hazardous materials must be managed in accordance with all applicable federal, state, and local environmental regulations. Contact DEQ TRO (Melinda Woodruff, 757-407-2516) for information on the location and availability of suitable waste management facilities in the project area or if free product, discolored soils, or other evidence of contaminated soils are encountered.

3(a) Petroleum Releases/ Storage. If evidence of a petroleum release is discovered during construction, it must be reported to DEQ TRO (Melinda Woodruff, 757-407-2516).

For installation, operation, or removal of any regulated ASTs or USTs, documentation and / or questions should be submitted to TRO Tanks at Tidewater Regional Office – 5636 Southern Blvd., Virginia Beach, VA 23462. tro.tanks@deq.virginia.gov.

4. Federal Consistency under the Coastal Zone Management Act. Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities located inside or outside of Virginia's designated coastal management area that can have reasonably foreseeable effects on coastal resources or coastal uses must, to the maximum extent practicable, be implemented in a manner consistent with the Virginia CZM Program. The Virginia CZM Program consists of a network of programs administered by several agencies. In order to be consistent with the Virginia CZM Program, the project activities must be consistent with the enforceable policies of the Virginia CZM Program and all the applicable permits and approvals listed under the enforceable policies of the Virginia CZM Program must be obtained prior to commencing the project. DEQ coordinates the review of FCDs with agencies administering the enforceable and advisory policies of the Virginia CZM Program. Pursuant to the federal consistency regulation 15 Code of Federal Regulations Part 930 Subpart C Section 930.31(c)(residual category), the Navy should submit a Federal Consistency Determination to DEQ for this project.

Project submissions may be emailed to eir@deq.virginia.gov.

CONCLUSION

Thank you for the opportunity to review and respond to the Draft Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement for the Atlantic Fleet Training and Testing. Detailed comments of reviewing agencies are attached for your review. Please contact Janine Howard at (804) 659-1916 for clarification of these comments.

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Navy Atlantic Fleet Training and Testing
24-168F

Sincerely,



Bettina Rayfield, Manager
Environmental Impact Review and Long-Range Priorities Program
Virginia Department of Environmental Quality
804-659-1915
bettina.rayfield@DEQ.virginia.gov
Central Office
1111 E. Main Street, Suite 1400
Richmond, Virginia 23219
804-698-4000

Ec: Hannah Schul, DWR
Allison Tillett, DCR
Arlene Warren, VDH
Roger Kirchen, DHR
Emily Hein, VIMS
Tiffany Birge, VMRC
Rusty Harrington, DOAV
R. Hiss, Bedford County
Elaine Meil, Accomack-Northampton Planning District Commission
Ben McFarlane, Hampton Roads Planning District Commission

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Travis A. Voyles
Secretary of Natural and Historic Resources

Matthew S. Wells
Director

Andrew W. Smith
Chief Deputy Director

Frank N. Stovall
Deputy Director for Operations

Darryl Glover
Deputy Director for Dam Safety, Floodplain Management and Soil and Water Conservation

Laura Ellis
Deputy Director for Administration and Finance

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

MEMORANDUM

DATE: October 22, 2024

TO: Janine Howard, DEQ

FROM: Allison Tillett, Environmental Impact Review Coordinator

SUBJECT: DEQ 24-168F, Draft Supplemental EIS for Atlantic Fleet Training and Testing

Division of Planning and Recreation Resources

The Department of Conservation and Recreation (DCR), Division of Planning and Recreational Resources (PRR), develops the *Virginia Outdoors Plan* and coordinates a broad range of recreational and environmental programs throughout Virginia. These include the Virginia Scenic Rivers program; Trails, Greenways, and Blueways; Virginia State Park Master Planning and State Park Design and Construction. PRR also administers the Land & Water Conservation Fund (LWCF) program in Virginia.

Division of Natural Heritage

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

The Parramore Island, Wreck Island and False Cape Natural Area Preserves are adjacent to the project area and support several different populations of rare nesting birds including the Piping plover (*Charadrius melodus,* G3/S2B/S1N/LT/LT), Least tern (*Sternula antillarum,* G4/S2B/NL/NL), Black skimmer (*Rynchops niger,* G4/S2BS1N/NL/NL), and, at False Cape Natural Area Preserve, Loggerhead sea turtle (*Caretta caretta,* G3/S1B,S1N/LT/LT). In addition, several state and federally listed sea turtles, whales and other marine mammals are located in the project vicinity and may be affected by the proposed activities. DCR recommends restricting any activities from April until August near these preserves during migration/nesting activities for sea turtles and migratory birds. Due to the legal status of many of these species, DCR also recommends continued coordination with the Virginia Department of Wildlife Resources (VDWR), the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) for information regarding the possible impacts and to ensure compliance with protected species legislation.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

600 East Main Street, 24th Floor | Richmond, Virginia 23219 | 804-786-6124

State Parks • Soil and Water Conservation • Planning and Recreation Resources
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The U.S. Fish and Wildlife Service (USFWS) utilizes an online project review process (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process) to facilitate compliance with the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended. The process enables users to 1) follow step-by-step guidance; 2) access information that will allow them to identify threatened and endangered species, designated critical habitat, and other Federal trust resources that may be affected by their project; and 3) accurately reach determinations regarding the potential effects of their project on these resources as required under the ESA. If you have questions regarding the online review process, please contact Jackie Luu at jackie_luu@fws.gov.

The VDWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed at https://services.dwr.virginia.gov/fwis/ or contact Hannah Schul at Hannah.Schul@dwr.virginia.gov.

Division of State Parks

DCR's Division of State Parks is responsible for acquiring and managing, state parks. Park development and master planning are managed by the Division of Planning and Recreation Resources. Master plans are required prior to a parks opening and are updated every ten years (Virginia Code § 10.1-200 *et seq.*).

Division of Dam Safety and Floodplain Management

Dam Safety Program:
The Dam Safety program was established to provide proper and safe design, construction, operation and maintenance of dams to protect public safety. Authority is bestowed upon the program according to *The Virginia Dam Safety Act*, Article 2, Chapter 6, Title 10.1 (10.1-604 et seq) of the Code of Virginia and Dam Safety Impounding Structure Regulations (Dam Safety Regulations), established and published by the Virginia Soil and Water Conservation Board (VSWCB).

Floodplain Management Program:
The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA), and communities who elect to participate in this voluntary program manage and enforce the program on the local level through that community's local floodplain ordinance. Each local floodplain ordinance must comply with the minimum standards of the NFIP, outlined in 44 CFR 60.3; however, local communities may adopt more restrictive requirements in their local floodplain ordinance, such as regulating the 0.2% annual chance flood zone (Shaded X Zone).

All development within a Special Flood Hazard Area (SFHA), as shown on the locality's Flood Insurance Rate Map (FIRM), must be permitted and comply with the requirements of the local floodplain ordinance.

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

State Agency Projects Only

Executive Order 45, signed by Governor Northam and effective on November 15, 2019, establishes mandatory standards for development of state-owned properties in Flood-Prone Areas, which include Special Flood Hazard Areas, Shaded X Zones, and the Sea Level Rise Inundation Area. These standards shall apply to all state agencies.

1. Development in Special Flood Hazard Areas and Shaded X Zones
    A. All development, including buildings, on state-owned property shall comply with the locally-adopted floodplain management ordinance of the community in which the state-owned property is located and any flood-related standards identified in the Virginia Uniform Statewide Building Code.
    B. If any state-owned property is located in a community that does not participate in the NFIP, all development, including buildings, on such state-owned property shall comply with the NFIP requirements as defined in 44 CFR §§ 60.3, 60.4, and 60.5 and any flood-related standards identified in the Virginia Uniform Statewide Building Code.
        (1) These projects shall be submitted to the Department of General Services (DGS), for review and approval.
        (2) DGS shall not approve any project until the State NFIP Coordinator has reviewed and approved the application for NFIP compliance.
        (3) DGS shall provide a written determination on project requests to the applicant and the State NFIP Coordinator. The State NFIP Coordinator shall maintain all documentation associated with the project in perpetuity.
    C. No new state-owned buildings, or buildings constructed on state-owned property, shall be constructed, reconstructed, purchased, or acquired by the Commonwealth within a Special Flood Hazard Area or Shaded X Zone in any community unless a variance is granted by the Director of DGS, as outlined in this Order.

The following definitions are from Executive Order 45:

Development for NFIP purposes is defined in 44 CFR § 59.1 as "Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials."

The Special Flood Hazard Area may also be referred to as the 1% annual chance floodplain or the 100-year floodplain, as identified on the effective Flood Insurance Rate Map and Flood Insurance Study. This includes the following flood zones: A, AO, AH, AE, A99, AR, AR/AE, AR/AO, AR/AH, AR/A, VO, VE, or V.

The Shaded X Zone may also be referred to as the 0.2% annual chance floodplain or the 500- year floodplain, as identified on the effective Flood Insurance Rate Map and Flood Insurance Study.

The Sea Level Rise Inundation Area referenced in this Order shall be mapped based on the National Oceanic and Atmospheric Administration Intermediate-High scenario curve for 2100, last updated in 2017, and is intended to denote the maximum inland boundary of anticipated sea level rise.

"State agency" shall mean all entities in the executive branch, including agencies, offices, authorities, commissions, departments, and all institutions of higher education.

"Reconstructed" means a building that has been substantially damaged or substantially improved, as defined by the NFIP and the Virginia Uniform Statewide Building Code.

Federal Agency Projects Only

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Projects conducted by federal agencies within the SFHA must comply with federal Executive Order 11988: Floodplain Management.

DCR's Floodplain Management Program does not have regulatory authority for projects in the SFHA. The applicant/developer must reach out to the local floodplain administrator for an official floodplain determination and comply with the community's local floodplain ordinance, including receiving a local permit. Failure to comply with the local floodplain ordinance could result in enforcement action from the locality. For state projects, DCR recommends that compliance documentation be provided prior to the project being funded. For federal projects, the applicant/developer is encouraged reach out to the local floodplain administrator and comply with the community's local floodplain ordinance.

To find flood zone information, use the Virginia Flood Risk Information System (VFRIS): www.dcr.virginia.gov/vfris

To find community NFIP participation and local floodplain administrator contact information, use DCR's Local Floodplain Management Directory: www.dcr.virginia.gov/dam-safety-and-floodplains/floodplain-directory

The remaining DCR divisions have no comments regarding the scope of this project. Thank you for the opportunity to comment.

Cc: Hannah Schul, VDWR
Brian Hopper, NOAA Fisheries-Protected Species Division
Shannon Alexander, DCR-DNH – Eastern Shore Regional Steward

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

October 29, 2024

Janine Howard
Dept. of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, VA 23218

Re: Naval Supplemental EIS Atlantic Fleet Training and Testing
DHR File No. 2023-5533
DEQ # 24-168S

Dear Ms. Howard

We have received your request for comments on the project referenced above. Our comments are provided as assistance to the Virginia Department of Environmental Quality (DEQ).

We request that the Department of the Navy or its agents consult directly with DHR pursuant to Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations codified at 36 CFR Part 800 which require Federal agencies to consider the effects of their undertakings on historic properties.

If you have any questions, please contact me at jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Outlook

RE: NEW PROJECT Navy DSEIS for Atlantic Fleet Training and Testing, DEQ 24-168F

From Harrington, Rusty N. (DOAV) <Rusty.Harrington@doav.virginia.gov>
Date Mon 10/28/2024 1:59 PM
To Howard, Janine (DEQ) <Janine.Howard@deq.virginia.gov>

Good afternoon, Janine-

Thank you for requesting our comments regarding the Navy DSEIS for Atlantic Fleet Training and Testing Activities, Project Number 24-168F.

The Virginia Department of Aviation has reviewed the documents provided. The Department believes that, as presented, the activities should not present any significant impacts, given the existing operations at these facilities.

The Department appreciates the consideration you have given to us by requesting our comments on this project. Please do not hesitate to contact me should you have any questions or require further assistance regarding the Department's review of this project.

--R. N. (Rusty) Harrington, MBA
Chief Planner
Virginia Department of Aviation
5702 Gulfstream Road
Richmond, Virginia 23250
(804) 236-3522

From: Howard, Janine (DEQ) <Janine.Howard@deq.virginia.gov>
Sent: Monday, October 28, 2024 1:32 PM
To: dgif-ESS Projects (DWR) <ESSProjects@dwr.virginia.gov>; Kirchen, Roger (DHR) <Roger.Kirchen@dhr.virginia.gov>; advisory@vims.edu (advisory@vims.edu) <advisory@vims.edu>; MRC - Scoping (MRC) <Scoping@mrc.virginia.gov>; Harrington, Rusty N. (DOAV) <Rusty.Harrington@doav.virginia.gov>; Meil, Elaine <emeil@a-npdc.org>; Ben McFarlane <bmcfarlane@hrpdcva.gov>; Ballou, Thomas (DEQ) <Thomas.Ballou@deq.virginia.gov>; Lovain, Ava (DEQ) <Anna.Lovain@deq.virginia.gov>; Hannah, Jeffrey (DEQ) <Jeffrey.Hannah@deq.virginia.gov>
Cc: Howard, Janine (DEQ) <Janine.Howard@deq.virginia.gov>
Subject: Re: NEW PROJECT Navy DSEIS for Atlantic Fleet Training and Testing, DEQ 24-168F

Good afternoon,

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE

Environmental Impact Review
Coordination Review

To: Office of Environmental Impact Review

From: Jeff Hannah, Regional VWPP Program Manager

Date: October 18, 2024

Project: Draft Supplemental EIS for Atlantic Fleet Training and Testing, DEQ #24-168F

As requested, the DEQ Tidewater Regional Office has reviewed the supplied information and offers the following comments:

Air Compliance Program :
The following air regulations may be applicable: Virginia Administrative Code 9 VAC 5-50-60 *et seq*. which addresses the abatement of visible emissions and fugitive dust emissions, and Virginia Administrative Code 9 VAC 5-130-10 et *seq*. which addresses open burning. For additional information, contact John Brandt, DEQ-TRO at (757)407-2341 or john.brandt@deq.virginia.gov .

Land Program (Solid and Hazardous Waste):
All construction and demolition waste, including any excess soil, must be characterized in accordance with the Virginia Solid and Hazardous Waste Management Regulations and disposed of at an appropriate facility as applicable.
For additional information, contact Melinda Woodruff, DEQ-TRO at melinda.woodruff@deq.virginia.gov .

Stormwater:
No comment as proposed action does not include land disturbing activities.

Virginia Water Protection Permit Program (VWPP):
Potential adverse impacts to water quality and wetlands resulting from surface runoff due to construction activities must be minimized. This can be achieved by using Best Management Practices (BMPs). Permanent or temporary impacts to surface waters and wetlands may require DEQ authorization under §401 of the Clean Water Act, Virginia Code §62.1-44.15:20, and Virginia Administrative Code 9 VAC 25-210-10 *et seq*. Provided that any and all necessary permits are obtained and complied with, the project will be consistent with DEQ program requirements. For additional information, contact Jeff Hannah, DEQ-TRO at (757)407-2510.

Water Permit Program (VPDES):

No comments as there does not appear to be any point source discharges of process water or wastewater that would necessitate a VPDES permit.

1 of 2

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Petroleum Storage Tank Program:

DEQ recognizes that active and or closed petroleum pollution complaint cases may be encountered adjacent to or within proposed project footprints. If evidence of a petroleum release is discovered during implementation of any project, it must be reported to DEQ, as authorized by CODE # 62.1-44.34.8 through 19 and 9 VAC 25-580-10 et seq. Contact Ms. Melinda Woodruff at (757)407-2516. Petroleum-contaminated soils and ground water generated during implementation of this project must be properly characterized and disposed of properly.

Installation, operation, removal, or relocation of any regulated petroleum storage tank(s) either AST or UST must also be conducted in accordance with the Virginia Regulations 9 VAC 25-91-10 et seq and / or 9 VAC 25-580-10 et seq. Documentation and / or questions should be submitted to TRO Tanks at Tidewater Regional Office – 5636 Southern Blvd., Virginia Beach, VA 23462. tro.tanks@deq.virginia.gov.

2 of 2

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

Outlook

RE: NEW PROJECT Navy DSEIS for Atlantic Fleet Training and Testing, DEQ 24-168F

From Warren, Arlene (VDH) <Arlene.Warren@vdh.virginia.gov>
Date Thu 10/17/2024 12:33 PM
To Howard, Janine (DEQ) <Janine.Howard@deq.virginia.gov>

The Office of Drinking Water – VDH does not have any comments currently on the Atlantic Fleet Training and Testing Draft Supplemental EIS.

Best Regards,

Arlene F. Warren
GIS Program Support Technician
Mobile 804-389-2167 (office/cell/text)
Email [arlene.warren@vdh.virginia.gov]arlene.warren@vdh.virginia.gov
VDH, Office of Drinking Water
109 Governor Street, 6th Floor
Richmond, VA 23219

From: Fulcher, Valerie (DEQ) <Valerie.Fulcher@deq.virginia.gov>
Sent: Thursday, October 3, 2024 2:01 PM
To: dgif-ESS Projects (DWR) <ESSProjects@dwr.virginia.gov>; DCR-PRR Environmental Review (DCR) <envreview@dcr.virginia.gov>; odwreview (VDH) <odwreview@vdh.virginia.gov>; Kirchen, Roger (DHR) <Roger.Kirchen@dhr.virginia.gov>; advisory@vims.edu (advisory@vims.edu) <advisory@vims.edu>; MRC - Scoping (MRC) <Scoping@mrc.virginia.gov>; Harrington, Rusty N. (DOAV) <Rusty.Harrington@doav.virginia.gov>; Meil, Elaine <emeil@a-npdc.org>; Ben McFarlane <bmcfarlane@hrpdcva.gov>; Ballou, Thomas (DEQ) <Thomas.Ballou@deq.virginia.gov>; Lovain, Ava (DEQ) <Anna.Lovain@deq.virginia.gov>; Hannah, Jeffrey (DEQ) <Jeffrey.Hannah@deq.virginia.gov>
Cc: Howard, Janine (DEQ) <Janine.Howard@deq.virginia.gov>
Subject: NEW PROJECT Navy DSEIS for Atlantic Fleet Training and Testing, DEQ 24-168F

Good afternoon- this is a new OEIR review request/project:

Document Type: Draft Supplemental Environmental Impact Statement

Project Sponsor: Department of the Navy

Project Title: Draft Supplemental EIS for Atlantic Fleet Training and Testing

Project Number: DEQ #24-168F

Figure M.3-4: Virginia Department of Environmental Quality Comment (continued)

MARINE MAMMAL COMMISSION

4 November 2024

Naval Facilities Engineering Systems Command, Atlantic
Attn: AFTT EIS Project Managers, Code EV22SG
6506 Hampton Boulevard
Norfolk, VA 23508-1278

Dear Sir or Madam:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the U.S. Navy's (the Navy) Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS) for training and research, development, test, and evaluation (testing) activities conducted within the Atlantic Fleet Training and Testing (AFTT) study area (Phase IV; 89 Fed. Reg. 77113). The DEIS addresses the impacts on marine mammals from conducting training and testing activities in the AFTT study area and is associated with the letter of authorization (LOA) application that the Navy submitted to the National Marine Fisheries Service (NMFS). The Navy previously analyzed the various impacts, first under the Tactical Training Theater Assessment and Planning DEISs (TAP I) and then under the Phase II and III DEISs.

Background

The Navy's AFTT study area is in the western Atlantic Ocean and encompasses the waters along the east coast of North America, the Gulf of Mexico, and portions of the Caribbean Sea, at Navy pierside locations and in port transit channels, near civilian ports and Coast Guard stations, and in bays, harbors, inland waters, and rivers. The activities would involve the use of low-, mid-, high- and very high-frequency active sonar, weapons systems, explosive and non-explosive practice munitions and ordnance, high-explosive underwater detonations (including ship shock trials), expended materials, vibratory and impact hammers, airguns, electromagnetic devices, high-energy lasers, vessels, underwater vehicles, and aircraft. Under the No Action Alternative, the Navy would not conduct training or testing activities. Alternative 1, the Preferred Alternative, includes a representative number of training and testing activities; whereas, Alternative 2 includes the maximum number of training and testing activities. In addition to some time-area closures, mitigation measures would include visual monitoring to implement delay and shut-down procedures.

Auditory thresholds

As the Commission has noted in letters related to NMFS's Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: Underwater and in-air criteria for

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www.mmc.gov

Figure M.3-5: Marine Mammal Commission Comment

onset of auditory injury and temporary threshold shifts (AINJ and TTS, respectively; NMFS 2024)[1], the Commission supports the weighting functions and associated thresholds as stipulated in Finneran (2024), which are the same as were used for Navy Phase IV activities (Department of Navy 2024a). However, new data are available since the Navy updated the weighting functions and thresholds. For example, Kastelein et al. (2024a) provided additional TTS data for harbor porpoises exposed to one-sixth octave band sound at 8 kHz. Although the Kastelein et al. (2024a) manuscript likely was 'in prep' at the time Finneran (2024) was drafted, it is unclear why the data were not included, as other data that were and still are part of 'in prep' manuscripts (i.e., Kastelein et al. in prep, Reichmuth et al. in prep) were incorporated in Finneran (2024)[2]. The Commission recommends that the Navy review the data from Kastelein et al. (2024a) and determine whether inclusion of the data would alter the weighting function and/or thresholds for very high-frequency[3] cetaceans and if so, whether those modifications are sufficient to warrant revision of the current weighting function and associated thresholds for non-impulsive sources as stipulated in Department of the Navy (2024a).

For mysticetes, more recent data were incorporated into the weighting function for Phase IV activities. The first hearing tests were conducted on minke whales in 2023 and showed that the whales were sensitive to frequencies much higher than expected—at least 45 kHz and potentially as high as 90 kHz (National Marine Mammal Foundation (NMMF) 2023, Houser et al. 2024[4]). As such, the Navy split the low-frequency (LF cetacean) functional hearing group into very low-frequency (VLF) and LF cetaceans[5], with the LF cetacean weighting function shifted to encompass higher frequencies. Since 2023, additional hearing data have been collected that showed minke whales were the most sensitive at 32 kHz for the frequencies that were tested in 2024[6]. Department of the Navy (2024a) based various VLF and LF parameters that inform the composite audiograms, weighting functions, and thresholds on the mean or median parameters of the other functional hearing groups. In its 31 August 2015 letter on NMFS's technical guidance and the Navy's original Phase III criteria and thresholds, the Commission recommended that the phocid (PCW) weighting and exposure function parameters be used to inform the LF weighting and exposure functions[7]. Recently, others[8] also have suggested that mysticete hearing appears to be more similar to that of phocids. Therefore, the Commission recommends that the Navy specify whether the LF weighting function has been shifted far enough to the higher frequencies to reflect that 32 kHz was the most sensitive frequency tested in minke whales, determine whether use of the PCW composite audiogram, weighting function, and threshold parameters are more representative of VLF and LF cetaceans than medians and means of the five other functional hearing groups, and revise the VLF and LF composite

[1] The Commission appreciates that the Navy, and in turn NMFS, incorporated its recommendations in the 26 June 2023 letter to (1) include the California sea lion hearing threshold data from Kastelein et al. (2021, 2022a and b, and 2024b) in the derivation of the otariid composite audiogram and revise the weighting function accordingly and (2) fix the rounding issues for K to ensure that the impulsive AINJ thresholds were 15 dB greater than the TTS thresholds.
[2] As well as NMFS (2024) and Department of the Navy (2024a).
[3] VHF.
[4] Which is similarly part of an in prep manuscript.
[5] VLF cetaceans include right, bowhead, fin, and blue whales; whereas, LF cetaceans include minke, sei, Bryde's, Rice's, Omura's, humpback, gray, and pygmy right whales.
[6] Which is part of another in prep manuscript.
[7] Which incorporate the weighting functions and associated weighted thresholds.
[8] D. Houser during his presentation of minke whale hearing results at the Effects of Sound on Marine Mammals meeting.

Figure M.3-5: Marine Mammal Commission Comment (continued)

audiograms, weighting functions, and thresholds as needed for impulsive and non-impulsive sources for the FEIS and LOA application.

Behavior thresholds for acoustic sources

To further define its behavior thresholds for acoustic sources (i.e., sonars and other transducers), the Navy developed multiple[9] Bayesian biphasic dose response functions[10] (Bayesian BRFs) for Phase IV activities. The Bayesian BRFs were a generalization of the monophasic functions previously developed[11] and applied to behavioral response data[12] (see Department of the Navy 2024a for specifics). The biphasic portions of the functions are intended to describe both level- and context-based responses as proposed in Ellison et al. (2011). At higher amplitudes, a level-based response relates the received sound level to the probability of a behavioral response; whereas, at lower amplitudes, sound can cue the presence, proximity, and approach of a sound source and stimulate a context-based response based on factors other than received sound level[13]. The Commission agrees that the general method by which Bayesian BRFs are derived is reasonable. The Commission, however, questions whether best available data were used to inform them.

In its review of Department of the Navy (2024a), the Commission notes the following in regard to the BRFs—

- Justification was not provided regarding why the upper bound of the BRFs increased from 185 to 200 dB re 1 µPa for Phase IV.
  - None of the raw behavioral data include exposures above 185 dB re 1 µPa (see Table E-1 in Department of the Navy 2024a).
  - Although the upper bound was set by subject matter experts for Phase III (Department of the Navy 2017a), it appears arbitrary for Phase IV. Such a change would result in the Phase IV functions moving farther to the right toward higher received levels, the 50-percent probabilities occurring at higher received levels, the slopes of the functions being less steep, and the overall BRFs for odontocetes and mysticetes[14] being less precautionary as compared to Phase III (see Figure 42 in Department of the Navy 2024a and note the flat slope between 185 and 200 dB re 1 µPa on all BRFs for Phase III).
  - Additionally, the Department of the Navy (2024a) indicated that the 50 percent probability of a behavioral response was estimated to occur at 185 dB re 1 µPa for the mysticete BRF, 8 dB higher than the TTS threshold for LF or VLF cetaceans.
- None of the Southall et al. (2018, 2019, 2020, 2021, 2022, 2023) data for the Atlantic behavioral response study (BRS) involving beaked whales and other odontocetes were included. However, 'in prep' data were included for auditory thresholds, and data that were

[9] For sensitive species (beaked whales and harbor porpoises), odontocetes, mysticetes, and pinnipeds.
[10] Comprising two truncated cumulative normal distribution functions with separate mean and standard deviation values, as well as upper and lower bounds. The model was fitted to data using the Markov Chain Monte Carlo algorithm.
[11] By Antunes et al. (2014) and Miller et al. (2014).
[12] From both wild and captive animals.
[13] e.g., the animal's previous experience, separation distance between the sound source and the animal, sound source speed and heading, and behavioral state of the animal including feeding, traveling, etc.
[14] And less precautionary for sensitive species at higher received levels. The Phase IV pinniped BRF is more precautionary than the Phase III BRF, but would have been more so if the upper bound had been 185 dB re 1 µPa.

Figure M.3-5: Marine Mammal Commission Comment (continued)

underlying but not specifically included in the publications were used for the BRFs[15]. This information may have been particularly useful to assess whether the less sensitive BRFs that were developed for Phase IV would have been supported by the Atlantic BRS data.

- The odontocete BRF incorporated 30 random samples from the dose-response function developed for just the *moderate and severe responses* of captive bottlenose dolphins (Houser et al. 2013b) to give equal weighting to the field and captive studies.
  - Houser et al. (2013b) included dose-response functions derived from all of the raw data. It is unclear why the Navy used only the moderate and severe responses to derive a new dose-response function for captive bottlenose dolphins, as this would skew the subsequent odontocete BRF to the right, particularly at the lower response probabilities and lower received levels, as seen in Figure 42 in Department of the Navy (2024a).
  - Further, there are more than 30 exposures for the field studies, so equal weighting of field to captive studies was not achieved as specified in Department of the Navy (2024a).
- The sensitive species BRF[16] incorporated 10 random samples from the generalized additive models (GAMs) that were developed from passive acoustic monitoring data in Moretti et al. (2014) and Jacobson et al. (2022)[17] and that ranged from 120 to 180 dB re 1 µPa[18].
  - Department of the Navy (2024a) did not specify how the 10 random samples were allocated between the GAMs nor did it specify how it handled the fact that the Jacobson et al. (2022) GAM went to only 165 dB re 1 µPa and was based on the decrease in the probability of a group vocal period (GVP; i.e., foraging dive), while the Moretti et al. (2014) GAM went to 180 dB re 1 µPa and included GAMs for both the decrease in the probability of a GVP and probability of disturbance[19].
  - Jacobson et al. (2022) specifically stated that they did not make an inference on sonar received levels above 165 dB re 1 µPa, because no GVPs were observed above this received level. Since the 10 random samples used for the BRFs were not included in Table 21 of Department of the Navy (2024a), it is unclear whether those samples could be causing the lesser sensitivity at the higher received levels in the sensitive species BRF as compared to the Phase III BRF.
  - It also is unclear why similar passive acoustic monitoring data were not used for beaked whales at the Southern California Acoustic Range and minke whales at PMRF, since those data have been collected and reported on as part of the Navy's Marine Species Monitoring Program for Phase III[20].
- For harbor porpoises, multiple received levels were noted for the same individual exposed to the same sound source (i.e., high-frequency active sonar (HFAS)) in Table E-1. Since the specific Kastelein et al. references were not provided, it is unclear whether the experimental scenarios differed enough that the data were considered independent or whether only the lowest received level for each individual should have been used.

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[15] i.e., data from Jacobson et al. (2022).
[16] Department of the Navy (2024a) indicated that, for harbor porpoises, a large enough aggregation of controlled exposure studies involving captive animals existed such that a risk function could be developed. The Commission understands that the Navy was referring to development of the actual BRF, not a separate harbor porpoise dose-response function that was used for other captive studies. This should be clarified in Department of the Navy (2024a).
[17] Moretti et al. (2014) included data from the range hydrophones at the Atlantic Undersea Test and Evaluation Center, and Jacobson et al. (2022) included data from the Pacific Missile Range Facility (PMRF).
[18] This range is indicated in the text, whereas, Table 21 specified the range was 100–180 dB re 1 µPa.
[19] i.e., whether they were considered a one-to-one comparison.
[20] https://www.navymarinespeciesmonitoring.us/reporting/pacific/. See DiMarzio et al. (2019) as one example.

Figure M.3-5: Marine Mammal Commission Comment (continued)

- The pinniped BRF incorporated 15 random samples from the dose-response function developed for just the *moderate and severe responses* of captive California sea lions (Houser et al. 2013a).
  - It is unclear why the captive dose-response function from Houser et al. (2013a) that was derived from all of the raw data was not used for subsampling.
- The executive summary, Tables 21–24, Figures 43–45, and accompanying text, as well as Table E-1 in Department of the Navy (2024a) included contradictory information regarding the range of received levels for both exposures and responses, distances at which the responses occurred, and the number of significant responses (see the Addendum herein). Further, Table E-1 does not appear to include the Blainville's beaked whale information from Tyack et al. (2011), Moretti et al. (2014), and Jacobson et al. (2022). The table also appears to include only the raw data from Houser et al. (2013a, b), not the subsampled data from the re-derived dose-response functions that then were used for the BRFs. Absent consistent information, it is difficult to assess the appropriateness of the various BRFs and the Navy's cut-off distances.

The Commission recommends that the Navy revise Department of the Navy (2024a) to clarify and address all of these points. The Commission further recommends that the Navy use the dose-response functions that were developed from all of the raw data rather than those that were regenerated for only moderate and severe responses and refrain from extrapolating beyond the bounds of the underlying data when revising the BRFs.

To derive criteria and thresholds for auditory and behavioral impacts, new data are being collected and new methods to analyze existing data are continually being developed. The Navy currently implements the thresholds at the animat stage within the Navy Acoustic Effects MOdel (NAEMO; Department of the Navy 2024b) rather than at a true post-processing stage after the sound propagation and animat modeling has been conducted. This means that the Navy cannot re-query the animat dosimeters using different thresholds when thresholds change, instead it must rerun the animat portion of NAEMO using the new thresholds. This is not only inefficient, but it has caused the Navy and NMFS to rely on the same outdated thresholds for more than a decade. Criteria and thresholds usually are developed at least three years before a DEIS and proposed rule are finalized, and a final rule is valid for seven years[21]. When Navy-funded projects (e.g., Southall et al. 2018, 2019, 2020, 2021, 2022, 2023) are not able to provide the data to the Navy by a specific deadline, those data then are not able to be incorporated until the next Phase based on the current paradigm. Thus, the Navy is not able to benefit from the data that it has funded to be collected, sometimes for at least 15 years, by which time the thresholds are not considered best available. The Commission recommends that the Navy make a concerted effort to incorporate data that support criteria and threshold development more often than on a decadal cycle and revise NAEMO to implement the relevant criteria and thresholds at a true post-processing stage so that animat dosimeter data can be re-queried if thresholds change, rather than needing to remodel the animat-portion of NAEMO.

[21] The same criteria and thresholds also have been used for all DEISs and rulemakings under a given Phase, meaning that the Phase IV thresholds will be used for Navy activities until the Phase IV Gulf of Alaska rulemaking would expire in 2037.

Figure M.3-5: Marine Mammal Commission Comment (continued)

Cut-off distances for behavior takes

The Commission remains concerned that, following the development of the BRFs and consistent with Phase III, the Navy implemented various cut-off distances beyond which it considered the potential for significant behavioral responses to be unlikely (Table 4 in Department of the Navy 2024a). The Navy previously indicated that the context of the exposure is likely more important than the amplitude at large distances (Department of the Navy 2017a)—that is, the context-based response dominates the level-based response. The Commission agrees with that notion but notes that the Bayesian BRFs specifically are intended to incorporate those factors. Thus, including additional cut-off distances would contradict the data underlying the Bayesian BRFs, negate the intent of the functions, and ultimately underestimate the numbers of takes.

For Phase IV activities, the Navy did add a condition that if a take were to occur beyond the relevant cut-off distance but above the 50 percent probability for a given BRF (e.g., a bottlenose dolphin exposed at 18 km and at a received level where the probability of response was 65 percent), it would be considered a significant response. That condition was further qualified based on the Navy assuming that animats would avoid a sound source between the response probabilities of 50 to 90 percent (avoidance is discussed further herein). Regardless of how the cut-off distances were qualified, they remain unsubstantiated and are less than what the Navy used for Phase III activities[22].

Department of the Navy (2024a) indicated that the models did not select range as a factor in the final BRFs, as it was too confounded with received level. The Navy also indicated that it was not surprising given that only 21 of 196 exposures that informed the four BRFs occurred at 10 km or greater from the sound source—19 animals had no response at all, one had a minor vocal response, and one had a strong avoidance response but it did not last for the full duration of the exposure. Delving into Department of the Navy (2024a), Table E-1 specified only 18 exposures occurred at 10 km or more from the sound source. Of those 18 exposures, one animal had minor vocal response, one had a strong avoidance response that lasted less time than the exposure, one stopped singing for as long as or longer than the duration of exposure, one had a strong avoidance response that was considered significant and lasted longer than the exposure, and another animal ceased its feeding, changed its dive and vocal behavior, and exhibited prolonged avoidance behavior. Thirteen animals exhibited no response at ranges of approximately 17 to 232 km from the source (Table E-1). Further, Figures 43–45 in Department of the Navy (2024a) are missing certain data that were specified in Table E-1 and in some instances have depicted the data incorrectly in terms of response, range, received level, and/or sample size relative to Table E-1. These inconsistencies make it difficult to assess the Navy's assumptions regarding cut-off distances similar to the BRFs.

Department of the Navy (2024a) however is correct in its statement that the probability of reaction at distances of 10 km and farther is not well represented. As such, it is unclear how the Navy can assert that those few data points provide support that beyond a certain distance, significant responses are unlikely to occur or that the source-receiver range must be included as a separate consideration to estimate likely significant behavioral reactions. Absence of data means just

[22] For Phase III, two different cut-off distances were used per behavioral group (one for moderate source level, single platform events and one for high source level or multiple platform events). For Phase IV, a single distance was used for all platforms and source levels for each behavioral group, but each of the four distances is less than the cut-off distance for high source level or multiple platform events from Phase III (see Table 4 in Department of the Navy 2024a).

Figure M.3-5: Marine Mammal Commission Comment (continued)

that, there are no data to support including such cut-off distances or assumptions that a significant response is unlikely to occur beyond a certain distance.

The Navy specified that the probability of significant behavioral responses occurring beyond the cut-off distances at received levels above the 50 percent probability of response is unknown, but was included as a conservative assumption due to the paucity of data (Department of the Navy 2024a). Even with the scant data available it is clear that the cut-off distances do not encompass the significant behavioral responses that have been observed to occur and that inform the revised BRFs. Further, significant behavioral responses are occurring at received levels *below* the 50-percent probability of response. For example, the cut-off distance for mysticetes is 10 km and the received level for the 50-percent probability of response is 185 dB re 1 µPa (Table 4 in Department of the Navy 2024a). However, a humpback whale exhibited a significant behavioral response in which it stopped foraging, changed its dive and vocal behavior, and conducted prolonged avoidance behavior at a distance of 16.8 km from the source and a received level of 128 dB re 1 µPa (Table E-1 in Department of the Navy 2024a). This example calls into question the appropriateness of both the received level estimated to equate to the 50-percent probability of response and the cut-off distance.

As another example, a sperm whale stopped resting and had a moderate change in its dive profile that occurred for a shorter duration than the exposure. It is unclear how long the response lasted but it did occur nearly 38 km from the sound source and at a received level of approximately 114 dB re 1 µPa (Table E-1 in Department of the Navy 2024a)—the cut-off distance for odontocetes is 15 km and the received level for the 50-percent probability of response is 168 dB re 1 µPa. Although this animal was incorrectly denoted as having a significant behavioral response in Table E-1 of Department of the Navy (2024a) due to the length of response, it highlights that responses do occur at larger distances and lower received levels than the cut-off distances and 50-percent probability of response portray. For harbor porpoises and pinnipeds, there currently are no data on a wild animal's response and relative distance to Navy acoustic sound sources.

Tyack and Thomas (2019) previously highlighted that the number of animals that are predicted to have a low probability of response may represent the dominant impact from a given sound source, as well as the shortcomings associated with assuming only a portion of the animals respond[23]. In addition to the Commission's ongoing concerns, use of cut-off distances has been criticized in public comments as an attempt to reduce the numbers of takes (85 Fed. Reg. 72326). Given the lack of data for certain behavioral groups in general and the fact that best available science was not used when data were available, the Commission again recommends that the Navy refrain from using cut-off distances in conjunction with the Bayesian BRFs and re-estimate the numbers of marine mammal takes based solely on the Bayesian BRFs for the FEIS and LOA application.

Behavior thresholds for explosives[24]

The Navy assumed a behavior threshold for explosives that was 5 dB less than the TTS threshold for each functional hearing group (Department of the Navy 2024a). The 5-dB value was

[23] Which corresponds to using various arbitrary cut-off distances.
[24] The Commission appreciates that the Navy incorporated the Commission's previous recommendations and used only the onset mortality, slight lung injury, and slight gastrointestinal tract injury thresholds for estimating the numbers of takes of marine mammals rather than the 50 percent thresholds that were used in Phase III.

Figure M.3-5: Marine Mammal Commission Comment (continued)

derived from observed onset behavioral responses of captive bottlenose dolphins during non-impulsive TTS testing[25] (Schlundt et al. 2000). Aside from the issues associated with conducting behavioral response studies on trained animals and using a different metric than all other BRFs or behavior thresholds[26], there is no scientific basis for using data from 1-sec tones to replicate or be comparable to an animal's behavioral response to underwater detonations. The Navy itself in Department of the Navy (2017a) stated that, although data from Schlundt et al. (2000) were used to derive the TAP I/Phase II BRFs for *acoustic sources*, they were not used in the quantitative derivation of the Phase III BRFs (or Phase IV BRFs) because the study was a hearing study where animals were conditioned and reinforced to tolerate high noise levels. It is illogical that the Navy removed such data from the estimation of BRFs for acoustic sources, which are similar to the 1-sec tones used in Schlundt et al. (2000), but then continued to use the same inappropriate data for a completely different sound source—data that underestimate impacts.

Another concerning assumption is that the Navy continues to maintain that marine mammals do not exhibit behavioral responses to single detonations (Department of the Navy 2024a)[27]. The Navy has asserted that the most likely behavioral response would be a brief alerting or orienting response and significant behavioral reactions would not be expected to occur due to no further detonations following the initial detonation based on reasoning that it historically has applied to shock trials (Department of the Navy 2024a). It is irrelevant that the same reasoning goes back to 1998. There were no data then, and there are no data now to support the assumption that animals would not behaviorally respond to a single detonation that could have been up to 58,000 lbs in net explosive weight (NEW)[28].

Larger single detonations (such as explosive torpedo testing or ship shock trials[29]) are expected to elicit 'significant behavioral responses' as described in Department of the Navy (2024a). The Navy has yet to justify why it believes that an animal would exhibit a significant behavioral response to two 5-lb charges detonated within a few minutes of each other but would not exhibit a similar response for a single detonation of 50 lbs, let alone detonations of up to 14,500 lbs. In response to Commission comments on the AFTT Phase III DEIS, the Navy indicated that there is no evidence to support that animals have significant behavioral reactions to temporally and spatially isolated explosions and that it has been monitoring detonations since the 1990s and has not observed those types of reactions. Due to human safety concerns, the Navy has never stationed personnel at the target site to monitor marine mammal responses during large single detonations. In other instances (i.e., bombs dropped from aircraft), lookouts are tasked with clearing the mitigation zone, not documenting an animal's behavioral response to the activity.

Although neither the Navy nor NMFS is aware of evidence to support the assertion that animals will have significant behavioral responses to temporally or spatially isolated explosions at

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[25] Based on 1-sec tones.
[26] Department of the Navy (2024a) used the cumulative sound exposure level (SEL_{cum}) metric for behavior thresholds for explosives rather than the root-mean-square sound pressure level (SPL_{rms}), which is used for behavior thresholds for all other sources. NMFS's behavior thresholds also are based on SPL_{rms} for all other sources.
[27] Including certain gunnery exercises that have several detonations of small munitions occurring within a few seconds.
[28] Takes for which were authorized under AFTT Phase III compliance documents, and ship shock trial activities for which the Navy conducted.
[29] With net explosive weights of 500 to 650 lbs (Bin E11) and 7,250 to 14,500 lbs (Bins E16), respectively, for Phase IV activities.

Figure M.3-5: Marine Mammal Commission Comment (continued)

received levels below the TTS threshold (85 Fed. Reg. 72325), a lack of evidence, particularly when concerted monitoring has not occurred in the Level B harassment zones during detonations, does not mean that takes have not occurred. Behavior takes from numerous types of activities have not been documented, but the Navy and in turn NMFS presumes that they could occur—essentially for all Navy acoustic sources but low- and mid-frequency active sonar. Given the lack of justification for continuing to ascribe validity to assumptions that clearly are not based on best available science, the Commission recommends that the Navy include behavior takes of marine mammals during *all* explosive activities, including those that involve single detonations and gunnery exercises that have several detonations occurring within a few seconds, in the FEIS and its LOA application and invest additional resources in conducting behavioral response studies on marine mammals' responses[30], including pinnipeds, to underwater detonations for the derivation of explosive BRFs.

Avoidance and other NAEMO limitations

Avoidance—NAEMO does not use moving animats for estimating avoidance, as it does moving sound sources for the propagation model (Department of the Navy 2024b). NAEMO simply simulates an animat moving away from a sound source by mathematically reducing the received SPLs of individual exposures based on a spherical spreading calculation for the source(s) present on each unique platform. Avoidance speeds and durations were informed by a review of available exposure and baseline data (Department of the Navy 2024b). In prior Phases, avoidance was not modeled in NAEMO. Instead, 95 percent of the takes for permanent threshold shift (PTS), now referred to as AINJ, predicted by NAEMO were assumed to be reduced to TTS due to avoidance (Department of the Navy 2017b). This reduction was based on the assumption that an animal avoided the AINJ zone of a moving MF1 source (i.e., a hull-mounted surface ship sonar as defined in NAEMO).

Department of the Navy (2024b) did not justify why spherical spreading was used rather than the propagation loss resulting from NAEMO modeling for each individual event. The Navy did however specify swim speeds that were used for the various groups for avoidance (see Table 5 in Department of the Navy 2024b). Some of the assumed avoidance speeds are greater than were noted in the underlying references. For example, Table 8 specified that Kastelein et al. (2018) was one of the references for harbor porpoise avoidance speeds. Even though Table 8 did not specify the speed, Kastelein et al. (2018) indicated that the highest sustainable swim speed for a harbor porpoise responding to pile-driving activities was 7.1 km/hr (or 1.97 m/s). The other harbor porpoise swim speeds mentioned were not sustainable for the duration of a Navy acoustic activity, while the baseline speed specified was 1.5 m/s (Table 8 in Department of the Navy 2024b). As such, it is unclear how a sustained swim speed of 3 m/s can be justified for harbor porpoises. Further, the baseline swim speed in Table 8 for otariids was 0.8 m/s, 0.4 m/s for harbor seals, and less than 1.7 m/s for northern elephant seals. No swim speeds were available for avoiding sound sources. Given that harbor seals comprise the vast majority of the phocid takes and swim speeds for a given group should be based on the slower species, pinniped swim speeds should have been no more than 1 m/s. For these reasons, the Commission recommends that the Navy use an avoidance swim speed of no more than 2 m/s for harbor porpoises and 1 m/s for pinnipeds and revise the NAEMO modeling and take estimates appropriately for the FEIS and LOA application.

[30] Living Marine Resources has provided funding for a few opportunistic studies involving behavioral response of cetaceans exposed to underwater detonations (Falcone et al. 2024).

Figure M.3-5: Marine Mammal Commission Comment (continued)

Moving animats, as well as animat-based avoidance behavior, has been modeled for quite some time. The Navy funded the development of the publicly-available Marine Mammal Movement and Behavior (3MB)[31] model 25 years ago (Houser and Cross 1999, Houser 2006) that incorporated moving animats and avoidance behavior. Although never included in NAEMO, 3MB has been modified over the years to be used for geophysical surveys (Zeddies 2015) and is currently used as the basis for animat modeling that is conducted for offshore wind activities (e.g., Denes et al. 2020, Küsel et al. 2022). Since NAEMO's current animat modeling and avoidance processes are not considered best available science, the Commission recommends that the Navy incorporate moving animats that can actively avoid sound sources based on species-specific dive profiles and swim speeds for Phase V activities and, if that is not feasible, incorporate species-specific swim speeds and the actual modeled sound propagation to simulate avoidance for a given event into NAEMO.

Repeated exposures—For Phase IV activities, the Navy has again used relative proportions or percentages of the stock to estimate impacts on individuals from repeated exposures and population-level consequences, which ultimately inform negligible impact determinations[32] under the Marine Mammal Protection Act (Department of the Navy 2024b). It is unclear why the Navy has not used NAEMO to model multi-day events or multiple single-day events that would provide information regarding repeated exposures of individuals by querying the animat dosimeters. This seems fairly basic, with something similar having been conducted for geophysical and geological activities in the Gulf of Mexico in 2015 (Zeddies et al. 2015 and 2017). To better assess repeated exposures of individuals and population-level consequences, the Commission recommends that the Navy use NAEMO to conduct modeling of both multi-day events and multiple single-day events to estimate the number of repeated exposures an individual is expected to incur.

Explosive propagation modeling—For Phase II activities, the Navy used its Refraction in Multilayered Ocean/Ocean Bottoms with Shear Wave Effects (REFMS) model to estimate sound propagation associated with underwater detonations. However, the Navy has since used Comprehensive Acoustic Simulation System/Gaussian Ray Bundle (CASS/GRAB) and a similitude equation to model underwater detonations for Phase III and IV activities (Department of the Navy 2017b, Department of the Navy 2024b). The Navy indicated that CASS/GRAB was approved by the Ocean and Atmospheric Master Library (OAML)[33], could vary environmental parameters with range, had a built-in absorption model, and was more numerically stable than REFMS (Department of the Navy 2017b). Although those assertions may be correct, the Navy also has used its Range-Dependent Acoustic Model (RAM) and the Navy's Standard Parabolic Equation (PE) model for non-impulsive sources with frequencies of less than 100 Hz[34] and for water depths of less than 50 m (Department of the Navy 2024b). It is unclear why RAM/PE was not used for underwater detonations that would occur in waters 50 m or less, where CASS/GRAB generally is not used. Further, Department of the Navy (2024b) specified that the similitude equation is valid only over a range of pressures equating to a NEW of up to 28.8 lbs.

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[31] http://oalib.hlsresearch.com/Sound%20and%20Marine%20Mammals/3MB%20HTML.htm.
[32] As well as small numbers determinations for construction activities conducted by the Navy.
[33] The Commission notes that CASS/GRAB is OAML-approved only for frequencies higher than 100 Hz per Department of the Navy (2017b). The Navy just uses it down to 25 Hz for impulsive sources.
[34] The main portion of an underwater detonation's energy occurs at frequencies less than 100 Hz.

Figure M.3-5: Marine Mammal Commission Comment (continued)

Department of the Navy (2017b and 2024b) did indicate that the CASS/GRAB modeling process compared favorably with in-situ data, but the data were for small explosives at short ranges (i.e., no larger than 15-lb charges in less than 5 m of water at a range of hundreds of meters[35]; Deavenport and Gilchrest 2015). Department of the Navy (2017b) specified that data for large explosions *and* at long ranges were needed to fully validate the model. During the most recent ship shock trials off the east coast of Florida in 2021, some such data were collected. Seger et al. (2023) collected in-situ measurements of the three individual shots of a NEW of up to 58,000 lbs fired near the USS Gerald R. Ford for the purpose of validating NAEMO propagation models. The researchers conducted their own modeling using the Peregrine version of RAM/PE for optimal placement of the acoustic recorders and to compare with the in-situ measurements.

The measured sound levels exceeded what the Navy had estimated for Phase III modeling for the ship shock trials (Bin E17 in Tables 9-15 to 9-22 in Department of the Navy 2017b) by orders of magnitude[36]. For example, the maximum volume modeled out to a radius of 201 km was exceeded for both the SPL_{peak} and SEL_{cum} metrics for PTS and TTS for LF cetaceans[37] (Table 12 in Seger et al. 2023), the largest range of which was estimated by NAEMO to be 47 km. Since the Navy has yet to conduct a rigorous comparison between the radii provided by NAEMO and those measured in-situ, the total amount NAEMO had underestimated the zones is unknown. However, Seger et al. (2023) noted in Table 12 that the impact volumes for PTS and TTS were 16.5 times as large as the Grand Canyon and 1/40th the size of the Gulf of Mexico[38]. The researchers also noted that the sound energy from the 2016 ship shock trial of only 10–11,000 lbs reached Ascension Island[39] nearly 8,200 km away at received levels of 135 dB re 1 µPa, thus the far field was a relatively very far distance in that context. For the USS Ford ship shock trial, the maximum received level at the Ascension Island hydrophones was 157 dB re 1 µPa (Seger et al. 2023). The Commission recommends that the Navy conduct a rigorous comparison of CASS/GRAB and the similitude equation and the in situ measurements of the USS Ford ship shock trial from Seger et al. (2023) to fulfill the intent of the project. Given the comparability of the modeled zones from the Peregrine version of RAM/PE to the measured values and that RAM/PE is already used by the Navy for modeling non-impulsive sources that operate at less than 100 Hz and in shallow water, the Commission further recommends that the Navy use RAM/PE to model all underwater detonations for Phase IV activities for which modeling has not been completed and for all Phase V activities, until such time that CASS/GRAB and the similitude equation have been validated for the range of detonation sizes and environmental parameters (water depth and receiver range) in which it would be used.

Seger et al. (2023) also were tasked with determining whether vocal activity of odontocetes and mysticetes differed before and after each shot of the ship shock trial. Odontocete vocal activity decreased at four recorders, increased at two recorders, and remained the same at seven recorders.

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[35] Parameters which are exceeded by modeled scenarios for even the smallest detonations, Bin E1 (i.e., see Table 2.5-9 in Appendix E of the DEIS).
[36] The Peregrine modeled received levels at the various monitoring device locations were comparable to measured values (Seger et al. 2023).
[37] For unknown reasons, Seger et al. (2023) used the 160 dB re 1 uPa threshold as the behavior threshold. The Navy has never used that threshold to estimate the range to behavioral response for underwater detonations.
[38] For reference, Department of Navy (2017b) estimated that the TTS zone for the SEL_{cum} threshold was 3.7 km for MF cetaceans.
[39] Where Comprehensive Nuclear-Test-Ban Treaty Organization hydrophones are installed.

Figure M.3-5: Marine Mammal Commission Comment (continued)

Mysticete vocal activity decreased at eight recorders, increased at one recorder, and remained the same at four recorders. Certain vocal activity changes were statistically significant. Although Seger et al. (2023) did not provide ranges from each of the detonations to the recorders, some recorders were very likely beyond the range of TTS for LF cetaceans and most definitely beyond the range of TTS for MF cetaceans (47.4 km and 6 km, respectively; Department of the Navy 2017b). Thus, contrary to the Navy and NMFS's continued presumption, behavioral responses do in fact occur at ranges beyond TTS for single detonations.

Pile-driving calculations—The Navy indicated that, based on the best available science regarding animal reactions to sound, selecting a reasonable accumulation period was necessary to accurately reflect the period that an animal is likely to be exposed to the sound (Department of the Navy 2024b). The Navy chose a 5-minute accumulation time for the SEL_{cum} thresholds for AINJ and TTS, because most marine mammals should be able to easily move away from the expanding AINJ and TTS zones within that timeframe, especially considering that soft-start procedures may warn the animals. The Navy also suggested that the animal could avoid the zone altogether if it is outside the immediate area when pile driving begins. Those assumptions may hold if an animal avoids pile-driving activities, but many times, certain species such as pinnipeds and bottlenose dolphins do not avoid the activities. As such, the assumed 5-min accumulation time would be insufficient. Since the Navy currently has 13 active incidental take authorizations for construction activities and has had at least 35 incidental take authorizations issued in the last 10 years, it should be able to review its monitoring data to determine whether a 5-minute accumulation time is sufficient for species that are known to remain near pile-driving activities. The Commission recommends that the Navy review its previous monitoring reports for both construction activities and any pile-driving activities associated with AFTT Phase I, II, or III FEISs to estimate the mean time an animal is expected to remain near a pile-driving activity and revise the accumulation time, range to effects, and numbers of takes accordingly for the FEIS and LOA application.

Mitigation measures

Mitigation Areas—Various mitigation areas in the AFTT study area were informed by biologically important areas (BIAs), critical habitat, important habitat, etc. for Phase III activities. BIAs in particular are of known importance for reproduction, feeding, or migration or are areas where small and resident populations are known to occur (see Harrison et al. 2023 for details). The BIAs for the Atlantic Ocean and Gulf of Mexico currently are in draft form and have not yet been incorporated into Navy compliance documents for Phase IV activities. However, the draft BIAs specifically for North Atlantic right whales and Rice's whales have been provided to the Navy and NMFS. Those draft BIAs vary from, and in some cases are larger than, the various North Atlantic Right Whale Mitigation Areas (LaBrecque et al. in prep) and the Gulf of Mexico Rice's Whale Mitigation Area (LaBrecque et al. in prep). The Commission understands that the other draft BIAs will be provided to the Navy and NMFS in the coming months. The Commission recommends that, in the FEIS and LOA application, the Navy (1) ensure that the Gulf of Mexico Rice's Whale Mitigation Area encompasses the Rice's whale parent BIA, (2) consider the new delineations for the North Atlantic right whale feeding, migrating, and most importantly reproductive BIAs and expand the various North Atlantic Right Whale Mitigation Areas as needed, (3) ensure that the Ship Shock Trial Mitigation Areas are at least 5 nmi beyond the boundaries of the Rice's whale parent and child BIAs and all of the North Atlantic right whale BIAs, and (4) evaluate whether any of the draft BIAs for the other marine mammal species should inform expansion of or additional mitigation areas.

Figure M.3-5: Marine Mammal Commission Comment (continued)

Passive acoustic monitoring—The Navy proposed to use information from passive acoustic detections (presumably from instrumented ranges, sonobuoys, etc.) to inform visual observations of lookouts when passive acoustic devices are already being used in events involving active acoustic sources (Table 5.6-1 in the DEIS). Given that visual observations by Navy lookouts have proven to be ineffective (Oedekoven and Thomas 2022)—such that the Navy has removed any 'credit' for mitigation implementation from the Phase IV DEIS and other compliance documents—the Navy's currently proposed mitigation measure that still relies on a lookout's visual observations is insufficient. Passive acoustic monitoring via range instrumentation, and sonobuoys, has reached the level of performance needed for use during military readiness activities (e.g., Department of the Navy 2013 and 2014, U.S. Air Force (USAF) 2016), contrary to the Navy's stance that they have not. The Navy's mitigation measures have yet to be supplemented from a technology standpoint[40] beyond those measures proposed for TAP I activities more than 15 years ago. Although the DEIS indicated that many of the technologies have yet to reach the level of performance needed for deployment during military readiness activities, many are and have been used by the Department of National Defence (DND) in Canada[41] to supplement detections when there are visual monitoring limitations (Binder et al. 2021, Thomson and Binder 2021, Binder et al. 2024). Therefore, the Commission remains skeptical of the Navy's insistence in the DEIS that use of passive acoustic monitoring is impractical as a precise real-time indicator of a marine mammal's location for mitigation implementation absent a confirmed visual sighting. The Commission recommends that the Navy use its instrumented ranges and sonobuoys to localize marine mammals and implement the relevant mitigation measures during active acoustic events for Phase IV activities, take a harder look at the technologies that the Canadian DND use during its at-sea activities, and incorporate accordingly for other Phase IV DEISs.

The Navy also proposed to use passive acoustic detections to inform lookouts prior to the initiating detonations only if the passive acoustic devices are already being used during the event. Passive acoustic monitoring was required for explosive sonobuoys, explosive torpedoes, and sinking exercises for Phase III and prior activities, including in NMFS's final rules. The effectiveness of passive acoustic devices has not diminished nor has use of the devices become impracticable. Thus, requirements to use passive acoustic devices should be included for Phase IV explosive sonobuoys, explosive torpedoes, and sinking exercises as well. It is unclear why passive acoustic monitoring, particularly the use of expendable sonobuoys, has not been a requirement before for ship shock trials. The Commission recommends that the Navy include the use of passive acoustic monitoring prior to and during activities involving explosive sonobuoys, explosive torpedoes, sinking exercises, and ship shock trials for Phase IV activities in the FEIS and its LOA application.

Further, since passive acoustic monitoring is not required for surface detonations[42] (i.e., air-to-surface explosive bombs, missiles, rockets), multiple sonobuoys could be deployed with a surface target prior to an activity to better determine whether the target area is clear and remains clear until the munition is launched. This would supplement any pre-activity visual observations for air-to-

[40] In fact, over the years some mitigation measures have been removed (i.e., surface-to-surface projectiles, passive acoustic monitoring requirements for certain explosive activities) and some of the mitigation zones have been reduced in size (i.e., explosive mine neutralization exercises not involving positive control).
[41] i.e., automated passive acoustic monitoring via fixed hydrophones, mobile autonomous systems, and sonobuoys; detection and tracking capabilities using bottom-mounted hydrophones on instrumented ranges; electro-optical, infrared, and space-based detection methods to supplement naked-eye monitoring.
[42] Mitigation is not required to be implemented at all for surface-to-surface detonations.

Figure M.3-5: Marine Mammal Commission Comment (continued)

surface exercises and would serve as the only mitigation measure for surface-to-surface detonations[43]. Specifically, Directional Frequency Analysis and Recording (DIFAR) sonobuoys[44] provide both range and bearing to vocalizing animals, can determine an animal's location and confirm its presence in a mitigation zone, and are routinely used by the Navy.

The Navy itself has drawn attention to the success of using sonobuoys to detect bottlenose dolphins in real-time during mine exercises, provides sonobuoys to researchers for the same purpose of detecting and localizing marine mammals[45], and has highlighted numerous instances of various types of sonobuoys being used to detect and localize baleen whales, delphinids, and beaked whales[67]. A broadband repertoire of frequencies, as well as narrow-band frequencies, can be monitored by sonobuoys. For these reasons, the Commission again recommends that the Navy include the use of passive acoustic devices (i.e., DIFAR and other types of passive sonobuoys, operational hydrophones) prior to air-to-surface and surface-to-surface explosive bomb, missile, and rocket exercises to detect marine mammals and implement the necessary mitigation measures in the FEIS and LOA application and, when sonobuoys are used, deploy them at the same time as the surface target.

Other mitigation measures—The Commission notes that mitigation measures for air-to-surface explosive large-caliber gunnery exercises[46] are lacking for Phase IV activities. Mitigation measures also are lacking for surface-to-surface activities involving explosive medium-caliber projectiles. The mitigation measures are similar to those included for explosive gunnery exercises for air-to-surface medium-caliber projectiles in Table 5.6-2 of the DEIS, except the mitigation zones were 600 yards for surface-to-surface activities using explosive medium-caliber projectiles and 1,000 yards for surface-to-surface activities using explosive large-caliber projectiles for Phase III activities. The Navy eliminated mitigation measures for surface-to-surface missiles and rockets (see Table 5.9-1 in the DEIS), but those measures should not have been eliminated for surface-to-surface explosive medium- and large-caliber projectiles. Given that the measures have been deemed practicable for Phase III and previous activities, the Commission recommends that the Navy include a 600-yard and 1,000-yard mitigation zone for surface-to-surface activities using explosive medium- and large-caliber projectiles, respectively, in the FEIS and its LOA application.

For Phase III and previous activities, the Navy would delay and/or move activities if floating vegetation or jellyfish[47] were observed in the relevant mitigation zone for active acoustic sources, pile driving, airguns, and explosive activities. Chapter 5 in the DEIS makes note of floating vegetation and jellyfish but does not specify what measures, if any, would be implemented if either

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[43] The Navy indicated in the DEIS that mitigation would not be effective for vessel-deployed missiles and rockets because of the distance between the firing platform and target location and it would not be possible for vessels to conduct close-range observations due to the length of time (and associated operational costs and exercise delays) it would take to complete observations and then transit back to the firing position (typically 28 to 139 km each way).
[44] And other types of passive (e.g., Vertical Line Array Directional Frequency Analysis and Recording (VLAD)) and active (Directional Command Active Sonobuoy System (DICASS) and the Multistatic Active Coherent (MAC) system and Air Deployed Active Receiver (ADAR)) sonobuoys.
[45] Including DIFAR sonobuoys, which have an upper frequency cutoff of 2.4 kHz, and other types of sonobuoys, including omnidirectional sonobuoys that have a higher frequency cutoff. https://www.navymarinespeciesmonitoring.us/files/4714/0069/6940/Spr14_Sonobuoys_Reasearch_Monitoring.pdf.
[46] For the projectiles themselves. Mitigation measures for explosive and non-explosive large-caliber gunnery firing noise is included in Table 5.6-2 of the DEIS.
[47] That the Navy has historically used as a proxy for the potential presence of marine mammals.

Figure M.3-5: Marine Mammal Commission Comment (continued)

were to be observed during a given activity. The Commission recommends that the Navy include the requirement to delay, relocate, or cease activities if floating vegetation or jellyfish are observed in the mitigation zone during activities involving active acoustic sources, pile driving, airguns, and explosives consistent with Phase III mitigation measures in the FEIS and LOA application.

In addition, the Navy removed the requirement for lookouts to wear polarized sunglasses in the Inshore Manatee and Sea Turtle Mitigation Areas (Table 5.8-1 in the DEIS). The Navy instead will *encourage* lookouts to use polarized sunglasses. Polarized sunglasses are more effective at observing submerged manatees and sea turtles than non-polarized sunglasses and are clearly practicable and not cost-prohibitive. It seems a bit absurd that such a minor 'technology' has been proposed to be removed as a requirement. The Commission recommends that the Navy include the requirement that lookouts wear polarized sunglasses in the Inshore Manatee and Sea Turtle Mitigation Areas to better implement the required mitigation measures in the FEIS and Biological Assessment submitted under the Endangered Species Act.

For ship shock trials, the Navy indicated that, if an incident involving a marine mammal is observed after an individual detonation, it would follow established incident reporting procedures and halt any remaining detonations until the Navy can consult with NMFS and review or adapt the mitigation plan. It is unclear why such a measure would not apply to all activities. The Commission recommends that the Navy cease any active acoustic, explosive, pile driving, or airgun activity if a marine mammal is observed to be injured or killed during or immediately after the activity and consult with NMFS to review or adapt the mitigation measures, as necessary.

The Commission appreciates the opportunity to provide comments on the Navy's DEIS for training and testing activities conducted within the AFTT study area. Most, if not all, of the Commission's recommendations would apply to the Navy's LOA application as well and should be considered as such. Please contact me if you have questions concerning the Commission's recommendations or rationale.

Sincerely,

Peter O Thomas

Peter O. Thomas, Ph.D.,
Executive Director

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Figure M.3-5: Marine Mammal Commission Comment (continued)

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Figure M.3-5: Marine Mammal Commission Comment (continued)

Naval Facilities Engineering Systems Command Atlantic
4 November 2024
Page 20

Addendum

The following are some of the errors, inconsistencies, or missing information observed in Tables 21–24, Figures 43–45, and Table E-1 of Department of the Navy (2024a). These issues should be addressed and the various tables, figures, and accompanying text should be revised accordingly.

Table 21—

- The range of response received levels (RLs) for bottlenose whales was 117–130 dB re 1 µPa in Table 21, while Table E-1 noted RLs of 127.2–128 dB re 1 µPa in Table E-1.
- The range of exposure RLs in Table 21 for Cuvier's and Baird's beaked whales from the Southern California Behavioral Response Study (SOCAL BRS) was 91–43 dB re 1 µPa, which is not an appropriate range. Table E-1 noted 138 dB re 1 µPa as the highest exposure RL for Cuvier's and Baird's beaked whales from the SOCAL BRS.
- Table 21 indicated that 9 significant responses occurred for harbor porpoises, while Table E-1 specified only 8 significant responses.
- Table 21 and the executive summary indicated that the response RLs for all species ranged from 95–138.4 dB re 1 µPa, while Table E-1 indicated a range of 98–138 dB re 1 µPa.

Table 22—

- The range of response RLs for killer whales was 94–164 dB re 1 µPa in Table 22, while Table E-1 noted a range of 94–161 dB re 1 µPa. The distances of responses for killer whales were 0.4–2.5 km in Table 22, while the distances at a response were 0.7–8.9 km in Table E-1.
- The number of significant exposures for sperm whales was 15 in Table 22, while only 14 are noted in Table E-1[48]. The distances of responses for sperm whales were 0.65–12.3 km in Table 22, while the distances at a response were 1.8–12.3 km in Table E-1.
- The range of response RLs for pilot whales was 115–159 dB re 1 µPa in Table 22, while Table E-1 noted a range of 114–152 dB re 1 µPa. The distances of responses for pilot whales were 0.08–0.3 km in Table 22, while the distances at a response were 0.09–6.2 km in Table E-1.

Table 23—

- The number of significant exposures for hooded seals was 12 in Table 23, while only 4 are noted in Table E-1. The range of response RLs for hooded seals was 161–170 dB re 1 µPa in Table 23, while Table E-1 noted a range of 165–170 dB re 1 µPa.

Table 24—

- The range of response RLs for blue whales from the SOCAL BRS was 105–143 dB re 1 µPa in Table 24, while Table E-1 noted a range of 111–146 dB re 1 µPa.
- The range of exposure RLs for fin whales from the SOCAL BRS was 110–161 dB re 1 µPa in Table 24, while Table E-1 noted a range of 104–156 dB re 1 µPa.
- The response RL for minke whales from the 3S project was 146 dB re 1 µPa at 4.5 km in Table 42, while Table E-1 noted a response RL of 138 dB re 1 µPa at less than 8 km.

[48] Since the Navy confirmed that it did not consider Sw_17_182a exposed to low LFAS to have exhibited a significant response.

Figure M.3-5: Marine Mammal Commission Comment (continued)

Naval Facilities Engineering Systems Command Atlantic
4 November 2024
Page 21

- The number of significant exposures for humpback whales from the 3S project was 4 in Table 24, while 5 exposures are noted in Table E-1. The distances of responses for humpback whales were 0.1–0.4 km in Table 24, while the distances at a response were 0.81–0.98 km in Table E-1.

Figure 43—

- Although nine exposure RLs with accompanying distances were included in the figure, of the nine exposures in Table E-1 three of the Cuvier's beaked whale exposures do not have distances denoted. Also, animals Ha12_176a and bb12_214a were not included in the figure, and it is unclear where the exposures from 140–155 dB re 1 μPa originated because the RLs in Table E-1 are all less than or equal to 138 dB re 1 μPa. Further, no data in Table E-1 represent distances at or around 60 km, as denoted in the figure.

Figure 44—

- The figure specified that 101 exposures were included, whereas only 97 exposures were included in Table E-1. Given the number of exposures included in the figure, its accuracy based on Table E-1 cannot be assessed.

Figure 45—

- The figure specified that 85 exposures were included, whereas only 79 exposures were included in Table E-1.
- Animal bw_193a was not included in the figure, and Animal bp_075a was incorrectly denoted at 47 rather than 57 km.

Table E-1—

- The relevant data on Blainville's beaked whales from Tyack et al. (2011), Moretti et al. (2014) and Jacobson et al. (2022) were not included in the table. At a minimum, the 10 data points that were randomly subsampled from the Moretti et al. (2014) and Jacobson et al. (2022) dose response functions should have been included in the table.
- Data from the minke whale from the SOCAL BRS from Kvadsheim et al. (2017) was not included in the table.
- The distances at a response are included as '?' for Cuvier's and Baird's beaked whales from the SOCAL BRS, while 2–5 km is provided in Table 21 for the distances of responses.
- The raw data were included in the table for bottlenose dolphins and California sea lions from Houser et al. (2013a, b) rather than the subsampled data from the dose response functions that the Navy derived specifically from the moderate and severe responses of the dolphins and sea lions.

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Figure M.3-5: Marine Mammal Commission Comment (continued)

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Figure M.3-5: Marine Mammal Commission Comment (continued)

Passive acoustic monitoring—The Navy proposed to use information from passive acoustic detections (presumably from instrumented ranges, sonobuoys, etc.) to inform visual observations of lookouts when passive acoustic devices are already being used in events involving active acoustic sources (Table 5.6-1 in the DEIS). Given that visual observations by Navy lookouts have proven to be ineffective (Oedekoven and Thomas 2022)—such that the Navy has removed any 'credit' for mitigation implementation from the Phase IV DEIS and other compliance documents—the Navy's currently proposed mitigation measure that still relies on a lookout's visual observations is insufficient. Passive acoustic monitoring via range instrumentation, and sonobuoys, has reached the level of performance needed for use during military readiness activities (e.g., Department of the Navy 2013 and 2014, U.S. Air Force (USAF) 2016), contrary to the Navy's stance that they have not. The Navy's mitigation measures have yet to be supplemented from a technology standpoint[40] beyond those measures proposed for TAP I activities more than 15 years ago. Although the DEIS indicated that many of the technologies have yet to reach the level of performance needed for deployment during military readiness activities, many are and have been used by the Department of National Defence (DND) in Canada[41] to supplement detections when there are visual monitoring limitations (Binder et al. 2021, Thomson and Binder 2021, Binder et al. 2024). Therefore, the Commission remains skeptical of the Navy's insistence in the DEIS that use of passive acoustic monitoring is impractical as a precise real-time indicator of a marine mammal's location for mitigation implementation absent a confirmed visual sighting. The Commission recommends that the Navy use its instrumented ranges and sonobuoys to localize marine mammals and implement the relevant mitigation measures during active acoustic events for Phase IV activities, take a harder look at the technologies that the Canadian DND use during its at-sea activities, and incorporate accordingly for other Phase IV DEISs.

The Navy also proposed to use passive acoustic detections to inform lookouts prior to the initiating detonations only if the passive acoustic devices are already being used during the event. Passive acoustic monitoring was required for explosive sonobuoys, explosive torpedoes, and sinking exercises for Phase III and prior activities, including in NMFS's final rules. The effectiveness of passive acoustic devices has not diminished nor has use of the devices become impracticable. Thus, requirements to use passive acoustic devices should be included for Phase IV explosive sonobuoys, explosive torpedoes, and sinking exercises as well. It is unclear why passive acoustic monitoring, particularly the use of expendable sonobuoys, has not been a requirement before for ship shock trials. The Commission recommends that the Navy include the use of passive acoustic monitoring prior to and during activities involving explosive sonobuoys, explosive torpedoes, sinking exercises, and ship shock trials for Phase IV activities in the FEIS and its LOA application.

Further, since passive acoustic monitoring is not required for surface detonations[42] (i.e., air-to-surface explosive bombs, missiles, rockets), multiple sonobuoys could be deployed with a surface target prior to an activity to better determine whether the target area is clear and remains clear until the munition is launched. This would supplement any pre-activity visual observations for air-to-

[40] In fact, over the years some mitigation measures have been removed (i.e., surface-to-surface projectiles, passive acoustic monitoring requirements for certain explosive activities) and some of the mitigation zones have been reduced in size (i.e., explosive mine neutralization exercises not involving positive control).
[41] i.e., automated passive acoustic monitoring via fixed hydrophones, mobile autonomous systems, and sonobuoys; detection and tracking capabilities using bottom-mounted hydrophones on instrumented ranges; electro-optical, infrared, and space-based detection methods to supplement naked-eye monitoring.
[42] Mitigation is not required to be implemented at all for surface-to-surface detonations.

Figure M.3-5: Marine Mammal Commission Comment (continued)

surface exercises and would serve as the only mitigation measure for surface-to-surface detonations[43]. Specifically, Directional Frequency Analysis and Recording (DIFAR) sonobuoys[44] provide both range and bearing to vocalizing animals, can determine an animal's location and confirm its presence in a mitigation zone, and are routinely used by the Navy.

The Navy itself has drawn attention to the success of using sonobuoys to detect bottlenose dolphins in real-time during mine exercises, provides sonobuoys to researchers for the same purpose of detecting and localizing marine mammals[45], and has highlighted numerous instances of various types of sonobuoys being used to detect and localize baleen whales, delphinids, and beaked whales[67]. A broadband repertoire of frequencies, as well as narrow-band frequencies, can be monitored by sonobuoys. For these reasons, the Commission again recommends that the Navy include the use of passive acoustic devices (i.e., DIFAR and other types of passive sonobuoys, operational hydrophones) prior to air-to-surface and surface-to-surface explosive bomb, missile, and rocket exercises to detect marine mammals and implement the necessary mitigation measures in the FEIS and LOA application and, when sonobuoys are used, deploy them at the same time as the surface target.

Other mitigation measures—The Commission notes that mitigation measures for air-to-surface explosive large-caliber gunnery exercises[46] are lacking for Phase IV activities. Mitigation measures also are lacking for surface-to-surface activities involving explosive medium-caliber projectiles. The mitigation measures are similar to those included for explosive gunnery exercises for air-to-surface medium-caliber projectiles in Table 5.6-2 of the DEIS, except the mitigation zones were 600 yards for surface-to-surface activities using explosive medium-caliber projectiles and 1,000 yards for surface-to-surface activities using explosive large-caliber projectiles for Phase III activities. The Navy eliminated mitigation measures for surface-to-surface missiles and rockets (see Table 5.9-1 in the DEIS), but those measures should not have been eliminated for surface-to-surface explosive medium- and large-caliber projectiles. Given that the measures have been deemed practicable for Phase III and previous activities, the Commission recommends that the Navy include a 600-yard and 1,000-yard mitigation zone for surface-to-surface activities using explosive medium- and large-caliber projectiles, respectively, in the FEIS and its LOA application.

For Phase III and previous activities, the Navy would delay and/or move activities if floating vegetation or jellyfish[47] were observed in the relevant mitigation zone for active acoustic sources, pile driving, airguns, and explosive activities. Chapter 5 in the DEIS makes note of floating vegetation and jellyfish but does not specify what measures, if any, would be implemented if either

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[43] The Navy indicated in the DEIS that mitigation would not be effective for vessel-deployed missiles and rockets because of the distance between the firing platform and target location and it would not be possible for vessels to conduct close-range observations due to the length of time (and associated operational costs and exercise delays) it would take to complete observations and then transit back to the firing position (typically 28 to 139 km each way).
[44] And other types of passive (e.g., Vertical Line Array Directional Frequency Analysis and Recording (VLAD)) and active (Directional Command Active Sonobuoy System (DICASS) and the Multistatic Active Coherent (MAC) system and Air Deployed Active Receiver (ADAR)) sonobuoys.
[45] Including DIFAR sonobuoys, which have an upper frequency cutoff of 2.4 kHz, and other types of sonobuoys, including omnidirectional sonobuoys that have a higher frequency cutoff. https://www.navymarinespeciesmonitoring.us/files/4714/0069/6940/Spr14_Sonobuoys_Reasearch_Monitoring.pdf.
[46] For the projectiles themselves. Mitigation measures for explosive and non-explosive large-caliber gunnery firing noise is included in Table 5.6-2 of the DEIS.
[47] That the Navy has historically used as a proxy for the potential presence of marine mammals.

Figure M.3-5: Marine Mammal Commission Comment (continued)

were to be observed during a given activity. The Commission recommends that the Navy include the requirement to delay, relocate, or cease activities if floating vegetation or jellyfish are observed in the mitigation zone during activities involving active acoustic sources, pile driving, airguns, and explosives consistent with Phase III mitigation measures in the FEIS and LOA application.

In addition, the Navy removed the requirement for lookouts to wear polarized sunglasses in the Inshore Manatee and Sea Turtle Mitigation Areas (Table 5.8-1 in the DEIS). The Navy instead will *encourage* lookouts to use polarized sunglasses. Polarized sunglasses are more effective at observing submerged manatees and sea turtles than non-polarized sunglasses and are clearly practicable and not cost-prohibitive. It seems a bit absurd that such a minor 'technology' has been proposed to be removed as a requirement. The Commission recommends that the Navy include the requirement that lookouts wear polarized sunglasses in the Inshore Manatee and Sea Turtle Mitigation Areas to better implement the required mitigation measures in the FEIS and Biological Assessment submitted under the Endangered Species Act.

For ship shock trials, the Navy indicated that, if an incident involving a marine mammal is observed after an individual detonation, it would follow established incident reporting procedures and halt any remaining detonations until the Navy can consult with NMFS and review or adapt the mitigation plan. It is unclear why such a measure would not apply to all activities. The Commission recommends that the Navy cease any active acoustic, explosive, pile driving, or airgun activity if a marine mammal is observed to be injured or killed during or immediately after the activity and consult with NMFS to review or adapt the mitigation measures, as necessary.

The Commission appreciates the opportunity to provide comments on the Navy's DEIS for training and testing activities conducted within the AFTT study area. Most, if not all, of the Commission's recommendations would apply to the Navy's LOA application as well and should be considered as such. Please contact me if you have questions concerning the Commission's recommendations or rationale.

Sincerely,

Peter O Thomas

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Figure M.3-5: Marine Mammal Commission Comment (continued)

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Figure M.3-5: Marine Mammal Commission Comment (continued)

Naval Facilities Engineering Systems Command Atlantic
4 November 2024
Page 20

Addendum

The following are some of the errors, inconsistencies, or missing information observed in Tables 21–24, Figures 43–45, and Table E-1 of Department of the Navy (2024a). These issues should be addressed and the various tables, figures, and accompanying text should be revised accordingly.

Table 21—

- The range of response received levels (RLs) for bottlenose whales was 117–130 dB re 1 µPa in Table 21, while Table E-1 noted RLs of 127.2–128 dB re 1 µPa in Table E-1.
- The range of exposure RLs in Table 21 for Cuvier's and Baird's beaked whales from the Southern California Behavioral Response Study (SOCAL BRS) was 91–43 dB re 1 µPa, which is not an appropriate range. Table E-1 noted 138 dB re 1 µPa as the highest exposure RL for Cuvier's and Baird's beaked whales from the SOCAL BRS.
- Table 21 indicated that 9 significant responses occurred for harbor porpoises, while Table E-1 specified only 8 significant responses.
- Table 21 and the executive summary indicated that the response RLs for all species ranged from 95–138.4 dB re 1 µPa, while Table E-1 indicated a range of 98–138 dB re 1 µPa.

Table 22—

- The range of response RLs for killer whales was 94–164 dB re 1 µPa in Table 22, while Table E-1 noted a range of 94–161 dB re 1 µPa. The distances of responses for killer whales were 0.4–2.5 km in Table 22, while the distances at a response were 0.7–8.9 km in Table E-1.
- The number of significant exposures for sperm whales was 15 in Table 22, while only 14 are noted in Table E-1[48]. The distances of responses for sperm whales were 0.65–12.3 km in Table 22, while the distances at a response were 1.8–12.3 km in Table E-1.
- The range of response RLs for pilot whales was 115–159 dB re 1 µPa in Table 22, while Table E-1 noted a range of 114–152 dB re 1 µPa. The distances of responses for pilot whales were 0.08–0.3 km in Table 22, while the distances at a response were 0.09–6.2 km in Table E-1.

Table 23—

- The number of significant exposures for hooded seals was 12 in Table 23, while only 4 are noted in Table E-1. The range of response RLs for hooded seals was 161–170 dB re 1 µPa in Table 23, while Table E-1 noted a range of 165–170 dB re 1 µPa.

Table 24—

- The range of response RLs for blue whales from the SOCAL BRS was 105–143 dB re 1 µPa in Table 24, while Table E-1 noted a range of 111–146 dB re 1 µPa.
- The range of exposure RLs for fin whales from the SOCAL BRS was 110–161 dB re 1 µPa in Table 24, while Table E-1 noted a range of 104–156 dB re 1 µPa.
- The response RL for minke whales from the 3S project was 146 dB re 1 µPa at 4.5 km in Table 42, while Table E-1 noted a response RL of 138 dB re 1 µPa at less than 8 km.

[48] Since the Navy confirmed that it did not consider Sw_17_182a exposed to low LFAS to have exhibited a significant response.

Figure M.3-5: Marine Mammal Commission Comment (continued)

Naval Facilities Engineering Systems Command Atlantic
4 November 2024
Page 21

- The number of significant exposures for humpback whales from the 3S project was 4 in Table 24, while 5 exposures are noted in Table E-1. The distances of responses for humpback whales were 0.1–0.4 km in Table 24, while the distances at a response were 0.81–0.98 km in Table E-1.

Figure 43—

- Although nine exposure RLs with accompanying distances were included in the figure, of the nine exposures in Table E-1 three of the Cuvier's beaked whale exposures do not have distances denoted. Also, animals Ha12_176a and bb12_214a were not included in the figure, and it is unclear where the exposures from 140–155 dB re 1 µPa originated because the RLs in Table E-1 are all less than or equal to 138 dB re 1 µPa. Further, no data in Table E-1 represent distances at or around 60 km, as denoted in the figure.

Figure 44—

- The figure specified that 101 exposures were included, whereas only 97 exposures were included in Table E-1. Given the number of exposures included in the figure, its accuracy based on Table E-1 cannot be assessed.

Figure 45—

- The figure specified that 85 exposures were included, whereas only 79 exposures were included in Table E-1.
- Animal bw_193a was not included in the figure, and Animal bp_075a was incorrectly denoted at 47 rather than 57 km.

Table E-1—

- The relevant data on Blainville's beaked whales from Tyack et al. (2011), Moretti et al. (2014) and Jacobson et al. (2022) were not included in the table. At a minimum, the 10 data points that were randomly subsampled from the Moretti et al. (2014) and Jacobson et al. (2022) dose response functions should have been included in the table.
- Data from the minke whale from the SOCAL BRS from Kvadsheim et al. (2017) was not included in the table.
- The distances at a response are included as '?' for Cuvier's and Baird's beaked whales from the SOCAL BRS, while 2–5 km is provided in Table 21 for the distances of responses.
- The raw data were included in the table for bottlenose dolphins and California sea lions from Houser et al. (2013a, b) rather than the subsampled data from the dose response functions that the Navy derived specifically from the moderate and severe responses of the dolphins and sea lions.

References

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Houser, D.S., S.W. Martin, and J.J. Finneran. 2013a. Behavioral responses of California sea lions to mid frequency (3250-3450 Hz) sonar signals. Marine Environmental Research 92:268–278.

Figure M.3-5: Marine Mammal Commission Comment (continued)

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Kvadsheim, P.H., S. DeRuiter, L.D. Sivle, J. Goldbogen, R. Roland-Hansen, P.J.O. Miller, F.A. Lam, J. Calambokidis, A. Friedlaender, F. Visser, P.L. Tyack, L. Kleivane, and B. Southall. 2017. Avoidance responses of minke whales to 1-4 kHz naval sonar. Marine Pollution Bulletin 121 1–2:60–68. https://doi.org/10.1016/j.marpolbul.2017.05.037.

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Tyack, P.L., W.M.X. Zimmer, D. Moretti, B.L. Southall, D.E. Claridge, J.W. Durban, C.W. Clark, A. D'Amico, N. DiMarzio, S. Jarvis, E. McCarthy, R. Morrissey, J. Ward, and I.L. Boyd. 2011. Beaked whales respond to simulated and actual Navy sonar. PLoS ONE 6(3):15. https://doi.org/10.1371/journal.pone.0017009.

Figure M.3-5: Marine Mammal Commission Comment (continued)

OFFICE OF FEDERAL ACTIVITIES
WASHINGTON, D.C. 20460

November 6, 2024

Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG (AFTT EIS Project Managers)
6506 Hampton Boulevard
Norfolk, VA 23508–1278

Dear Sir/Madam,

In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA) and the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency has reviewed the U.S. Navy's Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) for Atlantic Fleet Training and Testing (CEQ No. 20240164). The CAA Section 309 role is unique to EPA. It requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirements.

The U.S. Navy in cooperation with the U.S. Coast Guard as a Joint Lead has prepared a Supplemental DEIS to the 2018 Final Atlantic Fleet Training and Testing EIS/OEIS. The purpose of the Proposed Action is to ensure the U.S. Naval Services, including the Coast Guard, are able to organize, train, and equip service members and personnel to meet their respective national defense missions as prescribed by Congress. The Preferred Alternative, which is also the environmentally preferable Action Alternative, reflects a representative year of training and testing to account for the natural fluctuations of training cycles, testing programs, and deployment schedules that generally limit the maximum level of training and testing that could occur in the reasonably foreseeable future.

The missions mentioned above are achieved in part by conducting military readiness activities within a Study Area in accordance with established Department of the Navy military readiness requirements. The Atlantic Fleet Training and Testing Study Area in this EIS/OEIS includes areas of the western Atlantic Ocean along the east coast of North America, Gulf of Mexico, and portions of the Caribbean Sea. It also includes Navy and Coast Guard pier-side locations and port transit channels, bays, harbors, inshore waterways, and civilian ports where training and testing activities occur as well as transits between homeports and operating areas. The U.S. Navy and U.S. Coast Guard will request authorization to "take" marine mammals incidental to conducting training and testing activities in the Study Area to comply with the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA).

The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) is a cooperating agency and has coordinated in the development of this document to meet their separate

Figure M.3-6: U.S. Environmental Protection Agency Comment

and distinct obligations and to support the independent decision making regarding this action and compliance with the MMPA and Section 7 of ESA. NMFS plans to adopt this Supplemental EIS/OEIS and issue a separate Record of Decision associated with its decision on whether to grant a request for incidental take authorizations.

EPA is providing recommendations for consideration regarding the Supplemental EIS/OEIS with a focus on EPA's responsibilities for marine protection permitting as required by the Marine Protection, Research and Sanctuaries Act[1] and role for assessing other agencies' environmental justice analyses as directed in EO 14096[2] on Revitalizing Our Nation's Commitment to Environmental Justice for All. EPA is also providing recommendations regarding the climate change and spill response discussions in the document. These recommendations are provided in the detailed comments enclosed.

We appreciate the opportunity to review this draft Supplemental EIS/OEIS and look forward to reviewing the final Supplemental EIS/OEIS. If you have any questions on our review, please contact Marthea Rountree, Lead Reviewer, NEPA Compliance Division, at 202-564-7141 or by email at rountree.marthea@epa.gov

Sincerely,

PRASAD CHUMBLE Digitally signed by PRASAD CHUMBLE Date: 2024.11.06 11:20:29 -05'00'

Prasad Chumble
Acting Director
Office of Federal Activities

Enclosure

[1] Summary of the Marine Protection, Research, and Sanctuaries Act | US EPA
[2] Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All | The White House

2

Figure M.3-6: U.S. Environmental Protection Agency Comment (continued)

U.S. Navy's Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement (EIS/OEIS) for Atlantic Fleet Training and Testing
EPA Detailed Comments

Marine Protection Permitting

The primary focus of EPA's Marine Protection Permitting Program is on the Marine Protection, Research and Sanctuaries Act (MPRSA). EPA is responsible for the implementation of MPRSA under regulations (40 CFR 220-230) which cover a broad scope of marine environmental protection issues. The primary regulated activity under MPRSA is the transportation and disposition of material into ocean waters.

The Atlantic Fleet Training and Testing draft Supplemental EIS/OEIS notes in several locations throughout the document that sinking exercises, (activities which result in the deliberate sinking of decommissioned vessels) are being proposed. The EPA has issued a MPRSA general permit to the U.S. Navy for the transport and ocean disposal of target vessels used in the U.S. Navy's Sink Exercise (SINKEX) Program (40 CFR 229.2 - 229.3). During the review, EPA observed that the information concerning the program is not complete and clearly presented. The EPA recommends that the Navy incorporates additional details in Volume 1 about the SINKEX Program concerning the MPRSA general permit, the decommissioned vessels that will be used for sinking exercises, the Navy's vessel clean-up procedures, and information about when and where sinking exercises may take place (including whether these exercises will always take place in the "SINKEX box" identified in most of the maps). Additionally, EPA recommends adding a discussion of the potential localized impacts to the environment, including the seafloor specifically associated with SINKEX. Once provided, this information could then be referenced to other sections of the EIS/OEIS that discusses impacts from explosives more generally.

EPA also notes that Chapter 6 addresses the regulatory considerations for activities described in the EIS/OEIS. The EPA recommends adding the Marine Protection, Research and Sanctuaries Act to Table 6.1-1 (Summary of Environmental Compliance for the Proposed Action) with a brief statement about the status of compliance as similarly addressed for other applicable laws included in the table. Additionally, Navy may consider adding a short text summary in Section 6.1 generally describing the Marine Protection, Research and Sanctuaries Act and the general permit authorizing SINKEX activities.

Environmental Justice

Section 3 (b)(i) of EO 14096 directs the EPA to assess whether each agency analyzes and avoids or mitigates disproportionate human health and environmental effects on communities with environmental justice concerns when carrying out responsibilities under Section 309 of the Clean Air Act, 42 U.S.C. 7609. EPA understands that this Supplemental EIS/OEIS specifically analyzes in-water activities as well as activities occurring over water. It states that "any land-based impacts from activities associated with the Proposed Action are analyzed in separate NEPA documents; therefore, some resource areas are not analyzed." This includes environmental justice (EJ). The Supplemental EIS/OEIS

1

Figure M.3-6: U.S. Environmental Protection Agency Comment (continued)

also states that environmental justice was "not analyzed in detail because the proposed activities would result in minor and insignificant impacts to the human population in coastal areas." In addition, in the 2018 Final EIS/OEIS, environmental justice "was eliminated as an issue for further consideration because all of the proposed activities occur in the ocean and in harbors and bays, where there are no human residences present". However, the current draft Supplemental EIS/OEIS discusses a new Study Area that includes "inshore waters and pierside testing locations adjacent to the Gulf of Mexico" but does not provide information on whether disproportionate and adverse effects to communities with EJ concerns were analyzed. For this reason, EPA recommends that the Navy evaluate any areas (or incorporate by reference the analysis in any separate NEPA documents) that include inshore waters consistent with Executive Orders on environmental justice and NEPA regulations to determine whether there are disproportionate and adverse human health and environmental effects on communities with environmental justice concerns as appropriate. If any disproportionate and adverse effects to communities with EJ concerns are identified, mitigation measures should be incorporated to address these effects.

Social Cost of Greenhouse Gases

While the draft Supplemental EIS/OEIS acknowledges that the Social Cost of Greenhouse Gases (SC-GHG) estimates can provide additional context on greenhouse (GHG) emissions and are recommended by the CEQ's 2023 Guidance, it fails to apply the SC-GHG values to monetize the GHG emissions from the project Alternatives, including the No Action Alternative. EPA recommends that the climate damages from all reasonably foreseeable emissions be monetized using the best available estimates of the SC-GHG.

In November 2023, the EPA published the Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances. This report provides updated estimates of the SC-GHGs that reflect advancements in the scientific literature on climate change and its economic impacts and incorporates recommendations made by the National Academies of Science, Engineering, and Medicine[3]. In this update, the methodology underlying each of the four components, or modules, of the SC-GHG estimation process – socioeconomics and emissions, climate, damages, and discounting – is developed by drawing on the latest research and expertise from the scientific disciplines relevant to that component. Regarding discounting, the EPA's report presents updated estimates of the SC-GHG at multiple discount rates. Considering the multiple lines of evidence on the appropriate certainty-equivalent near-term rate, the modeling results presented in this report consider a range of near-term target rates of 1.5%, 2.0%, and 2.5%. This range of rates allows for a symmetric one point spread around 2.0%. The updated SC-GHG estimates have also undergone an expert peer review and a public comment process.

The EPA released a Microsoft Excel "Workbook for Applying SC-GHG Estimates" spreadsheet to better assist lead agencies with the utilization of these updated estimates, and it can be accessed at

[3] Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide | The National Academies Press

2

Figure M.3-6: U.S. Environmental Protection Agency Comment (continued)

https://www.epa.gov/environmental-economics/scghg. This workbook presents a straightforward tool for applying the updated SC-GHG values to monetize project GHG emissions.

EPA notes that there appears to be an error in the "Climate Change" section on page 4-11. It states, "For example, the estimated *SC-GHG emissions* from Alternatives 1 and 2 are similar to that of electricity used by 197,000 and 232,100 average U.S. households annually (U.S. Environmental Protection Agency, 2024)". EPA recommends that the "SC-GHG emissions" be replaced with "greenhouse gas emissions."

Spill Response

The draft Supplement EIS/OEIS briefly references ship-to-shore fuel transfer system training and major spill events. However, there is no discussion about refueling at sea. This includes both refueling a ship at sea (underway replenishments (UNREP)) and refueling an aircraft while at sea (vertical replenishments (VERTREP)). There is a potential risk of oil spillage for each of these issues. EPA recommends that the final Supplement EIS/OEIS provide a discussion about spill response for each of these issues as appropriate.

3

Figure M.3-6: U.S. Environmental Protection Agency Comment (continued)

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
100 Alabama Street SW
1924 Building, Room 5158
Atlanta, GA 30303

November 21, 2024

IN REPLY REFER TO:
ER 24/0412

Todd Kraft
Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG (AFTT EIS Project Managers)
6506 Hampton Boulevard
Norfolk, VA 23508–1278.

Subject: Comments on the Draft Supplemental EIS for Atlantic Fleet Training and Testing, Alabama

Dear Mr. Kraft,

We acknowledge these concerns are similar to those submitted by the Department of the Interior during the previous version of this EIS in 2018 but are seeking additional response and coordination if possible.

- For any training activities occurring within a National Park Service (NPS) unit, the Navy shall coordinate with the affected NPS unit. Homestead Air Force Base regularly coordinates training activities within the Biscayne National Park (NP) boundary with park staff. A similar level of coordination with the Navy is requested to mitigate potential negative impacts to sensitive habitats and wildlife.

- Extend the offshore mitigation area well beyond NPS unit boundaries. Biscayne NP is primarily a marine park whose boundary lies approximately 15 nautical miles (nm) offshore (60' isobath). Therefore, the Navy's standard mitigation practice of conducting activities greater than 12 nm from the coast, is not sufficient for Biscayne NP and potentially jeopardizes a significant portion of the park's marine resources.

For additional information contact Erin Hodel, Natural Resources Program Manager, National Park Service Southeast Regional Office at erin_hodel@nps.gov or on (470) 259-2323. I can be reached on (404) 331-4524 or via email at joyce_stanley@ios.doi.gov.

Figure M.3-7: U.S. Department of the Interior Comment

Draft Supplemental EIS for Atlantic Fleet Training and Testing, Alabama - - ER 24/0412

Sincerely,

JOYCE STANLEY

Digitally signed by JOYCE STANLEY
Date: 2024.11.21 10:01:56 -05'00'

Joyce Stanley, Ph.D.
Regional Environmental Officer

cc: Christine Willis - FWS
Jon Janowicz - USGS
Erin Hodel – NPS
Matt Moran - OSMRE
OEPC – WASH

2

Figure M.3-7: U.S. Department of the Interior Comment (continued)

JEFF LANDRY
GOVERNOR

TYLER PATRICK GRAY
SECRETARY

KEITH LOVELL
ASSISTANT SECRETARY

State of Louisiana
DEPARTMENT OF ENERGY AND NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT

October 30, 2024

Naval Facilities Engineering Command, Atlantic
Attention: AFTT EIS/OEIS Project Manager
Code: EV22SG
6506 Hampton Boulevard
Norfolk, Virginia, 23508-1278

Re: C20240094 U.S. Navy Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (OEIS) for Atlantic Fleet Training and Testing Study Area

Dear Project Manager:

Louisiana Department of Energy Natural Resources Director of Federal Affairs Neal McMillin received your September 16, 2024, invitation to review the referenced Draft Supplemental Environmental Impact Statement. The letter was forwarded to the Office of Coastal Management (OCM) for review. The following comments are offered for your consideration.

Chapter 6, Regulatory Considerations, notes that the USN will provide Louisiana with a consistency determination as required by the Coastal Zone Management Act of 1972, as amended. In preparing your consistency determination, please be aware that Louisiana's approved coastal management program includes, in its list of federal agency activities, "Outer Continental Shelf activities adjacent to the coastal zone which are not subject to consistency review under other provisions of Section 307 of the CZMA." In practice, this encompasses any reasonably foreseeable coastal effects resulting from federal activities anywhere within the 200 mile Exclusive Economic Zone off Louisiana's coast, including the New Orleans OPAREA identified in the OEIS.

Most of the proposed activities will take place far from Louisiana's coastal zone, and relatively few effects to the State's coastal resources are anticipated. Among the State's coastal uses and resources for which there may be reasonably foreseeable impacts, are the offshore oil and gas industry, shipping, and commercial and recreational fishing. These uses have a significant presence in the Gulf, and may occur in proximity to Navy operations.

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Figure M.3-8: Louisiana Office of Coastal Zone Management Comment

Also, Louisiana is host to large residential and migratory bird populations. It is noted that the National Marine Protected areas have been updated in this submission to mirror those of the International Union for Conservation of Nature. To the extent practicable, we request that overflights of the Louisiana coastal zone in any location should be managed to minimize potential adverse impacts.

We appreciate this opportunity to review and comment on the OEIS, and look forward to receiving your consistency determination for the proposed training and testing activities. If you should have any questions, please contact Ray Reich of the Consistency Section at (225) 342-7949 or ray.reich@la.gov.

Sincerely yours,

/S/ **Charles Reulet**
Administrator
Interagency Affairs/Field Services Division
CR/ MH/ rar

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Figure M.3-8: Louisiana Office of Coastal Zone Management Comment (continued)

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
100 Cambridge Street, Suite 900, Boston, MA 02114 • (617) 626-1200

Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG
(AFTT EIS Project Managers)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

RE: Atlantic Fleet Training and Testing Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

November 21, 2024

AFTT EIS Project Managers,

The Massachusetts Office of Coastal Zone Management (CZM) has reviewed the Draft Supplemental Environmental Impact Statement (SEIS) for the Navy's Atlantic Fleet Training and Testing Phase IV (AFTT). CZM is supportive of the least environmentally harmful alternative that meets the purpose and need of the Proposed Action, which based on the SEIS appears to be Alternative 1.

CZM is also highly supportive of the Navy's continued support of research and monitoring of potentially impacted wildlife including marine mammals, sea turtles, and protected fish species. The data gathered through these research and monitoring studies is used not only to ensure impacts from Navy activities are mitigated, but also to increase the scientific understanding of the ecology of the ocean including the distributions, behaviors, and abundance of protected species. The knowledge gained through Navy-supported research and monitoring has contributed to CZM's responsible management of ocean resources for a variety of uses beyond the military, and we encourage the Navy to continue to support these efforts.

The proposed project may be subject to CZM federal consistency review and, if so, must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact Sean Duffey, Project Review Coordinator, at sean.duffey@mass.gov or visit the CZM website at https://www.mass.gov/federal-consistency-review-program.

Thanks for the opportunity to review and comment on the SEIS. Please contact my office with any questions.

Sincerely,

Alison Brizius

MAURA T. HEALEY GOVERNOR **KIMBERLEY DRISCOLL** LIEUTENANT GOVERNOR **REBECCA L. TEPPER** SECRETARY **ALISON BRIZIUS** DIRECTOR
www.mass.gov/czm

Figure M.3-9: Massachusetts Office of Coastal Zone Management Comment



November 8, 2024

Submitted Electronically

Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG
(AFTT EIS Project Managers)
6506 Hampton Blvd.
Norfolk, VA 23508-1278

To Whom it May Concern:

The United States Department of the Navy, which includes both the U.S. Navy and U.S. Marine Corps, along with the U.S. Coast Guard, proposes to continue military readiness testing and training activities at selected sites along the North Atlantic, Gulf of Mexico, and parts of the Caribbean Sea. Such activities would include, but are not limited to, those proposed at specific Navy pierside sites, within port transit channels, and in certain inland waters, as shown in **Figure 1** below.

P.O. Box 370, Forest Knolls, CA 94933 • 415.663.8590 • www.seaturtles.org • action@seaturtles.org

Figure M.3-10: Turtle Island Restoration Network Comment

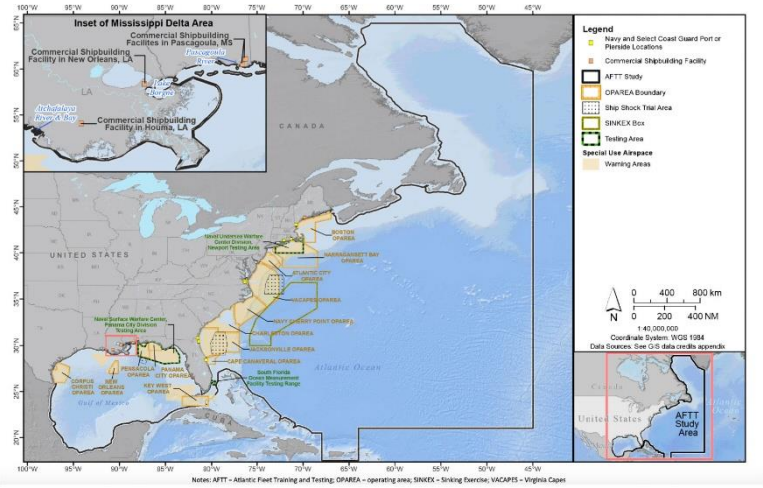


Figure 1: The map of the Atlantic Fleet Testing and Training area.

Sonar, explosives, and other weapons will be used in the various exercises proposed. Different military readiness aspects will be the focus of these activities targeted at different warfare communities: aviation, surface, submarine, and expeditionary forces.[1]

Turtle Island Restoration Network (TIRN) respectfully submits the following comments in regards to the Atlantic Fleet Training and Testing (AFTT) Draft Supplemental EIS/OEIS to continue to conduct military readiness training and research, development, testing and evaluation activities in the AFTT Study Area.

1. Given the recent developments in marine mammal data and the occurrence of Unusual Mortality Events (UME) along the Atlantic Coast, it is crucial to carefully evaluate the testing locations and the exercises being conducted.

The Atlantic coast of the United States is home to a variety of marine mammal species, many of which are threatened by the impacts of human activity, including vessel strike injuries and fishing gear entanglements.[2]

[1] U.S. Department of the Navy. (2024). *AFTT DEIS Volume I: Draft supplemental EIS*(https://www.nepa.navy.mil/Portals/20/Documents/aftteis4/AFTT%20DEIS%20Volume%20I%20Draft%20Supplemental%20EIS.pdf). U.S. Department of the Navy.
[2] Waring, G. T., Palka, D. L., & Evans, P. G. (2009). North Atlantic marine mammals. In *Encyclopedia of marine mammals* (pp. 773-781). Academic Press.

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

Humpback Whales

Humpback whales (*Megaptera novaeangliae*) along the Atlantic coast have been experiencing an Unusual Mortality Event (UME) since 2016. A large number of the UME-related strandings of humpback whales have occurred near the AFTT study area in the North Atlantic.[3] Necropsies have not been performed on every whale due to various factors, including the location of the stranding and the condition of the body. However, a significant proportion of the whales that were necropsied showed signs of injuries consistent with human interaction, particularly vessel strikes and entanglement in fishing gear. Some whales exhibited pre-mortem vessel strike injuries, suggesting they were struck by a moving vessel while still alive.[4] The 2018 Final Environmental Impact Statement (FEIS) notes that the U.S. Navy accurately reports all whale collisions and has historically had interactions with humpback whales.[5] However, with ongoing training and testing activities within the AFTT study area following the 2018 FEIS, it is important to consider that an increase in vessel traffic related to these exercises could be having a significant impact on humpback whale populations along the North Atlantic coast. Given this, the data in the 2018 FEIS is now outdated and cannot reliably be used to attribute blame to other vessels operating near the AFTT study area.

North Atlantic Right Whales

The North Atlantic Right Whale (*Eubalaena glacialis*) is approaching extinction after an UME was officially declared in 2017. Unfortunately, vessel strike injuries are a leading cause of mortality.[6] Critical habitat for the North Atlantic Right Whale has been established in areas of the North Atlantic, as seen below in **Figure 3**. The location of the critical habitat is just east of the AFTT study area.

[3] NOAA Fisheries. 2016–2024 Humpback Whale Unusual Mortality Event Along the Atlantic Coast. Available at: https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2023-humpback-whale-unusual-mortality-event-along-atlantic-coast

[4] NOAA Fisheries. 2016–2023 Humpback Whale Unusual Mortality Event Along the Atlantic Coast. Available at: https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2023-humpback-whale-unusual-mortality-event-along-atlantic-coast

[5] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF

[6] NOAA Fisheries. 2017–2023 North Atlantic Right Whale Unusual Mortality Event. Available at: https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2023-north-atlantic-right-whale-unusual-mortality-event

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

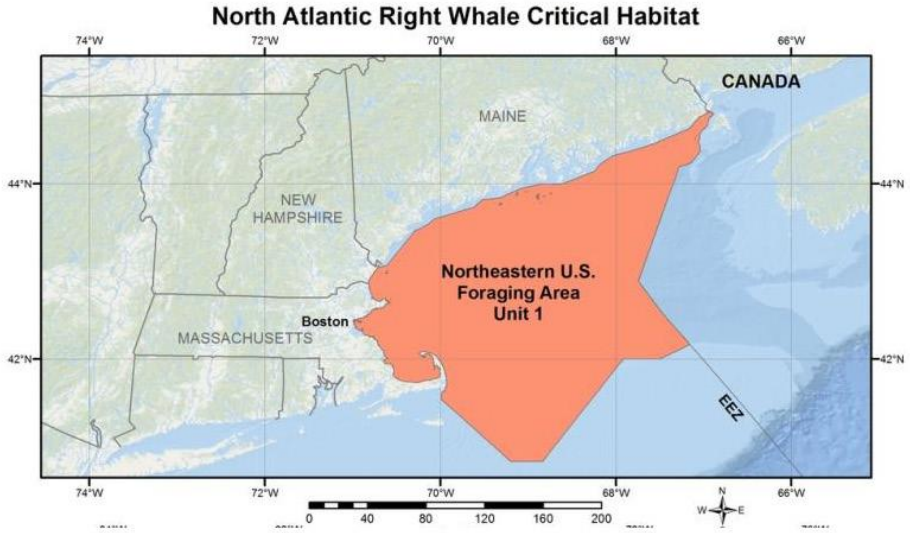


Figure 3: A map showing the critical habitat of North Atlantic Right Whales in the North Atlantic that is located east of the AFTT location.

[7]

The North Atlantic Right Whales migrate up the coast to feed in the waters around New England during winter and early spring.[8] This area is considered their critical habitat. However, whales do not stay within the boundaries of the critical habitat. Outside of these areas, their exposure to anthropogenic threats increases. Its proximity to this critical habitat-the AFTT study area-heightens the risk of vessel strike injuries as North Atlantic Right Whales travel along the coast. For their part, the 2018 FEIS recognizes that even with strict regulations on vessel speed and routing, no measurable reduction in marine mammal fatalities caused by vessel strikes has occurred.[9] As the North Atlantic Right Whales are still critically endangered, the testing boundaries should not be allowed to be located so close to their critical habitat.

Another risk associated with the ongoing military testing is the impact an increase in vessel traffic will have on North Atlantic Right Whales. 2024 was a deadly year for North Atlantic Right Whales with several whales falling victim to vessel strikes. Most notable, the first calf of

[7] NOAA Fisheries. North Atlantic Right Whale Critical Habitat Map and GIS Data. Available at: https://www.fisheries.noaa.gov/resource/map/north-atlantic-right-whale-critical-habitat-map-and-gis-data
[8] Parks, S. E., Warren, J. D., Stamieszkin, K., Mayo, C. A., & Wiley, D. (2012). Dangerous dining: surface foraging of North Atlantic right whales increases risk of vessel collisions. *Biology letters*, 8(1), 57-60.
[9] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299480/-1/-1/1/3.07%20AFTT%20FEIS%20MARINE%20MAMMALS.PDF

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

the season, the calf of Juno, suffered from a severe vessel strike injury that affected its mouth and head. Unfortunately, the young calf was later found dead after a courageous fight.[10] Another young Right Whale suffered a similar fate after she was hit and killed by a vessel. The one year old whale suffered from blunt force trauma, including skull fractures.[11] According to the current vessel speed rule that was put into place to protect North Atlantic Right Whales, military vessels are exempt from the speed restrictions.[12] With increased vessel traffic associated with military testing and speed restrictions not required for military vessels, North Atlantic RIght Whales are at significant risk of experiencing a fatal vessel strike injury.

We urge the US Department of the Navy and the US Coast Guard to consider halting training and testing exercises within these critical areas in light of the ongoing UMEs associated with both humpback and North Atlantic Right Whales.

2. The type of training and testing activities will have negative impacts on the behavior, physiology, and communication of marine mammals.

Marine mammals rely on sound to communicate and move around within their environment. Some species of marine mammals also use echolocation to feed. Underwater noise has the potential to disrupt essential life functions of marine mammals, such as feeding, mating, nursing, resting, and migrating.[13] Many marine animals are sensitive to loud unnatural sounds traveling through the water because it is not typical of their environment. Some known affected species are Beaked whales, dwarf, pygmy sperm whales (*Kogia* spp.), pilot whales (*Globicephala* spp.), several dolphin species (*Stenella* sp., *Delphinus delphis*), and harbor porpoises (*Phocoena phocoena*).[14]

There is a consistent history of harm being caused to these animals due to active sonar during military testing. In 2000, the United States government determined that many of the strandings in the Bahamas were a result of mid-frequency active sonar use from the military.[15] Years later, in

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[10] Kershaw, F. (2024, March 15). Right Whale Calf Succumbs to Vessel Strike Injuries. Natural Resources Defense Council. https://www.nrdc.org/bio/francine-kershaw/right-whale-calf-succumbs-vessel-strike-injuries

[11] Rousseau, M. (2024, February 17). A second right whale found dead off Georgia coast suffered a vessel strike, NOAA says. Boston.com. https://www.boston.com/news/environment/2024/02/17/a-second-right-whale-found-dead-off-georgia-coast-suffered-a-vessel-strike-noaa-says/

[12] National Oceanic and Atmospheric Administration. (2020). *Final report on the North Atlantic right whale vessel speed rule* (June 2020). NOAA Fisheries. https://www.fisheries.noaa.gov/s3/2021-01/FINAL_NARW_Vessel_Speed_Rule_Report_Jun_2020.pdf

[13] Erbe, C., Dunlop, R., & Dolman, S. (2018). Effects of noise on marine mammals. Effects of anthropogenic noise on animals, 277-309.

[14] Van Dyke, J. M. (2004). Whales, submarines and active sonar. https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/cac22f22-8645-4a06-beda-bc36538c25fc/content

[15] Simmonds, M. P., Dolman, S. J., Jasny, M., Parsons, E. C. M., Weilgart, L., Wright, A. J., & Leaper, R. (2014). Marine noise pollution-increasing recognition but need for more practical action.

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

September of 2002, 15 Cuvier's beaked whales were beached on the Canary Islands and necropsies revealed brain damage consistent with acoustic impact, usually associated with sonar exposure.[16] In May of 2003, the *USS Shoup* emitted mid-range sonar for five consecutive hours near Vancouver Island, pinging louder than 200 dB. This sonar session resulted in the disruption of feeding behaviors for a pod of 22 orcas and a minke whale. They were observed to form a tight group and flee the region to try to get away from the sound.[17] After this test, it was found that eight harbor porpoises stranded with severe trauma in their brains.[18] Ultimately, a correlation was discovered between naval sonar and marine organism injury after stranding events occurred globally, including regions in the Caribbean, Scotland, Ireland's coast, the Mediterranean, and Guam.[19]

Underwater noise, including sonar, can impact marine mammals both behaviorally and physiologically. At 40-50 dB, porpoises show avoidance behavior. At <100 dB, beaked whales display a change in behavior, including beating tail flukes, paused echolocation and foraging, and abnormal diving patterns. Sounds of 130 dB results in avoidance behavior of bottlenose dolphins, increased swim speed and body movement of Baird's beaked whales, and disrupted foraging in sperm whales. 140 dB results in abnormal feeding behavior and swimming displacement of blue whales and avoidance behavior of migrating gray whales. 150 dB results in mass stranding of beaked whales, increased tachycardia as dB increased, and abnormal respiration rate in beluga whales. 160 dB results in internal injuries, mass stranding of beaked whales, increased tachycardia as dB increased, abnormal respiration rate in beluga whales, changed singing behavior and reduced lunge feeding rates in humpback whales. 170 dB results in mass stranding of beaked whales.[20] [21]

With so many different areas of military training and testing coupled with a diverse array of marine mammal species, it is imperative that testing and training should not be conducted near critical habitats of marine mammals.

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[16] Parsons, E. C. M. (2017). Impacts of navy sonar on whales and dolphins: now beyond a smoking gun?. *Frontiers in Marine Science*, *4*, 295. https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2017.00295/full

[17] Parsons, E. C. M. (2017). Impacts of navy sonar on whales and dolphins: now beyond a smoking gun?. *Frontiers in Marine Science*, *4*, 295. https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2017.00295/full

[18] Parsons, E. C. M. (2017). Impacts of navy sonar on whales and dolphins: now beyond a smoking gun?. *Frontiers in Marine Science*, *4*, 295. https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2017.00295/full

[19] Van Dyke, J. M. (2004). Whales, submarines and active sonar. https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/cac22f22-8645-4a06-beda-bc36538c25fc/content

[20] Van Dyke, J. M. (2004). Whales, submarines and active sonar. https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/cac22f22-8645-4a06-beda-bc36538c25fc/content

[21] Parsons, E. C. M. (2017). Impacts of navy sonar on whales and dolphins: now beyond a smoking gun?. *Frontiers in Marine Science*, *4*, 295. https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2017.00295/full

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

3. The presence of military training and testing can negatively impact endangered and vulnerable sea turtle populations.

Different species of sea turtles can be found throughout the AFTT study area, including green sea turtles (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), Kemp's ridley turtle (*Lepidochelys kempii*), leatherback turtle (*Dermochelys coriacea*), and loggerhead turtle (*Caretta caretta*). According to the 2018 FEIS, some sea turtle species, like the hawksbill sea turtle, have critical habitat that is located within the AFTT study area.[22] The endangered Kemp's Ridley sea turtle has a smaller range within the Gulf of Mexico,[23] but is still at risk due to the training and testing exercises in the Gulf. A multi-year study focused along the Florida coast found vessel strike related mortality in sea turtles to be a significant threat among several species.[24] The 2024 Draft SEIS indicates that species of sea turtles, including the leatherback sea turtle, are at a heightened risk of vessel strikes due to their surface behavior.[25] We can expect to see increased vessel traffic related to testing and training exercises within the AFTT study area and, as a result, sea turtle populations are at a heightened risk of vessel strike related mortality.

The impacts of different types of marine debris were touched upon in the 2024 Draft SEIS. Marine debris can lead to entanglements and ingestion in sea turtles. The 2024 Draft SEIS references a study in which juvenile sea turtles were more likely to ingest marine debris than adults.[26] Different types of marine debris related to training and testing exercises are expected to impact sea turtle populations within the AFTT study area.

4. With nearly 50 individuals remaining, the critically endangered Rice's whale is at risk of extinction.

[22] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299481/-1/-1/1/3.08%20AFTT%20FEIS%20REPTILES.PDF Page 3.8-22.
[23] US Department of the Navy. Final Environmental Impact Statement. 2018. Available at: https://media.defense.gov/2020/May/13/2002299481/-1/-1/1/3.08%20AFTT%20FEIS%20REPTILES.PDF Page 3.8-28.
[24] Foley, A. M., Stacy, B. A., Hardy, R. F., Shea, C. P., Minch, K. E., & Schroeder, B. A. (2019). Characterizing watercraft-related mortality of sea turtles in Florida. The Journal of Wildlife Management, 83(5), 1057-1072.
[25] U.S. Department of the Navy. (2024). *AFTT DEIS Volume IV: Draft supplemental EIS*(https://www.nepa.navy.mil/Portals/20/Documents/aftteis4/AFTT%20DEIS%20Volume%20IV%20Appendices%20F%20through%20P.pdf). U.S. Department of the Navy.

[26] U.S. Department of the Navy. (2024). *AFTT DEIS Volume IV: Draft supplemental EIS*(https://www.nepa.navy.mil/Portals/20/Documents/aftteis4/AFTT%20DEIS%20Volume%20IV%20Appendices%20F%20through%20P.pdf). U.S. Department of the Navy.

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

At the time of the 2018 FEIS, the Rice's whale (*Balaenoptera ricei*) had not been identified as its own species.[27] Therefore, this species was technically not a part of the 2018 FEIS and had not been accurately assessed for potential stressors caused by training and testing exercises in the Gulf of Mexico. NOAA Fisheries proposed critical habitat designation for the Rice's whales in response to their incredibly small population size and limited distribution range. In the 2024 SEIS, the proposed critical habitat directly overlaps with the study area for military training and testing, as seen below in **Figure 4**.[28]

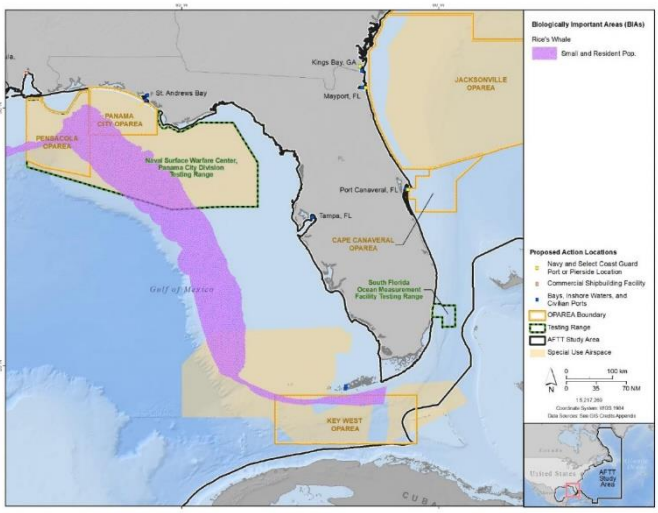


Figure F.5-4: Biologically Important Areas for Rice's Whales in the Study Area – Eastern Gulf of Mexico

Figure 4: A map showing the proposed critical habitat of Rice's Whales in the Gulf of Mexico overlapping with the study area.

29

As with other marine mammals, the Rice's whales are at risk of the same stressors as identified in item 2. The Rice's whale is protected under both the Endangered Species Act (ESA) and the

[27] Soldevilla, M. S., Ternus, K., Cook, A., Hildebrand, J. A., Frasier, K. E., Martinez, A., & Garrison, L. P. (2022). Acoustic localization, validation, and characterization of Rice's whale calls. The Journal of the Acoustical Society of America, 151(6), 4264-4278.
[28] U.S. Department of the Navy. (2024). *AFTT DEIS Volume IV: Draft supplemental EIS*(https://www.nepa.navy.mil/Portals/20/Documents/aftteis4/AFTT%20DEIS%20Volume%20IV%20Appendices%20F%20through%20P.pdf). U.S. Department of the Navy.
[29] U.S. Department of the Navy. (2024). *AFTT DEIS Volume IV: Draft supplemental EIS*(https://www.nepa.navy.mil/Portals/20/Documents/aftteis4/AFTT%20DEIS%20Volume%20IV%20Appendices%20F%20through%20P.pdf). U.S. Department of the Navy.

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

Marine Mammal Protection Act (MMPA). This species is considered to be depleted under the MMPA, heightening the need to further protect this species from anthropogenic threats.[30]

We recommend all military training and testing be immediately stopped within the Gulf of Mexico to ensure the protection and survival of the critically endangered Rice's whale, especially within the bounds of their proposed critical habitat.

Final Thoughts

In light of ongoing UMEs, increased anthropogenic pressure, and declining species populations, it is vital that the location of military training and testing be re-evaluated in an effort to protect vulnerable and endangered species. We recommend that all exercises be stopped until safer locations and practices can be determined.

Thank you for your consideration,

Elizabeth Purcell
Environmental Policy Coordinator

Savannah Martinez
Environmental Policy Intern

[30] NOAA Fisheries. Rice's Whale. Available at: https://www.fisheries.noaa.gov/species/rices-whale

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Figure M.3-10: Turtle Island Restoration Network Comment (continued)

LaVere, Ashley

From: Stahl, Chris <Chris.Stahl@FloridaDEP.gov>
Sent: Thursday, November 14, 2024 2:40 PM
To: elizabeth.nashold@navy.mil
Cc: State_Clearinghouse; LaVere, Ashley
Subject: State Clearance Letter for FL202409250246C- Draft Supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), Atlantic Fleet Training And Testing Activities(AFTT), Atlantic Ocean And Gulf Of Mexico, Florida
Attachments: FWC Comments_Atlantic Fleet Training And Testing DEIS-OEIS_File No. FL202409250246C.pdf

[EXTERNAL SENDER] Use Caution opening links or attachments

November 14, 2024

Elizabeth Nashold
Naval Facilities Engineering Command, Atlantic
6506 Hampton Boulevard
Norfolk, Virginia 23508-1278

RE: Department of Defense, Department of the Navy, Draft Supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS), Atlantic Fleet Training and Testing Activities(AFTT), Atlantic Ocean and Gulf of Mexico, Florida
SAI # FL202409250246C

Dear Elizabeth:

Florida State Clearinghouse staff has reviewed the proposal under the following authorities: Presidential Executive Order 12372; § 403.061(42), Florida Statutes; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

Attached are comments generated by Florida Fish and Wildlife Conservation Commission (FWC) staff and incorporated hereto.

If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The applicant shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at (850)-245-6333. Project activities shall not resume without verbal and/or written authorization. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05,

Based on the information submitted, the state has no objections to the subject project and, therefore, it is consistent with the Florida Coastal Management Program (FCMP). Thank you for the opportunity to review the proposed plan. If you have any questions or need further assistance, please don't hesitate to contact me at (850) 717-9076.

1

Figure M.3-11: Florida State Clearinghouse Comment

Thank You,

Chris Stahl

Chris Stahl, Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Blvd., M.S. 47
Tallahassee, FL 32399-2400
ph. (850) 717-9076
Chris.Stahl@floridadep.gov



Figure M.3-11: Florida State Clearinghouse Comment (continued)

Florida Fish and Wildlife Conservation Commission

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Assistant Executive Director

George Warthen
Chief Conservation Officer

Jessica Crawford
Chief of Staff

Division of Habitat and Species Conservation
Melissa Tucker
Director

850-488-3831

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

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32399-1600
Voice: 850-488-4676

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MyFWC.com

November 6, 2024

Chris Stahl, Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 47
Tallahassee, FL 32399-2400
Chris.Stahl@dep.state.fl.us

Subject: FWC Comments, File No. FL202409250246C, Atlantic Fleet Training and Testing (AFTT) Draft Environmental Impact Statement (DEIS)/Overseas Environmental Impact Statement (OEIS), Atlantic Ocean and Gulf of Mexico, Florida

Dear Mr. Stahl,

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the Department of the Navy Environmental Impact Statement (EIS) / Overseas Environmental Impact Statement (OEIS) for the above-referenced project, and provides the following comments and recommendations for your consideration in accordance with Chapter 379, Florida Statutes (F.S.), and pursuant to the federal National Environmental Policy Act (NEPA), the federal Coastal Zone Management Act, and the State of Florida Coastal Management Program.

Project Description

The U.S. Navy proposes to conduct military readiness training activities and research, development, testing, and evaluation activities in the Atlantic Fleet Training and Testing (AFTT) Study Area. These activities include the use of vessels, active sonar, and explosives within the in-water areas of the western Atlantic Ocean along the eastern coast of North America (including the Jacksonville Operating Area and South Florida Ocean Measurement Testing Range), in portions of the Caribbean Sea (Key West Operating Area) and the Gulf of Mexico (Panama City and Pensacola Operating Area), at select Navy pier-side locations (Naval Station Mayport, Naval Surface Warfare Center-Panama City), within port transit channels, near select civilian ports, and in bays and harbors (St. Johns River, Mayport, Port Canaveral, Demolition Key, Truman Harbor, Tampa, St. Andrew Bay, North Bay). These military readiness activities are generally consistent with those analyzed in the AFTT DEIS/OEIS completed in 2018 and are representative of training and testing that the Navy has been conducting in the AFTT Study Area for decades. The Navy proposes an annual level of testing that reflects a representative year of training and testing to account for the natural fluctuations of training cycles, testing programs, and deployment schedules that generally limit the maximum level of training and testing that could occur in the reasonably foreseeable future (Alternative 1).

Since the completion of the 2018 Final EIS/OEIS, the best available science has been updated, the regulatory environment has changed, the Study Area has changed, and the Proposed Action has been refined. Under the current draft EIS/OEIS the study area has been updated to include inshore waters and pier side testing locations adjacent to the Gulf of Mexico, and changes to ship shock trial areas including the shift of the Gulf of Mexico ship shock trial area to the south to avoid Rice's whale core habitat, to expand the Jacksonville ship shock area, and to remove the Key West ship shock trial area.

Figure M.3-11: Florida State Clearinghouse Comment (continued)

Potentially Affected Resources

The draft EIS/OEIS indicated that the following federally listed sea turtles and marine mammals could be affected by the proposed activities: green sea turtles (*Chelonia mydas,* Federally Threatened [FT]), hawksbill sea turtle (*Eretmochelys imbricata*, Federally Endangered [FE]), Kemps ridley sea turtle (*Lepidochelys kempii*, FE), leatherback sea turtle (*Dermochelys coriacea*, FE), loggerhead sea turtle (*Caretta caretta*, FT), North Atlantic right whale (*Eubalaena glacialis*, FE), blue whale (*Balaenoptera musculus*, FE), finback whale (*Balaenoptera physalus*, FE), sperm whale (*Physeter microcephalus*, FE), and West Indian manatee (*Trichechus manatus latirostris*, FT). FWC staff reviewed relevant agency data and confirmed the species list provided in the draft EIS/OEIS.

Mitigation for potential impacts includes personnel training, reporting and monitoring, visual observations, and geographic mitigation for physical habitats, marine species habitats, or cultural resources.

Comments and Recommendations

North Atlantic Right Whale:

The North Atlantic Right Whale (NARW) is a federally endangered species which the population size has declined from a peak of approximately 483 individuals in 2011 to 372 individuals in 2023 (Linden 2024). Additionally, the population's ability to recover is limited, as there are only an estimated 70 breeding females remaining in the population (Linden 2024).

- Mitigation measures for right whales as described in the draft EIS/OEIS include not detonating explosives, not conducting ship shock training, and minimizing the use of sonar and north-south oriented vessel transits in the Jacksonville OPAREA and Southeast North Atlantic Right Whale Mitigation Area between 15 November and 15 April each year. Additionally, the Navy will consult Early Warning System (EWS) data when planning vessel transits and military readiness activities. FWC continues to commend the Navy's support and use of the EWS surveys. However, the EWS surveys, Lookouts, and other modes of detecting marine mammals and other marine wildlife have weaknesses, which includes marine wildlife cannot always be detected when present in an area. Additionally, airspace restrictions due to military activities have limited the EWS aerial surveys in the past, reducing their effectiveness as mitigation. FWC staff encourages the Navy to continue working with NOAA Fisheries to improve species detection and effectiveness of the EWS surveys.

- Time-area restrictions are the most effective form of mitigation measures given the challenges associated with detecting NARW and other marine wildlife. The draft EIS/OEIS describes a time-area closure in the Southeast NARW Mitigation Area, which resembles the NARW critical habitat designated by NOAA Fisheries in 1994, and only reporting requirements in the larger Southeast NARW Special Reporting Mitigation Area, which covers the current NARW critical habitat established by NOAA Fisheries in 2016. The draft EIS/OEIS states that "the mitigation area is the largest area practical to implement within the North Atlantic

Figure M.3-11: Florida State Clearinghouse Comment (continued)

right whale reproduction critical habitat". However, NARWs occur throughout and beyond the current critical habitat, and their distribution within the Southeast NARW Mitigation Area may be uneven (Roberts et al. 2024). If the area covered by mitigation is limited, FWC encourages the Navy to consult with NOAA Fisheries to consider modifying the configuration of the Mitigation Area in a way that provides the most risk reduction possible for NARW. If the area covered by mitigation can be increased, FWC encourages the Navy to consult with NOAA Fisheries on expanding the size of the Southeast NARW Mitigation Area to further reduce the risks posed to NARWs.

- The draft EIS/OEIS describes mitigation measures for NARWs in the Southeastern and Northeastern United States. However, NARWs also occur in the mid-Atlantic where vessel strikes to NARWs have been documented. FWC encourages the Navy to consult with NOAA Fisheries on increasing situational awareness of and other mitigation measures for NARWs, particularly for activities east of the mouth of the Chesapeake Bay in the VACAPES OPAREA, in the Atlantic City OPAREA, and in the Narragansett Bay OPAREA, where right whales have been observed in high densities in recent years.

Florida Manatee:

- Protected Species Monitoring Programs in Florida are recommended for in-water or over-water activities that have been documented and determined to pose an increased risk of injury or death to a protected marine species. The FWC has created the Observer Guidelines for Protected Species Monitoring Programs in Florida State Waters manual for entities conducting these activities to determine if individuals have the recommended qualifications for the proposed activities. *Please note that FWC staff recommend a 30-minute wait period, when feasible, to allow the animal to move out of the impact area.*

- Any collision with or injury to a manatee, within Florida state waters, should be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida and emailed to FWC at ImperiledSpecies@MyFWC.com.

- Inshore activities within Florida should adhere to all posted speed zones, including state Manatee Protection Zones, state Boating Restricted Areas, and local regulations. Maps identifying the location of these zones can be found on the FWC website at: https://myfwc.com/wildlifehabitats/wildlife/manatee/data-and-maps/.

- Due to available foraging habitat and warm-water refuge sites, manatees are active near Port Canaveral and Tampa Bay year-round. To minimize impacts to manatees, FWC staff recommend limiting any in-water demolition, explosive, and/or other high impact activities occurring adjacent to Port Canaveral and Tampa Bay between November 15th and March 31st. Information on the location of identified warm-water sites in Florida can be found in the 2020 Manatee Warm-water Habitat Action Plan.

Figure M.3-11: Florida State Clearinghouse Comment (continued)

Marine Turtles:

- Any collision with (or injury to) a marine turtle, within Florida state waters, should be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 888-404-3922 and to the Sea Turtle Stranding and Salvage Network (STSSN) at SeaTurtleStranding@MyFWC.com.

Marine Habitat:

- The draft EIS/OEIS indicates that less than 2.2 acres of submerged aquatic vegetation will be affected annually by all military expended materials in all training and testing areas. To address these impacts, FWC staff recommend working with federal regulatory agencies to develop a mitigation plan to offset any impacts that satisfies federal requirements.

- Several of the areas identified and proposed to mitigate habitat impacts from the proposed activities are already closed off and would be closed regardless of the proposed activities occurring, due to the presence of military equipment/cables or security measures. FWC staff recommend identification of alternative actions to mitigate for the proposed activities that do not include the identification of areas that are already closed for other purposes.

We appreciate the opportunity to provide information on this project. If you have specific technical questions regarding the content of this letter, please contact Ashley LaVere by email at Ashley.LaVere@MyFWC.com. All other inquiries may be sent to ImperiledSpecies@MyFWC.com.

Sincerely,

Ron Mezich, Section Leader
Imperiled Species Management Section
Division of Habitat and Species Conservation
Florida Fish and Wildlife Conservation Commission

References

Linden, D. 2024. Population size estimation of North Atlantic right whales from 1990-2023. US Department of Commerce Northeast Fisheries Science Center Technical Memorandum 325. 15p.

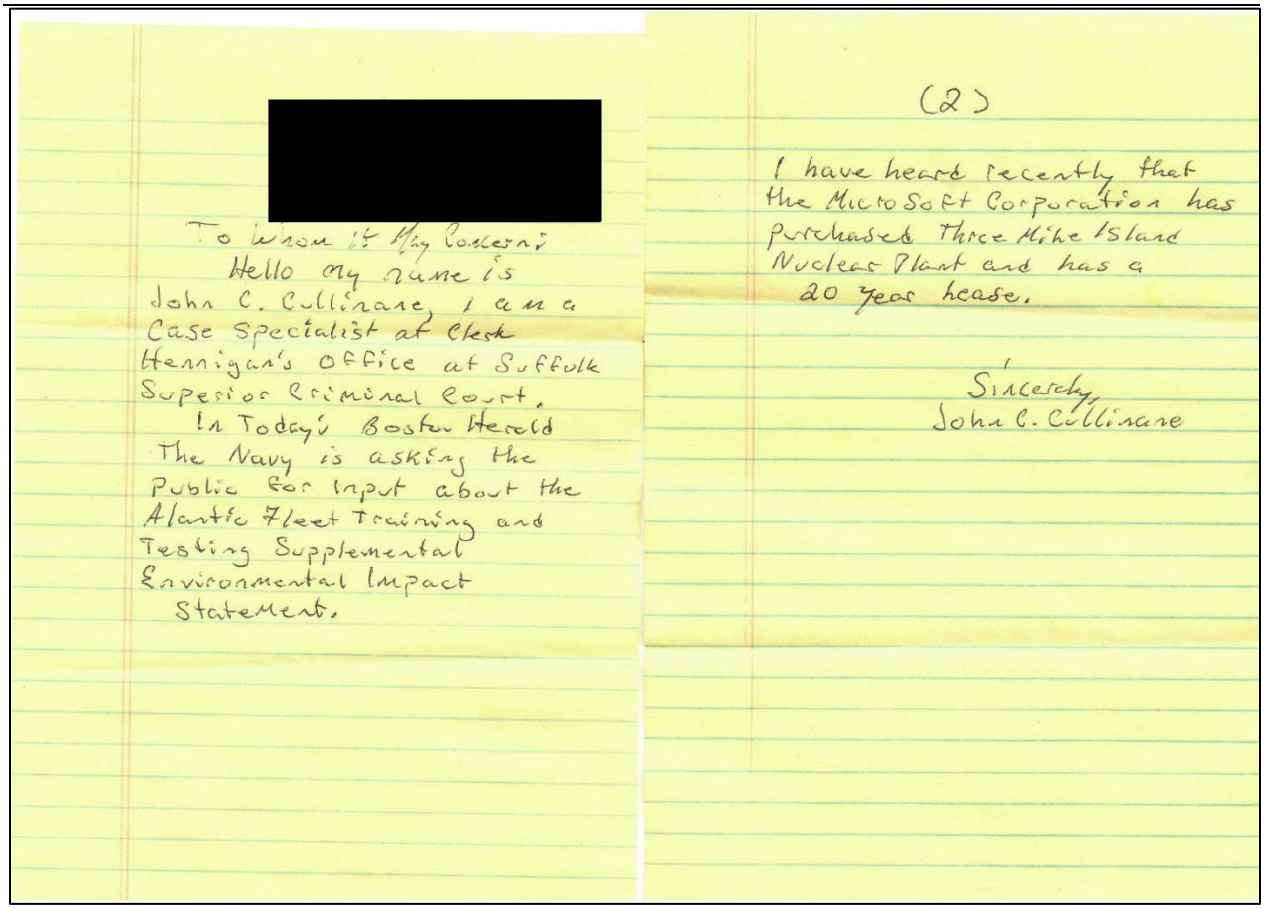
Roberts, J., et al. 2024. North Atlantic right whale density surface model for the US Atlantic evaluated with passive acoustic monitoring. Marine Ecology Progress Series 732: 167–192.

cc: Caity Savoia, FWC
Lisa Gregg, FWC
Michelle Pasawicz, FWC

Figure M.3-11: Florida State Clearinghouse Comment (continued)

Nathan Crum, FWC
Robbin Trindell, FWC
Tom Pitchford, FWC

Figure M.3-11: Florida State Clearinghouse Comment (continued)



To whom it May Concern:
Hello my name is John C. Cullinane, I am a Case Specialist at Clerk Hennigan's Office at Suffolk Superior Criminal Court.
In Today's Boston Herald The Navy is asking the Public for input about the Atlantic Fleet Training and Testing Supplemental Environmental Impact Statement.

(2)

I have heard recently that the Micro Soft Corporation has purchased Three Mile Island Nuclear Plant and has a 20 year lease.

Sincerely,
John C. Cullinane

Figure M.3-12: Private Individual (1) Comment

Atlantic Fleet Training and Testing
Supplemental Environmental Impact Statement/
Overseas Environmental Impact Statement

Comment Form

Date: 11-4-2024

Comments must be submitted by November 21, 2024, to be considered in the development of the Final Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). Comments should describe specific issues or topics. The public may submit written comments in one of the following ways:

- Through the project website: **www.nepa.navy.mil/aftteis**
- In person at one of the open house public meetings
- By mail, postmarked no later than **November 21, 2024**

The Navy, Marine Corps, and Coast Guard will consider each comment during the National Environmental Policy Act (NEPA) process, and all comments become part of the public record and will be made publicly available without change. All personally identifiable information (for example name, email, or address) voluntarily submitted by the commenter may be publicly accessible. You may also submit a comment anonymously. Do not submit confidential, sensitive, or protected information. The Navy, Marine Corps, and Coast Guard do not retain personally identifiable information voluntarily submitted by the commenter in any system of records outside of the scope of this Supplemental EIS/OEIS.

** Please Print Clearly ** Additional Space is Provided on Back **

1. Name: _____
2. Organization/Affiliation (if applicable): _____
3. Email: _____
4. Mailing Address: _____

☐ *I would like to receive future email notifications about the project*

I viewed the videos and feel grateful for the partnership with agencies to protect aquatic wildlife. However, testing with explosives - though I understand its necessity for combat - seems contradictory to wild life protection. How do you reconcile these two goals.

Mail comments to:
Naval Facilities Engineering Systems Command Atlantic
Attention: Code EV22SG (AFTT EIS Project Managers)
6506 Hampton Blvd
Norfolk, VA 23508-1278
If available, please use a pre-addressed stamped envelope for mailing your comments.

Figure M.3-13: Private Individual (2) Comment

APPENDIX N
FEDERAL REGISTER NOTICES

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

N FEDERAL REGISTER NOTICES N-1

N.1 Federal Register Notices N-1

List of Figures

Figure N.1-1: Federal Register Vol. 88, No. 221, Friday, November 17, 2023 ..... N-1
Figure N.1-2: Federal Register Vol. 89, No. 183, Friday, September 20, 2024 ..... N-4

List of Tables

This appendix does not contain tables.

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N FEDERAL REGISTER NOTICES

N.1 FEDERAL REGISTER NOTICES

80286 Federal Register / Vol. 88, No. 221 / Friday, November 17, 2023 / Notices

of Fiscal Year 2024 and until the launch of the new project and grant application system. The currently approved information collection is due to expire on March 31, 2024.

Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval. Comments are invited on: (a) Whether the collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology; and (e) estimates of capital or start-up costs and costs of operation, maintenance, and purchase of services to provide information. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; to develop, acquire, install, and utilize technology and systems for the purpose of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; to train personnel and to be able to respond to a collection of information, to search data sources, to complete and review the collection of information; and to transmit or otherwise disclose the information. All written comments will be available for public inspection on *regulations.gov*.

Carly Bruder,

Acting Director, AmeriCorps VISTA.

[FR Doc. 2023–25405 Filed 11–16–23; 8:45 am]

BILLING CODE 6050–28–P

DEPARTMENT OF DEFENSE

Defense Acquisition Regulations System

[Docket Number DARS–2023–0046; OMB Control Number 0704–0525; Req No. DARS–2024–00014–FR]

Information Collection Requirement; Defense Federal Acquisition Regulation Supplement; Prohibition of Foreign Commercial Satellite Services From Certain Foreign Entities-Representations

AGENCY: Defense Acquisition Regulations System; Department of Defense (DoD).

ACTION: Notice and request for comments regarding a proposed extension of an approved information collection requirement.

SUMMARY: In compliance with the Paperwork Reduction Act of 1995, DoD announces the proposed extension of a public information collection requirement and seeks public comment on the provisions thereof. DoD invites comments on: whether the proposed collection of information is necessary for the proper performance of the functions of DoD, including whether the information will have practical utility; the accuracy of DoD's estimate of the burden of the proposed information collection; ways to enhance the quality, utility, and clarity of the information to be collected; and ways to minimize the burden of the information collection on respondents, including through the use of automated collection techniques or other forms of information technology. The Office of Management and Budget (OMB) has approved this information collection for use under Control Number 0704–0525 through March 31, 2024. DoD proposes that OMB approve an extension of the information collection requirement, to expire three years after the approval date.

DATES: DoD will consider all comments received by January 16, 2024.

ADDRESSES: You may submit comments, identified by OMB Control Number 0704–0525, using either of the following methods:

○ *Federal eRulemaking Portal: https://www.regulations.gov.* Follow the instructions for submitting comments.

○ *Email: osd.dfars@mail.mil.* Include OMB Control Number 0704–0525 in the subject line of the message.

Comments received generally will be posted without change to *https://www.regulations.gov,* including any personal information provided.

FOR FURTHER INFORMATION CONTACT: Ms. Kimberly Bass, at 703–717–3446.

SUPPLEMENTARY INFORMATION:

Title and OMB Number: Defense Federal Acquisition Regulation Supplement (DFARS), Prohibition on Acquisition of Commercial Satellite Services from Certain Foreign Entities-Representations; OMB Control Number 0704–0525.

Affected Public: Businesses or other for-profit and not-for-profit institutions.

Respondent's Obligation: Required to obtain or retain benefits.

Frequency: On occasion.

Number of Respondents: 235.

Responses Per Respondent: 1.

Annual Responses: 235.

Average Burden Per Response: 0.25 hour.

Annual Burden Hours: 58.

Needs and Uses: DFARS solicitation provision 252.225–7049, Prohibition on Acquisition of Commercial Satellite Services from Certain Foreign Entities-Representations, is used by contracting officers to determine whether the offeror is subject to the statutory prohibition on award of contracts for commercial satellite services to certain foreign entities. The provision is included in solicitations for the acquisition of foreign commercial satellite services and requires the offeror to represent whether it is or is not a foreign entity subject to the prohibitions of the statute, or is or is not offering foreign commercial satellite services provided by such a foreign entity. If the offeror responds affirmatively to any of the representations, then the offeror must provide further information.

Jennifer D. Johnson,

Editor/Publisher, Defense Acquisition Regulations System.

[FR Doc. 2023–25373 Filed 11–16–23; 8:45 am]

BILLING CODE 6820–FR–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare a Supplement to the September 2018 Final Atlantic Fleet Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement for Continuation of Navy Atlantic Fleet Training and Testing Activities

AGENCY: Department of the Navy (DoN), Department of Defense (DoD).

ACTION: Notice.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality, the Department of the Navy (DoN)

Figure N.1-1: Federal Register Vol. 88, No. 221, Friday, November 17, 2023

(including both the U.S. Navy and the U.S. Marine Corps) in cooperation with the U.S. Coast Guard announces its intent to prepare a supplement to the 2018 Atlantic Fleet Training and Testing (AFTT) Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS). New information includes an updated acoustic effects analysis, updated marine mammal density data, and evolving and emergent best available science. Proposed activities and study area are consistent with those analyzed in the 2018 AFTT EIS/OEIS.

DATES: The 30-day public scoping period begins on November 17, 2023 and extends to December 16, 2023. Comments must be postmarked or submitted electronically via the website no later than 11:59 p.m. Eastern Time on December 16, 2023 for consideration in the Draft Supplemental EIS/OEIS.

ADDRESSES: The DoN invites all interested parties to submit scoping comments on the Supplemental EIS/OEIS to the physical address listed below and electronically through the project website at *http://www.nepa.navy.mil/aftteis.*

Comments can be mailed to: Naval Facilities Engineering Systems Command, Atlantic, 6506 Hampton Boulevard, Building A, Norfolk, Virginia, 23508–1278, ATTN: EV22, AFTT SEIS Project Manager.

FOR FURTHER INFORMATION CONTACT: U.S. Fleet Forces Command, 1562 Mitscher Avenue Suite 250, Norfolk, VA 23551–2487, Attn: Mr. Theodore Brown, Installations and Environment Public Affairs Officer, 757–836–4427, or visit the project website: *http://www.nepa.navy.mil/aftteis.*

SUPPLEMENTARY INFORMATION: The DoN's lead action proponent is U.S. Fleet Forces Command. Additional Navy action proponents include the Office of Naval Research, Naval Sea Systems Command, Naval Air Systems Command, the U.S. Marine Corps, The U.S. Coast Guard, as a joint lead agency is also an action proponent (hereinafter collectively referred to as the "Action Proponents").

The Action Proponents will assess the potential environmental effects associated with ongoing and future at-sea military readiness activities conducted within the AFTT EIS/OEIS Study Area (hereafter known as the "Study Area") beyond 2025. Military readiness activities include training and research, development, testing, and evaluation (hereafter known as "testing"). The Supplemental EIS/OEIS will include an analysis of training and testing activities using new information that became available after the release of the 2018 Final EIS/OEIS. New information includes an updated acoustic effects analysis, updated marine mammal density data, and evolving and emergent best available science. Proposed activities are consistent with those analyzed in the 2018 Final EIS/OEIS and are representative of training and testing activities the Action Proponents have been conducting in the Study Area for decades. The Study Area remains consistent with the 2018 Final EIS/OEIS with the addition of some inland waters within the Gulf of Mexico coast. The Study Area is comprised of operating areas (sea space) and warning areas (airspace) located in the Atlantic Ocean along the eastern coast of North America, the Gulf of Mexico, and portions of the Caribbean Sea, at select Navy pierside locations, within port transit channels, and some inland waters.

The purpose of the Proposed Action is to maintain a ready force, which is needed to ensure the peacetime promotion of the national security interests and prosperity of the United States and for prompt and sustained combat incident to operations at sea and to meet the needs of war, consistent with Title 10, section 8062, of the United States Code.

The Proposed Action is to conduct at-sea training and testing activities within the Study Area. Activities include the use of active sonar and explosives while employing marine species protective mitigation measures. The Proposed Action does not alter the original purpose and need as discussed in the 2018 Final EIS/OEIS.

Proposed training and testing activities are consistent with those analyzed in the 2018 Final EIS/OEIS. In the Supplemental EIS/OEIS, the DoN will analyze the proposed changes to the types and tempo of training and testing activities, accounting for the introduction of new technologies, the evolving nature of international events, advances in warfighting doctrine and procedures, and changes in the organization of vessels, aircraft, weapons systems, and personnel. In the AFTT Supplemental EIS/OEIS, the Action Proponents will reflect the compilation of training and testing activities required to fulfill the Action Proponent's military readiness requirements beyond 2025, and therefore includes the analysis of newly proposed activities and changes to previously analyzed activities.

The Supplemental EIS/OEIS will consider a No Action Alternative and two Action Alternatives that account for the types and tempo of training and testing activities that are necessary to meet future military readiness requirements (beginning in November 2025).

The Supplemental EIS will evaluate the expected social, economic and environmental effects resulting from implementing the action alternatives and the No Action Alternative. Resource areas that will be addressed include, but are not limited to: biological resources (including marine mammals and other protected species), sediments and water quality, air quality, noise, cultural resources, socioeconomic resources, and public health and safety.

As part of this process, the Action Proponents will seek the issuance of Federal regulatory permits and authorizations under the Marine Mammal Protection Act and Endangered Species Act to support on-going and future at-sea military readiness activities within the Study Area beyond 2025.

Pursuant to 40 CFR 1501.8, the Navy invited the National Marine Fisheries Service (NMFS) to be a cooperating agency in preparation of the Supplemental EIS/OEIS, in a letter dated August 18, 2022. NMFS has agreed to be a cooperating agency on the Supplemental EIS/OEIS to support and expedite the NEPA and consultation processes.

To ensure that the full range of issues related to the proposed action are addressed and all potential issues are identified, DoN invites comments and suggestions from all interested parties regarding potential alternatives, information, studies or analyses of any kind concerning impacts affecting the quality of the human environment relevant to the proposed action on behalf of all the Action Proponents. Comments may be submitted according to the instructions in the following Public Scoping Process section.

The scoping process is used to identify the full range of issues including public concerns and local issues to be considered during the development of the Draft Supplemental EIS/OEIS. Federal agencies, State agencies, local agencies, the public, and interested persons are encouraged to provide substantive comments to the DoN on environmental resources and areas of concern that the commenter believes the DoN should consider.

After the scoping period DoN will coordinate with participating and cooperating agencies to develop a Draft Supplemental EIS/OEIS. The Draft Supplemental EIS/OES is anticipated to be issued in the Fall of 2024. The Final Supplemental EIS/OEIS is anticipated to

Figure N.1-1: Federal Register Vol. 88, No. 221, Friday, November 17, 2023 (continued)

be issued in the Fall of 2025, within 24 months of the publication of this NOI.

Dated: November 7, 2023.

J.E. Koningisor,

Lieutenant Commander, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. 2023–24947 Filed 11–16–23; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Fiscal Year 2023 Performance Review Board Membership

AGENCY: Department of the Navy, Department of Defense.

ACTION: Notice.

SUMMARY: The Department of the Navy (DON) announces the appointment of members to the DON Senior Executive Service (SES), Senior Level (SL), and Scientific and Professional (ST) Fiscal Year 2023 Performance Review Board (PRB). The purpose of the PRB is to provide fair and impartial review of the annual SES performance appraisal prepared by the senior executive's immediate and second level supervisor; to make recommendations to appointing officials regarding acceptance or modification of the performance rating; and to make recommendations for performance-based bonuses and performance-based pay increases.

FOR FURTHER INFORMATION CONTACT: For further information, contact Danielle Dutton, Director, Executive Management Program Office, Manpower and Reserve Affairs at (703) 697–0640 or *danielle.a.dutton.civ@us.navy.mil.*

SUPPLEMENTARY INFORMATION: Composition of the specific PRB is provided below:

Ms. Mary Tompa
Mr. Frederick Stefany
Mr. Andrew Haeuptle
Ms. Leila Gardner
Ms. E. Anne Sandel
Mr. Thomas Rudowsky
Ms. Giao Phan
Mr. John Pope
Ms. Deline Reardon
Ms. Catherine Kessmeier
Mr. Mark Romano (HLR)
Mr. Timothy Bridges (HLR)
Mr. Robert Hogue (Chair)

(Authority: 5 U.S.C. 4314(c)(4))

Dated: November 14, 2023.

J.E. Koningisor,

Lieutenant Commander, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. 2023–25453 Filed 11–16–23; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2023–SCC–0163]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Annual Performance Report for Titles III, V, and VII Grants

AGENCY: Office of Postsecondary Education (OPE), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act (PRA) of 1995, the Department is proposing a revision of a currently approved information collection request (ICR).

DATES: Interested persons are invited to submit comments on or before December 18, 2023.

ADDRESSES: Written comments and recommendations for proposed information collection requests should be submitted within 30 days of publication of this notice. Click on this link *www.reginfo.gov/public/do/PRAMain* to access the site. Find this information collection request (ICR) by selecting "Department of Education" under "Currently Under Review," then check the "Only Show ICR for Public Comment" checkbox. *Reginfo.gov* provides two links to view documents related to this information collection request. Information collection forms and instructions may be found by clicking on the "View Information Collection (IC) List" link. Supporting statements and other supporting documentation may be found by clicking on the "View Supporting Statement and Other Documents" link.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Jason Cottell, 202–453–7530.

SUPPLEMENTARY INFORMATION: The Department is especially interested in public comment addressing the following issues: (1) is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Annual Performance Report for Titles III, V, and VII Grants.

OMB Control Number: 1840–0766.

Type of Review: A revision of a currently approved ICR.

Respondents/Affected Public: Private Sector; State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 1,400.

Total Estimated Number of Annual Burden Hours: 28,000.

Abstract: Titles III, V, and VII of the Higher Education Act of 1965, as amended (HEA), provide discretionary and formula grant programs that make competitive awards to eligible institutions of higher education and organizations (Title III, Part E) to assist these institutions with expanding their capacity to serve minority and low-income students. Grantees annually submit a performance report to demonstrate that substantial progress is being made towards meeting the objectives of their project. A Final Performance Report will be completed after the grantee completes their final performance period.

Dated: November 14, 2023.

Kun Mullan,

PRA Coordinator, Strategic Collections and Clearance, Governance and Strategy Division, Office of Chief Data Officer, Office of Planning, Evaluation and Policy Development.

[FR Doc. 2023–25480 Filed 11–16–23; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2023–SCC–0159]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; State and EIS Record Keeping and Reporting Requirements Under Part C

AGENCY: Office of Special Education and Rehabilitative Services (OSERS), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act (PRA) of 1995, the Department is proposing an extension without change of a currently

Figure N.1-1: Federal Register Vol. 88, No. 221, Friday, November 17, 2023 (continued)

Federal Register / Vol. 89, No. 183 / Friday, September 20, 2024 / Notices 77113

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Public Meetings for the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement for Atlantic Fleet Training and Testing (ID# SEIS–007–17–USN–1723491961)

AGENCY: Department of the Navy (DoN), Department of Defense (DoD).

ACTION: Notice.

SUMMARY: Pursuant to the National Environmental Policy Act- (NEPA) of 1969, as implemented by the Council on Environmental Quality regulations, and Presidential Executive Order 12114, the Department of the Navy (DoN), as the lead agency, and U.S. Coast Guard (Coast Guard) have prepared and filed with the U.S. Environmental Protection Agency a Draft Supplemental Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) that evaluates the reasonably foreseeable effects on the human environment of Navy, Marine Corps, and Coast Guard training and testing activities conducted within the Atlantic Fleet Training and Testing (AFTT) Study Area.

DATES: The 60-day public comment period begins on September 20, 2024, and ends November 21, 2024. The comment period includes an additional 15 calendar days (from the required 45 days) to allow the public more time to review and comment. The public can submit comments during the Draft EIS/OEIS public review and comment period at one of the in-person public meetings, online at the project website, or by U.S. mail. All comments must be postmarked or received electronically by 11:59 p.m. Eastern Daylight Time (EDT) on November 21, 2024, for consideration in the Final Supplemental EIS/OEIS.

Three in-person public meetings in the form of an open-house will be held to inform the public about the proposed action and alternatives and about the opportunity to provide written and oral comments on the Draft Supplemental EIS/OEIS.

The in-person public meetings will be held as follows:

1. Tuesday, October 8, 2024, 5 p.m. to 7 p.m. EDT New Bedford Whaling Museum, 18 Johnny Cake Hill, New Bedford, MA 02740.
2. Thursday, October 10, 2024, 5 p.m. to 7 p.m. EDT Silver Spring Civic Building at Veterans Plaza, 1 Veterans Pl, Silver Spring, MD 20910.
3. Wednesday, October 16, 2024, 5 p.m. to 7 p.m. (Central Daylight Time (CDT)) New Orleans Marriott Metairie at Lakeway, 3838 N Causeway Blvd., Metairie, LA 70002.

Two virtual public meetings in the form of a webinar and question and answer session will be held for the public to learn about the proposed action and alternatives. The virtual public meetings will be held as follows:

1. Tuesday, October 22, 2024, 6 p.m. to 7 p.m. EDT.
2. Thursday, October 24, 2024, 2 p.m. to 3 p.m. EDT.

Registration for the virtual public meetings is available at the project website *www.nepa.navy.mil/aftteis/*. Recordings of the virtual public meetings will be posted to the project website at *www.nepa.navy.mil/aftteis/* for the public to view following their completion.

ADDRESSES: Comments on the Draft Supplemental EIS/OEIS may be provided at the in-person public meetings, submitted electronically through the project website: *www.nepa.navy.mil/aftteis/*, or by mail to: Naval Facilities Engineering Systems Command Atlantic; Attention: Code EV22SG (AFTT EIS Project Managers); 6506 Hampton Boulevard, Norfolk, VA 23508–1278.

FOR FURTHER INFORMATION CONTACT: U.S. Fleet Forces Command, 1562 Mitscher Avenue Suite 250, Norfolk, VA 23551–2487, Attention: Mr. Theodore Brown, Installations and Environment Public Affairs Officer, 757–836–4427, *theodore.c.brown4.civ@us.navy.mil*, or visit the project website *www.nepa.navy.mil/aftteis/*.

SUPPLEMENTARY INFORMATION: DoN and Coast Guard's Proposed Action is to conduct military readiness training activities, and research, development, testing, and evaluation activities in the AFTT Study Area. These military readiness activities include the use of active sonar and explosives within existing range complexes and testing ranges and additional areas located in the Atlantic Ocean along the eastern coast of North America, in portions of the Caribbean Sea, the Gulf of Mexico, at Navy pierside locations and port transit channels, near civilian ports, and in bays, harbors, and inland waterways (*e.g.*, the lower Chesapeake Bay). These military readiness activities are generally consistent with those analyzed in the AFTT EIS/OEIS completed in 2018 and are representative of training and testing that the Navy has been conducting in the AFTT Study Area for decades. Since the completion of the 2018 Final EIS/OEIS, the best available science has been updated, the regulatory environment has changed, the Study Area has changed, and what is known about our impacts has been refined. All of this has been incorporated into this Supplemental EIS/OEIS analysis. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) is a Cooperating Agency for the Supplemental EIS/OEIS.

The purpose of the Proposed Action is to ensure the Action Proponents, including the Coast Guard, are able to organize, train, and equip service members and personnel to meet their respective national defense missions in accordance with their Congressionally mandated requirements.

Potential direct, indirect, cumulative, short-term, long-term, irreversible, and irretrievable impacts to the environment from two action alternatives and a No Action Alternative are evaluated in the Draft Supplemental EIS/OEIS. Resources evaluated in detail include air quality, sediments and water quality, vegetation, invertebrates, marine habitats, fish, marine mammals, sea turtles and other marine reptiles, and birds and bats.

Based on the results of the analysis, the DoN and Coast Guard have requested from NMFS a Letter of Authorization in accordance with the Marine Mammal Protection Act to authorize the incidental take of marine mammals that may result from the implementation of the activities analyzed in the AFTT Draft Supplemental EIS/OEIS. In accordance with Section 7 of the Endangered Species Act, DoN and Coast Guard are consulting with NMFS and U.S. Fish and Wildlife Service for potential impacts to federally listed species. DoN and Coast Guard will complete all required consultations and comply with all applicable laws and regulations.

The Draft Supplemental EIS/OEIS addresses mitigation measures designed to help reduce or avoid potential impacts to marine resources, including new mitigation measures that include expanded location-specific mitigations and updates to activity-based mitigation measures. In addition, the Draft Supplemental EIS/OEIS addresses marine species monitoring efforts designed to track compliance with authorizations and to investigate the effectiveness of mitigation measures implemented as part of the Proposed Action. The proposed mitigation measures would be implemented under either action alternative to maximize the mitigation benefits to the environment.

Mitigation measures are being coordinated through the consultation and permitting processes. DoN and Coast Guard will also consider public

Figure N.1-2: Federal Register Vol. 89, No. 183, Friday, September 20, 2024

comments on proposed mitigation measures described in this Draft Supplemental EIS/OEIS.

Comments submitted during the public comment period at the in-person public meetings, electronically via the project website, or mailed to the address provided in the **ADDRESSES** section will become part of the public record. Substantive comments will be considered in the development of the Final Supplemental EIS/OEIS.

Notice of the availability of the Draft Supplemental EIS/OEIS was distributed to federal, state, and local agencies, elected officials, and other interested individuals and organizations. Copies of the Draft Supplemental EIS/OEIS are available for public review at the following libraries:

1. Brigadier General Charles E. McGee Library, 900 Wayne Avenue, Silver Spring, MD 20910.
2. Broward County Main Library, 100 South Andrews Avenue, Fort Lauderdale, FL 33301.
3. Camden County Public Library, 1410 GA–40, Kingsland, GA 31548.
4. Corpus Christi La Retama Central Library, 805 Comanche Street, Corpus Christi, TX 78401.
5. East Bank Regional Library, 4747 West Napoleon Avenue, Metairie, LA 70001.
6. New Bedford Free Public Library Casa de Saudade Branch, 58 Crapo Street #1, New Bedford, MA 02740.
7. Onslow County Public Library, 58 East Doris Avenue, Jacksonville, NC 28540.
8. Portland Public Library, 5 Monument Square, Portland, ME 04101.
9. Providence Public Library, 150 Empire Street, Providence, RI 02903.
10. West Florida Public Library, Southwest Branch, 12248 Gulf Beach Highway, Pensacola, FL 32507.

Copies of the AFTT Draft Supplemental EIS/OEIS are available for electronic viewing at *www.nepa.navy.mil/aftteis/*. A paper copy of the Executive Summary and a single compact disc (CD) of the Draft Supplemental EIS/OEIS will be made available upon written request by contacting: Naval Facilities Engineering Systems Command Atlantic, Attention: Code EV22SG (AFTT EIS Project Managers), 6506 Hampton Boulevard, Norfolk, VA 23508–1278.

Dated: September 12, 2024.

A.J. Gioiello,

Lieutenant Commander, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. 2024–21123 Filed 9–19–24; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2024–SCC–0091]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Performance Report for Graduate Assistance in Areas of National Need (GAANN) Program

AGENCY: Office of Postsecondary Education (OPE), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act (PRA) of 1995, the Department is proposing an extension without change of a currently approved information collection request (ICR).

DATES: Interested persons are invited to submit comments on or before October 21, 2024.

ADDRESSES: Written comments and recommendations for proposed information collection requests should be submitted within 30 days of publication of this notice. Click on this link *www.reginfo.gov/public/do/PRAMain* to access the site. Find this information collection request (ICR) by selecting "Department of Education" under "Currently Under Review," then check the "Only Show ICR for Public Comment" checkbox. Reginfo.gov provides two links to view documents related to this information collection request. Information collection forms and instructions may be found by clicking on the "View Information Collection (IC) List" link. Supporting statements and other supporting documentation may be found by clicking on the "View Supporting Statement and Other Documents" link.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Rebecca Ell, 202–453–6348.

SUPPLEMENTARY INFORMATION: The Department is especially interested in public comment addressing the following issues: (1) is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Performance report for Graduate Assistance in Areas of National Need (GAANN) Program.

OMB Control Number: 1840–0748.

Type of Review: An extension without change of a currently approved ICR.

Respondents/Affected Public: Private Sector; State, Local, and Tribal Governments.

Total Estimated Number of Annual Responses: 291.

Total Estimated Number of Annual Burden Hours: 3,274.

Abstract: Graduate Assistance in Areas of National Need (GAANN) Program grantees must submit a performance report annually. In addition, grantees are required to submit a supplement to the final performance report two years after submission of their final report. The reports are used to evaluate grantee performance. Further, the data from the reports will be aggregated to evaluate the accomplishments and impact of the GAANN Program as a whole. Results will be reported to the Secretary in order to respond to performance requirements.

Dated: September 17, 2024.

Kun Mullan,

PRA Coordinator, Strategic Collections and Clearance, Governance and Strategy Division, Office of Chief Data Officer, Office of Planning, Evaluation and Policy Development.

[FR Doc. 2024–21563 Filed 9–19–24; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2024–SCC–0090]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Indian Education Professional Development Grants Program: GPRA and Service Payback Data Collection

AGENCY: Office of Elementary and Secondary Education, Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act (PRA) of 1995, the Department is proposing an extension without change of a currently approved information collection request (ICR).

DATES: Interested persons are invited to submit comments on or before October 21, 2024.

ADDRESSES: Written comments and recommendations for proposed

Figure N.1-2: Federal Register Vol. 89, No. 183, Friday, September 20, 2024 (continued)

the Interior and the Federal Power Commission under Section 5 of the Flood Control Act of 1944, 16 U.S.C. 825s, relating to the Southwestern Power Administration (Southwestern), were transferred to and vested in the Secretary of Energy. By Delegation Order No. S1–DEL–RATES–2016, effective November 19, 2016, the Secretary of Energy delegated: (1) the authority to develop power and transmission rates to Southwestern's Administrator; (2) the authority to confirm, approve, and place such rates into effect on an interim basis to the Deputy Secretary of Energy; and (3) the authority to confirm, approve, and place into effect on a final basis, or to remand or disapprove such rates, to the Federal Energy Regulatory Commission (FERC). By Delegation Order No. S1–DEL–S3–2024, effective August 30, 2024, the Secretary of Energy also delegated the authority to confirm, approve, and place such rates into effect on an interim basis to the Under Secretary for Infrastructure. By Redelegation Order No. S3–DEL–SWPA1–2023, effective April 10, 2023, the Under Secretary for Infrastructure redelegated the authority to confirm, approve, and place such rates into effect on an interim basis to the Southwestern Administrator.

Background

On December 17, 2015, in Rate Order No. SWPA–70, the Deputy Secretary of Energy placed into effect the current Robert D. Willis Hydropower Project (Robert D. Willis) rate schedule (RDW–15) on an interim basis for the period January 1, 2016 to September 30, 2019. FERC confirmed and approved RDW–15 on a final basis on June 15, 2016 for a period ending September 30, 2019. On September 22, 2019, in Rate Order No. SWPA–76, the Assistant Secretary for Electricity extended RDW–15 for two years, for the period of October 1, 2019 through September 30, 2021. On August 30, 2021, in Rate Order No. SWPA–79, the Administrator, Southwestern, extended RDW–15 for two years, for the period of October 1, 2021 through September 30, 2023. On September 25, 2023, in Rate Order No. SWPA–83, the Administrator, Southwestern, temporarily extended RDW–15 for one year, for the period of October 1, 2023 through September 30, 2024.

Discussion

Southwestern's current rate schedule for the Robert D. Willis isolated rate system, RDW–15, is based on the 2015 Power Repayment Study (PRS). Each subsequent annual PRS through 2022 indicated the need for a revenue adjustment within a plus or minus five percent range of the current revenue estimate. It is Southwestern's practice for the Administrator to defer, on a case-by-case basis, revenue adjustments for isolated rate systems that are within plus or minus five percent of the revenue estimated from the current rate schedule. Therefore, the Administrator deferred revenue adjustments annually for Robert D. Willis through 2022. The 2023 PRS indicated a need for a revenue adjustment above five percent and therefore a new rate is needed. However, implementation of a rate adjustment plan including a new rate schedule (RDW–23), and the associated procedures for public participation in accordance with 10 CFR part 903 will not be completed in time for the new rate schedule to be placed into effect prior to the September 30, 2024, expiration of the current rate schedule and thus temporary extension of the current rate schedule is necessary. Pursuant to 10 CFR 903.23(b) and Redelegation Order No. S3–DEL–SWPA1–2023, Southwestern's Administrator may extend existing rates on a temporary basis without advance notice or comment pending further action. In such a circumstance, the Administrator shall publish notice of said extension in the **Federal Register** and promptly advise FERC of the extension. The revenue collection associated with the extension of the current rate will be considered in the development of the new rate based on the 2023 PRS such that repayment obligations are met consistent with the provisions of U.S. Department of Energy (DOE) Order No. RA 6120.2.

Availability of Information

Information regarding the extension of the rate schedule is available for public review in the offices of Southwestern Power Administration, One West Third Street Suite 1500, Tulsa, Oklahoma 74103. The rate schedule is available on the Southwestern website at *www.energy.gov/swpa/rates-and-repayment.*

Order

In view of the foregoing and pursuant to the authority delegated to me by the Secretary of Energy, I hereby extend, effective October 1, 2024, Robert D. Willis *Rate Schedule RDW–15, Wholesale Rates for Hydro Power and Energy.* The rate schedule shall remain in effect on a temporary basis through September 30, 2025, unless superseded.

Signing Authority

This document of the Department of Energy was signed on September 13, 2024, by Michael S. Wech, Administrator for Southwestern Power Administration, pursuant to delegated authority from the Secretary of Energy. That document, with the original signature and date, is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of DOE. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on September 17, 2024.

Treena V. Garrett,

Federal Register Liaison Officer, U.S. Department of Energy.

[FR Doc. 2024–21530 Filed 9–19–24; 8:45 am]

BILLING CODE 6450–01–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL OP–OFA–144]

Environmental Impact Statements; Notice of Availability

Responsible Agency: Office of Federal Activities, General Information 202–564–5632 or *https://www.epa.gov/nepa.*

Weekly receipt of Environmental Impact Statements (EIS)

Filed September 9, 2024 10 a.m. EST Through September 16, 2024 10 a.m. EST

Pursuant to 40 CFR 1506.9.

Notice

Section 309(a) of the Clean Air Act requires that EPA make public its comments on EISs issued by other Federal agencies. EPA's comment letters on EISs are available at: *https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/search.*

EIS No. 20240163, Draft Supplement, FHWA, FTA, WA, Interstate Bridge Replacement Program, Comment Period Ends: 11/18/2024, Contact: Thomas Goldstein, P.E. 503–316–2545.

EIS No. 20240164, Draft Supplement, USN, USCG, AL, Atlantic Fleet Training and Testing, Comment Period Ends: 11/21/2024, Contact: Todd Kraft 757–836–2943.

EIS No. 20240165, Draft, BLM, NV, Copper Rays Solar Project, Comment Period Ends: 12/19/2024, Contact: Jessica Headen 702–515–5206.

EIS No. 20240166, Final, BLM, NV, Rhyolite Ridge Lithium-Boron Mine Project, Review Period Ends: 10/21/

Figure N.1-2: Federal Register Vol. 89, No. 183, Friday, September 20, 2024 (continued)

2024, Contact: Scott Distel 775–861–6476.

EIS No. 20240167, Final, BLM, UT, Cross-Tie 500 kV Transmission Project, Review Period Ends: 10/31/2024, Contact: Amber Koski 801–320–8300.

EIS No. 20240168, Final, FTA, WA, West Seattle Link Extension, Review Period Ends: 10/21/2024, Contact: Erin Littauer 206–220–7521.

EIS No. 20240169, Draft, GSA, TX, Proposed Modernization of the Bridge of the Americas Land Port of Entry, El Paso, Texas, Comment Period Ends: 11/04/2024, Contact: Karla Carmichael 817–822–1372.

Amended Notice

EIS No. 20240118, Draft, Caltrans, CA, Albion River Bridge Project, Comment Period Ends: 10/09/2024, Contact: Liza Walker 707–502–9657.

Revision to FR Notice Published 07/05/2024; Extending the Comment Period from 09/09/2024 to 10/09/2024.

Dated: September 16, 2024.

Timothy Witman,

Acting Director, NEPA Compliance Division, Office of Federal Activities.

[FR Doc. 2024–21552 Filed 9–19–24; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[EPA–HQ–OPPT–2024–0057; FRL–11683–08–OCSPP]

Certain New Chemicals; Receipt and Status Information for August 2024

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: EPA is required under the Toxic Substances Control Act (TSCA), as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act, to make information publicly available and to publish information in the **Federal Register** pertaining to submissions under TSCA section 5, including notice of receipt of a Premanufacture notice (PMN), Significant New Use Notice (SNUN) or Microbial Commercial Activity Notice (MCAN), including an amended notice or test information; an exemption application (Biotech exemption); an application for a test marketing exemption (TME), both pending and/or concluded; a notice of commencement (NOC) of manufacture (including import) for new chemical substances; and a periodic status report on new chemical substances that are currently under EPA review or have recently concluded review. This document covers the period from 8/01/2024 to 8/31/2024.

DATES: Comments identified by the specific case number provided in this document must be received on or before October 21, 2024.

ADDRESSES: Submit your comments, identified by docket identification (ID) number EPA–HQ–OPPT–2024–0057, through the *Federal eRulemaking Portal* at *https://www.regulations.gov.* Follow the online instructions for submitting comments. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Additional instructions on commenting and visiting the docket, along with more information about dockets generally, is available at *https://www.epa.gov/.*

FOR FURTHER INFORMATION CONTACT:

For technical information contact: Jim Rahai, Project Management and Operations Division (MC 7407M), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, DC 20460–0001; telephone number: (202) 564–8593; email address: *rahai.jim@epa.gov.*

For general information contact: The TSCA-Hotline, ABVI-Goodwill, 422 South Clinton Ave., Rochester, NY 14620; telephone number: (202) 554–1404; email address: *TSCA-Hotline@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. Executive Summary

A. What action is the Agency taking?

This document provides the receipt and status reports for the period from 8/01/2024 to 8/31/2024. The Agency is providing notice of receipt of PMNs, SNUNs, and MCANs (including amended notices and test information); an exemption application under 40 CFR part 725 (Biotech exemption); TMEs, both pending and/or concluded; NOCs to manufacture a new chemical substance; and a periodic status report on new chemical substances that are currently under EPA review or have recently concluded review.

EPA is also providing information on its website about cases reviewed under the amended TSCA, including the section 5 PMN/SNUN/MCAN and exemption notices received, the date of receipt, the final EPA determination on the notice, and the effective date of EPA's determination for PMN/SNUN/MCAN notices on its website at: *https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/status-pre-manufacture-notices.* This information is updated on a weekly basis.

B. What is the Agency's authority for taking this action?

Under the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 *et seq.,* a chemical substance may be either an ''existing'' chemical substance or a ''new'' chemical substance. Any chemical substance that is not on EPA's TSCA Inventory of Chemical Substances (TSCA Inventory) is classified as a ''new chemical substance,'' while a chemical substance that is listed on the TSCA Inventory is classified as an ''existing chemical substance.'' (See TSCA section 3(11).) For more information about the TSCA Inventory please go to: *https://www.epa.gov/inventory.*

Any person who intends to manufacture (including import) a new chemical substance for a non-exempt commercial purpose, or to manufacture or process a chemical substance in a non-exempt manner for a use that EPA has determined is a significant new use, is required by TSCA section 5 to provide EPA with a PMN, MCAN, or SNUN, as appropriate, before initiating the activity. EPA will review the notice, make a risk determination on the chemical substance or significant new use, and take appropriate action as described in TSCA section 5(a)(3).

TSCA section 5(h)(1) authorizes EPA to allow persons, upon application and under appropriate restrictions, to manufacture or process a new chemical substance, or a chemical substance subject to a significant new use rule (SNUR) issued under TSCA section 5(a)(2), for ''test marketing'' purposes, upon a showing that the manufacture, processing, distribution in commerce, use, and disposal of the chemical will not present an unreasonable risk of injury to health or the environment. This is referred to as a test marketing exemption, or TME. For more information about the requirements applicable to a new chemical go to: *https://www.epa.gov/under-tsca.*

Under TSCA sections 5 and 8 and EPA regulations, EPA is required to publish in the **Federal Register** certain information, including notice of receipt of a PMN/SNUN/MCAN (including amended notices and test information); an exemption application under 40 CFR part 725 (biotech exemption); an application for a TME, both pending and concluded; NOCs to manufacture a new chemical substance; and a periodic status report on the new chemical substances that are currently under EPA

Figure N.1-2: Federal Register Vol. 89, No. 183, Friday, September 20, 2024 (continued)

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APPENDIX O
GEOGRAPHIC INFORMATION SYSTEM DATA SOURCES

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

O GEOGRAPHIC INFORMATION SYSTEM DATA SOURCES O-1

List of Figures

This appendix does not contain figures.

List of Tables

Table O-1: Data Sources by Feature/Layer..... O-1

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O GEOGRAPHIC INFORMATION SYSTEM DATA SOURCES

Table O-1: Data Sources by Feature/Layer

Feature/Layer	*Applicable Figures*	*Data Source References*
Commercial Shipbuilding Facility	Multiple Figures (Global)	Government Furnished Information Department of the Navy (2024)
Bays, Inshore Waters, and Civilian Ports	Multiple Figures (Global)	Government Furnished Information Department of the Navy (2024)
Navy and Select Coast Guard Port or Pierside Locations	Multiple Figures (Global)	Government Furnished Information Department of the Navy (2024)
Military Training/ Range/Operation Areas	Multiple Figures (Global)	Government Furnished Information Department of the Navy (2024)
Special Use Airspace	Multiple Figures (Global)	NGA Digital Aeronautical Flight Information File (DAFIF) (2010) Government Furnished Information Department of the Navy (2024)
Ship Shock Area	Multiple Figures (Global)	Military Training Locations – Commander, U.S. Fleet Forces – U.S. Navy, Common Operating Picture (COP) Atlantic formerly known as GOMEX. Updated 10/2022. SDSFIE Version 2.6
SINKEX Box	Multiple Figures (Global)	Military Training Locations – Commander, U.S. Fleet Forces – U.S. Navy, Common Operating Picture (COP) Atlantic formerly known as GOMEX. Updated 10/2022. SDSFIE Version 2.6
AFTT Study Area	Multiple Figures (Global)	Military Training Locations – Commander, U.S. Fleet Forces – U.S. Navy, Common Operating Picture (COP) Atlantic formerly known as GOMEX. Updated 10/2022. SDSFIE Version 2.6
Amphibious Vessel Testing	Multiple Figures (Global)	Government Furnished Information. Provided to Leidos by Jocelyn Pelser Borcuk, NUWC Newport via email on December 5, 2023. Department of the Navy (2024)
Ocean Depth	Multiple Figures (Global)	Amante, C. and B.W. Eakins, 2009. ETOPO1 1 Arc-Minute Global Relief Model: Procedures, Data Sources and Analysis. NOAA Technical Memorandum NESDIS NGDC-24. National Geophysical Data Center, NOAA. doi:10.7289/V5C8276M [2017] https://www.ngdc.noaa.gov/docucomp/page?xml=NOAA/NESDIS/NGDC/MGG/DEM/iso/xml/316.xml&view=getDataView&header=none
3 NM/9 NM State/Federal Boundary	2.1-6	Government Furnished Information Department of the Navy (2024)
Coast Guard Station	2.1-7	Commander, U.S. Fleet Forces – U.S. Navy, Common Operating Picture (COP) Atlantic formerly known as GOMEX. Updated 10/2022. SDSFIE Version 2.6
Coast Guard Cutter Station	2.1-7	Units by OPFAC LANT CUTTERS lat long.xlsx. Provided to Leidos on 11/28/2023

Notes: AFTT = Atlantic Fleet Training and Testing; BIA = Biologically Important Areas; CO = carbon monoxide; COP = Common Operating Procedure; DAFIF = Digital Aeronautical Flight Information File; EPA = Environmental Protection Agency; GIS = Geographic Information System; NESDIS = National Environmental Satellite, Data, and Information Service; NGA = National Geospatial Intelligence Agency; NM = nautical mile; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; OPFAC LANT = Operational Facility Atlantic; Pb = lead; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; POC = Point of Contact; SFDIE = Spatial Data Standards for Facilities, Infrastructure, and Environment; SO_2 = sulfur dioxide; U.S. = United States; VA = Virginia

Table O-1: Data Sources by Feature/Layer (continued)

Feature/Layer	*Applicable Figures*	*Data Source References*
Section 3.1	3.1-1, 3.1-2, 3.1-3, 3.1-4	See Ozone, CO, Pb, $PM_{2.5}$, and PM_{10} Nonattainment/Maintenance Areas
Ozone, CO, Pb, $PM_{2.5}$, and PM_{10} Nonattainment/ Maintenance Areas	3.1-2 - 3.1-5	U.S. Environmental Protection Agency: CO Maintenance Area (1971 Standard) - 12/04/2013 Pb (2008 Standard) – 2017 - 02/07/2017 $PM_{2.5}$ (2012 Standard) - 3/21/2016 $PM_{2.5}$ (2006 Standard) - 9/15/2011 $PM_{2.5}$ (1997 Standard) - 8/23/2011 PM_{10} (1987 Standard) - 12/5/2013 8-Hour Ozone (1997 Standard) – 9/8/2015 8-Hour Ozone (2008 Standard) – 6/13/2012 8-Hour Ozone (2015 Standard) – 2/1/2022 SO_2 (2010 Standard) – 6/30/2021 https://www.epa.gov/green-book/green-book-gis-download
Section 3.2	3.2-2, 3.2-3, 3.2-4	EPA National Aquatic Resource Surveys https://www.epa.gov/national-aquatic-resource-surveys/data-national-aquatic-resource-surveys 2010
Section 3.2	3.2-6, 3.2-7, 3.2-8	EPA National Aquatic Resource Surveys https://www.epa.gov/national-aquatic-resource-surveys/data-national-aquatic-resource-surveys 2010
Section 3.3	3.3-1, 3.3-2, 3.3-3, 3.3-4, 3.3-5, 3.3-6, 3.3-7, 3.3-8, 3.3-9, 3.3-10	U.S. Department of the Navy. (2024). Phase IV Atlantic Fleet Training and Testing: Marine Habitat Database Technical Report. Naval Facilities Engineering Systems Command Atlantic, Norfolk, VA. 66 pages
Section 3.5	3.5-1	NMFS Office of Protected Resources, 2024: Mountainous Star Coral, Boulder Star Coral, Lobed Star Coral, Pillar Star Coral, and Rough Cactus Coral https://www.fisheries.noaa.gov/inport/item/65261 and https://www.fisheries.noaa.gov/inport/item/65253 and https://www.fisheries.noaa.gov/inport/item/65259 and https://www.fisheries.noaa.gov/inport/item/65263 and https://www.fisheries.noaa.gov/inport/item/65265
		NMFS Office of Protected Resources, 2024: Elkhorn and Staghorn Coral https://www.fisheries.noaa.gov/inport/item/65405 and https://www.fisheries.noaa.gov/inport/item/65407
Critical Habitat (areas) – Atlantic Salmon	3.6-1	NOAA (2009). Designation of Critical Habitat for Atlantic Salmon (Salmo salar). 74 *Federal Register* 29300. https://www.fisheries.noaa.gov/resource/map/atlantic-salmon-gulf-maine-dps-critical-habitat-map-and-gis-data
Critical Habitat – Atlantic Sturgeon	3.6-2, 3.6-3	NOAA NMFS: http://sero.nmfs.noaa.gov/maps_gis_data/protected_resources/critical_habitat/geodata/proposed_atlantic_sturgeon_critical_habitat_ln.htm 2016

Table O-1: Data Sources by Feature/Layer (continued)

Feature/Layer	*Applicable Figures*	*Data Source References*
Critical Habitat – Gulf Sturgeon	3.6-4	NOAA (2022). Final Critical Habitat for the Gulf Sturgeon (*Acipenser oxyrinchus desotoi*). 68 *Federal Register* 13370. 2003. https://www.fisheries.noaa.gov/resource/map/gulf-sturgeon-critical-habitat-map-and-gis-data
Critical Habitat – Smalltooth Sawfish	3.6-5	NOAA (2009). Final Critical Habitat for the U.S. distinct population segment (DPS) of Smalltooth Sawfish (*Pristis pectinata*). 74 *Federal Register* 45353. https://www.fisheries.noaa.gov/resource/map/smalltooth-sawfish-critical-habitat-map-and-gis-data
Critical Habitat – Nassau Grouper	3.6-6	NOAA (2022). Critical Habitat for the Nassau Grouper (*Epinephelus striatus*). 87 *Federal Register* 62930. https://noaa.hub.arcgis.com/datasets/8dfb377e2a1649dbac19a4fad0d6dbda_260/about
Mitigation Areas	3.6-7, 3.6-8	Government Furnished Information Department of the Navy (2024)
Section 3.7	3.7-1	NMFS Office of Protected Resources, 2024: North Atlantic Right Whale, https://www.fisheries.noaa.gov/inport/item/65383
	3.7-2	U.S. Fish and Wildlife Service. 2005. Final Critical Habitat for the West Indian manatee (*Trichechus manatus*) [Vector digital data]. Federal Register (41 *Federal Register* 41914), September 24, 1976 http://criticalhabitat.fws.gov/docs/crithab/zip/fch_41fr41914_trma_2009.zip
	3.7-3	NMFS Office of Protected Resources, 2024: Proposed_RicesWhale_20230724, https://www.fisheries.noaa.gov/inport/item/70324
Section 3.7	3.7-3, 5.4-4, 5.4-5	NOAA Fisheries Greater Atlantic Regional Fisheries Office, 2016 http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm
Green Turtle Designated Critical Habitat	3.8-1, 3.8-3	National Oceanic and Atmospheric Administration Fisheries, 2024 https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat
Green Turtle Proposed Critical Habitat	3.8-1, 3.8-2, 3.8-3, 3.8-4, 3.8-12, 3.8-13	National Oceanic and Atmospheric Administration Fisheries, 2023 https://noaa.maps.arcgis.com/home/item.html?id=475809f0b637409b8027502fd05dbeb6
Section 3.8	3.8-4, 3.8-5	National Oceanic and Atmospheric Administration National Marine Fisheries Service, 1998
Hawksbill Turtle Designated Critical Habitat	3.8-5	National Oceanic and Atmospheric Administration Fisheries, 2024 https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat
Leatherback Turtle Designated Critical Habitat	3.8-6	National Oceanic and Atmospheric Administration Fisheries, 2024 https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat

Table O-1: Data Sources by Feature/Layer (continued)

Feature/Layer	*Applicable Figures*	*Data Source References*
Section 3.8	3.8-6, 3.8-7, 3.8-8	NOAA Fisheries: http://www.nmfs.noaa.gov/pr/species/turtles/criticalhabitat_loggerhead.htm 2014
Loggerhead Turtle Designated Critical Habitat	3.8-7, 3.8-8, 3.8-9, 3.8-10, 3.8-14, 3.8-15, 3.8-16	National Oceanic and Atmospheric Administration Fisheries, 2024 https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat
Section 3.8	3.8-9	National Oceanic and Atmospheric Administration National Marine Fisheries Service, 1979
Section 3.8	3.8-10	U.S. Fish and Wildlife Service, 2003 https://www.fws.gov/verobeach/GIS.html
American Crocodile Designated Critical Habitat	3.8-11	U.S. Fish and Wildlife Service, 2024 https://ecos.fws.gov/ecp/report/table/critical-habitat.html
Section 3.9	3.9-1, 3.9-2, 3.9-3	U.S. Fish and Wildlife Service, 2009 https://www.fws.gov/verobeach/GIS.html
Piping Plover Designated Critical Habitat	3.9-1, 3.9-2, 3.9-3, 3.9-4, 3.9-9, 3.9-10	U.S. Fish and Wildlife Service, 2024 https://ecos.fws.gov/ecp/report/table/critical-habitat.html
Red Knot Proposed Critical Habitat	3.9-5, 3.9-6, 3.9-7, 3.9-8, 3.9-11, 3.9-12	U.S. Fish and Wildlife Service, 2024 https://ecos.fws.gov/ecp/report/table/critical-habitat.html
National Marine Sanctuaries	6.1-1, 6.1-2	NOAA Marine Protected Areas Inventory, 2023 https://marineprotectedareas.noaa.gov/dataanalysis/mpainventory/
Chapter 5	5.7-1, 5.7-2, 5.7-3, 5.7-4, 5.7-5, 5.7-6	Department of the Navy Navy POC: Ben Bartley Version: 2024
		U.S. Department of the Navy. (2024). Phase IV Atlantic Fleet Training and Testing: Marine Habitat Database Technical Report. Naval Facilities Engineering Systems Command Atlantic, Norfolk, VA. 66 pages. Available on the AFTT project website (https://www.nepa.navy.mil/aftteis/).
Chapter 6	2.3-2, 6.1-5, 6.1-6	NOAA National Marine Sanctuaries, 2004 https://sanctuaries.noaa.gov/library/imast_gis.html
Chapter 6	6.1-1, 6.1-2, 6.1-3, 6.1-4	NOAA National Marine Protected Areas Center, 2015 United States Fish and Wildlife Service, 2017 https://marinecadastre.gov/data/
Chapter 6	6.1-1, 6.1-2, 6.1-3, 6.1-4	National Park Service, 2017 https://catalog.data.gov/dataset/national-park-boundariesf0a4c#sec-date
Appendix F (Habitats)	F.1-1	U.S. Department of the Navy. (2024). Phase IV Atlantic Fleet Training and Testing: Marine Habitat Database Technical Report. Naval Facilities Engineering Systems Command Atlantic, Norfolk, VA. 66 pages

Table O-1: Data Sources by Feature/Layer (continued)

Feature/Layer	*Applicable Figures*	*Data Source References*
Appendix F (Invertebrates)	F.3-1	U.S. Department of the Navy. (2024). Phase IV Atlantic Fleet Training and Testing: Marine Habitat Database Technical Report. Naval Facilities Engineering Systems Command Atlantic, Norfolk, VA. 66 pages
		Same as legend item: 3 NM State/Federal Boundary 9 NM State/Federal Boundary
Appendix F (Marine Mammals)	F.5-1, F.5-2, F.5-3, F.5-4, F.5-5, F.5-6, F.5-7, F.5-8, F.5-9, F.5-10, F.5-11, F.5-12	National Oceanic and Atmospheric Administration. Biologically Important Areas, Overview of BIA II [unpublished GIS data for the East Coast and Gulf of America]. Available from: https://oceannoise.noaa.gov/biologically-important-areas

Notes: AFTT = Atlantic Fleet Training and Testing; BIA = Biologically Important Areas; CO = carbon monoxide; COP = Common Operating Procedure; DAFIF = Digital Aeronautical Flight Information File; EPA = Environmental Protection Agency; GIS = Geographic Information System; NESDIS = National Environmental Satellite, Data, and Information Service; NGA = National Geospatial Intelligence Agency; NM = nautical mile; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; OPFAC LANT = Operational Facility Atlantic; Pb = lead; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than or equal to 10 microns in diameter; POC = Point of Contact; SFDIE = Spatial Data Standards for Facilities, Infrastructure, and Environment; SO_2 = sulfur dioxide; U.S. = United States; VA = Virginia

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APPENDIX P
LIST OF PREPARERS

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Final

Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement Atlantic Fleet Training and Testing

TABLE OF CONTENTS

P LIST OF PREPARERS P-1

List of Figures

This appendix does not contain figures.

List of Tables

This appendix does not contain tables.

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