FINAL ENVIRONMENTAL ASSESSMENT

For

Relocation of National Oceanic and Atmospheric Administration Research Vessels

At

Naval Station Newport
Newport, Rhode Island

December 2022

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Abstract

Designation:	Final Environmental Assessment
Title of Proposed Action:	Relocation of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport
Project Location:	Newport, Rhode Island
Lead Agency for the EA:	National Oceanic and Atmospheric Administration
Affected Region:	Newport County, Rhode Island
Action Proponent:	National Oceanic and Atmospheric Administration
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Date:	December 2022

This Final Environmental Assessment (EA) was prepared by the United States Navy for National Oceanic and Atmospheric Administration (NOAA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code §4321, et seq.), as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations Parts 1500-1508); and Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities, Companion Manual for NOAA Administrative Order 216-6A (Effective: January 13, 2017). The Proposed Action would establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island. The proposed location of the pier and shoreside facilities would be at the former site of Robert E. Derecktor Shipyard in Coddington Cove, referred to as Pier Landing Site. A second location, near NAVSTA Newport Building 11, would also be developed as a parking area. Structures that would be constructed at Pier Landing Site would be located outside of the 100-year floodplain but would be within the 500-year floodplain. Portions of the parking lots and exterior storage area would be located within the limits of the 100-year floodplain. The additional parking facilities at Building 11 Parking Area would not be located within the floodplain. Project construction is planned to begin in 2024 and take approximately 2 years to complete. This EA evaluates the potential environmental impacts associated with two action alternatives (the Proposed Action and the Action Alternative) and the No Action Alternative to the following resource areas: land use, geological resources, hydrological processes, air quality, water resources, cultural resources, flora and fauna, wetlands, floodplains, coastal zone management, noise, transportation, utilities and solid waste, visual impacts, and hazardous materials. Cumulative impacts to these resources are also evaluated. The Proposed Action is the Preferred Alternative for this EA.

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Executive Summary

ES.1 Proposed Action

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (Figure 1-1). The Proposed Action includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove. The proposed location of the pier and shoreside facilities would be at the Former Robert E. Derecktor Shipyard site (Former Derecktor Shipyard, also known as Environmental Restoration Program [ERP] Site 19), in Coddington Cove, herein referred to as Pier Landing Site (Figure 1-2). Approximately 728 feet of bulkhead would be constructed at the Pier Landing Site to reinforce and stabilize the existing deteriorating bulkhead. Additional parking facilities would be constructed on a vacant site located approximately one quarter mile east of Pier Landing Site, herein referred to as Building 11 Parking Area (Figure 1-2). Structures that would be constructed at Pier Landing Site would be located outside of the Federal Emergency Management Agency (FEMA)-designated 100-year floodplain but would be within the FEMA-designated 500-year floodplain. Portions of the parking lots and exterior storage area would be located within the limits of the 100-year floodplain. The additional parking facilities at Building 11 Parking Area would not be located within any FEMA-designated floodplains. The Proposed Action is the Preferred Alternative. Construction is planned to begin in 2024 and take approximately 2 years to complete. This Environmental Assessment (EA) was prepared for NOAA by the United States (U.S.) Navy in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §4321, et seq.), as implemented by the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); and Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities, Companion Manual for NOAA Administrative Order 216-6A (Effective: January 13, 2017). In accordance with NEPA, the Navy is also preparing a Categorical Exclusion for the real estate agreement that would allow NOAA's use of the property.

ES.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide facilities and functions to meet the operational requirements necessary to support the relocation of four NOAA Atlantic Fleet research vessels at NAVSTA Newport.

The need for the Proposed Action is due to the insufficiency of current research vessel locations, including deteriorating conditions of Pier 2 at NAVSTA Newport and user conflicts at other locations. The Proposed Action would also gain efficiencies by co-locating NOAA vessels in support of NOAA's mission and operational requirements consistent with the NOAA – U.S. Coast Guard Fleet Plan (2016) and Cooperative Maritime Strategy (2013). Relocation of NOAA vessels at NAVSTA Newport would establish and expand effective partnerships that would integrate operational capabilities, reduce redundancies, and unify commands resulting in greater mission success.

ES.3 Alternatives Considered

Alternatives were developed based upon screening factors regarding the physical setting and availability of the site, navigation and pier structure requirements, and shore facility and services requirements. NOAA is considering two alternatives: the Proposed Action and the Action Alternative, in addition to a No Action Alternative. Both the Proposed Action and the Action Alternative would meet the purpose of and need for the proposed project. The Proposed Action would permanently homeport four ships and construct a new pier and associated shoreside facilities at a location between the existing T-Pier and the existing breakwater near Pier 1 in Coddington Cove. Additional parking facilities would be constructed near Building 11 to the east of the pier location. The Action Alternative would permanently homeport four ships and construct a new pier and associated shoreside and support facilities at the existing T-Pier site in Coddington Cove. Additional parking would also be constructed at Building 11 Parking Area. The No Action Alternative would have NOAA operations remain as under current conditions. No pier or facility construction or relocation of research vessels would occur.

ES.4 Summary of Environmental Resources Evaluated in the EA

CEQ regulations, NEPA, and Navy/NOAA instructions for implementing NEPA, specify that an EA should address those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact.

Several important existing resources were analyzed in detail in the EA, including water quality, noise, threatened and endangered species, marine mammals, essential fish habitat (EFH), historic properties, and the coastal zone. The EA discusses proposed mitigation measures and consultations that were undertaken. Technical studies and regulatory documents included in this EA are: Air emissions calculations for Clean Air Act Conformity, Request for Incidental Harassment Authorization (IHA) under the Marine Mammal Protection Act (MMPA), EFH Assessment, Acoustic Transmission Loss Modeling, National Historic Preservation Act Section 106 Documentation, Endangered Species Act (ESA) Correspondence, and a Coastal Consistency Determination.

The following resources have been evaluated in this EA: land use, geological resources, hydrological processes, air quality, water resources, cultural resources, flora and fauna, wetlands, floodplains, coastal zone management, noise, transportation, utilities and solid waste, visual resources, public health and safety, and hazardous materials. Because potential impacts to airfields and airspace, recreational resources, farmland, and environmental justice were non-existent, these resources were not evaluated in this EA.

ES.5 Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating Actions

Land Use. Land use and development at NAVSTA Newport is guided by the installation's Master Plan to ensure that existing and future development and land use are compatible with the installation mission and adjacent land uses (NAVSTA Newport, 2008). Existing undeveloped and underutilized land at Coddington Cove (Pier Landing Site and Building 11 Parking Area) would be permanently converted from disturbed land and lawn, respectively, to active uses that are consistent and compatible with designated and adjacent land uses and intended long-term uses for the respective sites. As a result, both the Proposed Action and Action Alternative would have minimal impacts on land use at NAVSTA Newport. Therefore, implementation of the Proposed Action would not result in significant impacts to land use.

Geologic Resources. Long-term impacts to topography would occur under both the Proposed Action and Action Alternative as a result of construction activity and grading at Pier Landing Site and at Building 11 Parking Area. The construction of buildings and structures at Pier Landing Site would result in a long-term, localized change to site topography. Additional minor long-term impacts would result from site grading that would direct stormwater flows away from the site structures and towards the stormwater system designed for the respective sites. Additional temporary impacts would result from the excavation and backfilling for utility connections at both Pier Landing Site and Building 11 Parking Area. These impacts, although long-term, are minor and would have no large-scale effect on topography. Therefore, impacts to topography would not be significant.

Some pier, bulkhead, floating dock, and building foundation support piles may need to be drilled or hammered into the underlying bedrock as part of the Proposed Action. This impact would not adversely affect the overall geology of the area and would not be significant.

Short-term impacts to soil would occur as a result of the Proposed Action from disturbance by construction activities. Long-term impacts would result from the addition of impervious surfaces. In total, approximately 180,000 square feet (sf) of soil would be disturbed by construction activities and utilities installation at Pier Landing Site. Approximately 120,000 sf of soil area would be permanently converted to impervious surface resulting from the construction of buildings, structures, sidewalks, roadways, and parking areas. Minor localized changes to surface soils could occur from land hardening activities designed to provide additional foundation support to the proposed buildings and structures (NAVFAC MIDLANT, 2022). However, these impacts would be limited to the project footprints, be managed with the use of best management practices (BMPs), would not result in a change to site soil classification, and would not be significant. Any excess soils generated at Pier Landing Site would be tested for contaminants of concern and reused or disposed of according to Rhode Island Department of Environmental Management (RIDEM) and U.S. Environmental Protection Agency (USEPA) criteria. Removal of contaminated soils would have a beneficial impact.

Similar impacts would occur at Building 11 Parking Area where approximately 60,000 sf of soil disturbance would occur from construction activities and up to approximately 40,000 sf of soil would be converted to impervious surfaces as a result of the construction of the parking area. With BMPs and General Permit requirements incorporated, any impacts from soil disturbance would be minimized and would not be significant.

The Proposed Action and Action Alternative would have short-term and long-term impacts to marine sediments from shading and pile installation. Impacts to sediments would be greater under the Proposed Action because the proposed pier location has not been previously developed under this alternative. Short-term impacts would result under the Proposed Action and Action Alternative from the anchoring of construction vessels and from template installation and relocation during construction. These impacts would be minor and localized. Under the Proposed Action, approximately 55,000 sf of sediment would be shaded by the new pier and trestle (40,000 sf for the Action Alternative) and approximately 3,360 sf of sediment surface would be lost from pile and bulkhead installation (4,000 sf for the Action Alternative). The incremental filling associated with the Proposed Action would be negligible when considered against the 147-square mile surface area of Narragansett Bay (less than one thousandth of a percent) and 395-acre surface area of Coddington Cove (0.02 percent). Therefore, impacts to bathymetry and marine sediments would not be significant.

Hydrological Processes. The Proposed Action or Action Alternative would have negligible impacts on the currents, hydrodynamics, salinity, and oxygen distribution in Coddington Cove. The construction of a new pile-supported pier at either location within Coddington Cove would not create obstructions that would greatly alter flow patterns and currents. Upland development would be designed and operated in compliance with National Pollutant Discharge Elimination System requirements to ensure that stormwater is managed so as to have no impacts on the temperature, salinity, and oxygen distribution in

Coddington Cove or Narragansett Bay. Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to hydrological processes.

Air Quality. The potential air emissions of the Proposed Action were quantified, and the results show that emissions would be well below the applicable General Conformity Rule *de minimis* criteria. Greenhouse gas emissions from the Proposed Action or Action Alternative would not have an appreciable effect on overall global or United States cumulative greenhouse gas emissions and global climate change. Implementation of the Proposed Action or the Action Alternative would not result in significant impacts to air quality.

Water Resources. The Proposed Action and Action Alternative would have no impact on groundwater. There are no sole source aquifers, drinking water supply watersheds, or groundwater recharge areas underlying any of the proposed upland or in-water construction areas. Groundwater at Pier Landing Site is currently undergoing long-term monitoring for contamination and would continue to be monitored until remediation goals are met. Compliance with regulations and instructions for material storage and disposal and the implementation stormwater controls would minimize the potential for adverse impacts to groundwater during construction and operation. Therefore, construction activities and facility operations would not affect groundwater resources.

The Proposed Action and Action Alternative would result in temporary resuspension of sediments from the anchoring of construction vessels and pile driving activities during pier, floating dock, and bulkhead construction. These impacts would be largely limited to the cove bottom within a few feet of each anchor/pile and along the face of the existing bulkhead where stabilization is proposed (728 linear feet). The installation of piles would disturb bottom sediments and may cause a temporary increase in suspended sediment in the immediate area. Based on available information collected from a project in the Hudson River, pile driving activities are expected to produce total suspended solid concentrations of approximately 5 to 10 milligrams per liter (mg/L) above background levels within approximately 300 feet of the pile being driven. The small resulting sediment plume is expected to settle out of the water column within a few hours (FHWA, 2012). The sediments within Coddington Cove that would be resuspended within the enclosed area between the T-Pier and the breakwater would be retained by the circular currents (SAIC/URI, 1997). Upon completion of construction activities, surface water would return to pre-existing conditions. Sediment resuspension from propeller wash is not anticipated due to the depth of water at the proposed pier location (approximately 26 feet).

Potential impacts to surface water from upland construction activities associated with the Proposed Action or Action Alternative would be minimized via BMPs for sedimentation and erosion control and compliance with conditions set forth in the Rhode Island Pollution Discharge Elimination System (RIPDES) General Permit for Storm Water Discharge Associated with Construction Action pursuant to Section 402 of the Clean Water Act (CWA) (33 U.S. Code §1342).

Under the Proposed Action, impacts to the water column from bulkhead and pier construction would be 1,770 cubic yards (cy). Construction of the new pier, trestle, floating dock, and bulkhead would cover a total of approximately 55,000 sf of surface water. Construction of the new bulkhead for stabilization of the shoreline and construction of the new pier, trestle, and floating dock would result in the filling of approximately 3,360 sf of sea floor and require the placement of approximately 1,770 cy of fill.

Impacts to surface waters under the Action Alternative would be greater than those anticipated under the Proposed Action as a result of the increased amount of in-water work associated with restoring the existing T-Pier structure. Under the Action Alternative, the installation of piles and fill for bulkhead stabilization and pier, trestle, and floating dock construction would impact 5,500 sf of surface water and 2,450 cy of water column and would cover a total of approximately 40,000 sf of surface water. NOAA would apply for permits from the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA and Section 10 Rivers and Harbors Act and would apply for a Water Quality Certification from the State of Rhode Island for compliance with CWA Section 401 to ensure that impacts to water resources from construction activities are minimized and not significant.

No impacts to the water column are expected due to port operations associated with the Proposed Action. No cooling water withdrawals would be made, and no ballast water would be discharged. The water depth at the pier would be sufficient as to not have any impact from propeller wash from the planned vessels. Compliance with the environmental procedures established by NOAA's Marine Operations Environmental Compliance Office would ensure that accidental releases of polluting substances are minimized.

The Proposed Action or Action Alternative would permanently alter the shoreline of Coddington Cove by the addition of the pier structure. This addition is consistent with the existing shoreline type and projected long-term use of the project area. Therefore, impacts to water resources would not be significant.

Cultural Resources. The Proposed Action would have no potential to impact archaeological resources. At the Pier Landing Site, any submerged landscapes and resources in this area have been covered with fill, and recent soil borings indicate sediment has been disturbed by dredging. Building 11 Parking Area currently consists of remnants of a basketball/tennis court, and the area has historically been used agriculturally and as parking facilities. In the event that archaeological resources are discovered during the proposed construction, NOAA would notify NAVSTA Newport and would follow the procedures of inadvertent discovery in accordance with 36 CFR 800. Therefore, implementation of Alternative 1 would have no effect on archaeological resources.

The design of the new facilities would be consistent with the industrial nature and setting of the existing pier area and would not substantially change the visual character or setting of the two historic properties. Pursuant to 36 CFR 800.5, NOAA has determined that the Proposed Action would result in a finding of no adverse effect on historic properties. In compliance with Section 106 of the National Historic Preservation Act, NOAA consulted with the State Historic Preservation Officer (SHPO) on this determination. The SHPO concurred with NOAA's findings.

As part of the evaluation of impacts in accordance with NEPA, NOAA initiated consultation with three federally-recognized Native American Tribes regarding the Proposed Action; specifically, the Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and Wampanoag Tribe of Gayhead Aquinnah to determine if the Proposed Action might affect resources of religious or cultural significance. NOAA did not receive responses from the tribes.

Flora and Fauna. The Proposed Action would result in the conversion of approximately 120,000 sf of vegetated and disturbed areas to impervious surfaces at Pier Landing Site and 40,000 sf at Building 11 Parking Area. Areas adjacent to the new facilities that were disturbed by construction, approximately 60,000 sf at Pier Landing and 20,000 sf at Building 11 Parking Area, would be revegetated with native plants and landscape-appropriate trees, shrubs, and/or grasses. A memorial tree and plaque that would be impacted by the Building 11 Parking Area would be replaced in a new location. The proposed project area at Pier Landing Site is a highly disturbed, industrialized waterfront with little vegetation. The vegetation at Building 11 Parking Area is currently maintained lawn grasses with a few landscaped trees and shrubs. Therefore, impacts to vegetation would not be significant.

Marine vegetation, primarily macroalgae and other algae is present in the proposed project area but is relatively sparse. There is no eelgrass in the proposed project areas (AECOM, 2018). The bottom substrate in the proposed project areas is largely silty/sandy, without rocks and structures that support an abundance of macroalgae. Therefore, additional overwater coverage of the substrate under the Proposed Action would not significantly impact marine vegetation.

Upland construction activities associated with the Proposed Action would occur on previously developed lands or disturbed, actively managed areas (i.e., mowed or landscaped), and may temporarily displace wildlife from suitable habitat in the immediate vicinity of the proposed project areas. However, quality wildlife habitat is limited in areas of proposed construction because of the developed and relatively active nature of the sites. Additionally, wildlife species at the installation are adapted to the existing industrial environment. Impacts to wildlife from construction and operation of the new facilities would be minor, as they would be similar to existing operations and maintenance activities associated with waterfront facilities at NAVSTA Newport and would not result in a significant adverse effect on any population of terrestrial wildlife, including migratory birds.

Benthic communities occurring within the footprint of the piles/fill areas would be at risk of direct mortality during pile installation or loss of habitat due to sea floor displacement. Benthic communities and habitat would also be impacted by shading from the new pier structure. These disturbances would be localized but long-term. Given the fact that Narragansett Bay has a surface area of 147 square miles, this loss of benthos would impact a small fraction of a percent of Narragansett Bay. Therefore, impacts on benthic invertebrates and their habitat from the Proposed Action would not be significant.

The Proposed Action would have adverse effects on fish, EFH, and Habitat Areas of Particular Concern (HAPC) for summer flounder. Temporary impacts to fish from noise due to construction activities would be minimized with the use of BMPs, such as the use of soft starts for impact pile driving activities that would allow fish to move away from the noise generating activity. A permanent loss of a small amount of benthic and open water habitat would occur from pile installation. Summer flounder HAPC is found in small amounts mainly in the sandy, shallow area just north of the T-Pier and is not common in the silty area which comprises most of the proposed project area. This loss of habitat and HAPC is not significant when compared to the available habitat in Coddington and Narragansett Bay. NOAA and the Navy have consulted with the National Marine Fisheries Service (NMFS) on the EFH assessment, and NMFS concurred with NOAA's findings. NMFS recommended conservation measures for EFH, and NOAA agreed to implement most of the recommendations.

Temporary impacts to marine mammals could occur as a result of construction noise and construction vessel traffic. Marine mammals that may be present within the project area and subject to underwater noise impacts from pile installation and removal activities include short-beaked common dolphin (*Delphinus delphis*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), harbor porpoise (*Phocoena phocoena*), harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), harp seal (*Pagophilus groenlandicus*), and hooded seal (*Cystophora cristata*). NOAA requested authorization from NMFS, as required by the MMPA, for the potential incidental harassment of small numbers of marine mammals during pile driving and drilling activities associated with the Proposed Action. The draft NMFS-issued IHA is included in this Final EA. Construction vessels operating during the Proposed Action would be slow moving and would not increase the risk that any vessel in the area would strike an individual or would increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured, detected, or evaluated.

Long-term operational impacts to marine mammals could occur as a result of the small increase in operational vessel traffic between Coddington Cove and the Atlantic Ocean. Within Narragansett Bay, potentially affected marine mammal species would include short-beaked common dolphin, Atlantic white-sided dolphin, harbor porpoise, harbor seal, gray seal, harp seal, and hooded seal. Outside of Narragansett Bay, North Atlantic right whale (NARW), fin whales, humpback whales, and minke whales could potentially be affected. Because two NOAA vessels are currently temporarily homeported in Narragansett Bay (NAVSTA Newport), the permanent relocation of four NOAA vessels would only increase vessel traffic in Narragansett Bay by two ships. Therefore, increases in vessel traffic to and from Coddington Cove and associated noise would be minimal. In the event of whale sightings during transit to and from the homeport, NOAA vessels would adhere to safety zone separations from sighted federally threatened or endangered species and would comply with the recommendations in the weekly published U.S. Coast Guard (USCG) Notice to Mariners with regards to marine mammal sightings and restrictions.

Habitat for the endangered roseate tern is not found within Pier Landing Site or Building 11 Parking Area. Therefore, NOAA has determined that the Proposed Action would have no effect on roseate tern. The endangered northern long-eared bat (NLEB) has been observed in the past on NAVSTA Newport but was not detected in bat acoustic surveys conducted in 2018. The Pier Landing Site is a disturbed and active waterfront and does not likely provide suitable roosting or foraging habitat for NLEB. Building 11 Parking Area contains several ornamental trees but lacks suitable daytime roosting habitat for NLEB. NOAA has determined that the Proposed Action would have no effect on the NLEB. The monarch butterfly, a candidate species, is unlikely to be present in the proposed project area due to the lack of suitable habitat. NOAA has determined that the Proposed Action would have no effect on the monarch butterfly.

The endangered Atlantic sturgeon and shortnose sturgeon may occur in Narragansett Bay. Atlantic sturgeon have been recorded in the area (particularly in May and June) but are likely to move away from areas of disturbance during construction activities. Shortnose sturgeon are unlikely to be found in the proposed project area due to the limited suitable foraging habitat and the distance from known populations. Therefore, NOAA has determined that the Proposed Action may affect, but is not likely to adversely affect, the Atlantic sturgeon and shortnose sturgeon. NOAA consulted with NMFS, and NMFS concurred with NOAA’s findings for Atlantic sturgeon and shortnose sturgeon.

Threatened and endangered sea turtle species may be found in the coastal waters of New England from spring to early fall but are unlikely to be present in the proposed project area due to the industrial site characteristics and limited suitable habitat and associated prey. NOAA has determined that the Proposed Action may affect, but is not likely to adversely affect, listed sea turtles. NOAA consulted with NMFS, and NMFS concurred with NOAA’s findings for sea turtles.

Endangered fin whale and NARW are seasonally present in New England waters. However, due to the depths of Narragansett Bay and the nearshore location of the proposed project area, they are unlikely to occur in the proposed project area (Naval Undersea Warfare Center [NUWC], 2011). Therefore, only the minor long-term increases in vessel traffic outside of Narragansett Bay would impact these species. NOAA would comply with speed limits and Notices to Mariners aimed to protect the NARW and other whale species. Therefore, the Proposed Action may affect but is not likely to adversely affect the NARW or fin whale. Impacts to flora and fauna under the Action Alternative would be the same as described under the Proposed Action; however, impacts from shading and pier construction would be less under the Action Alternative due to the existing impact of the T-Pier. Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to flora and fauna.

Wetlands. The Proposed Action or Action Alternative would require the placement of structures in waters of the United States classified as subtidal, estuarine, and marine, and deep water in the National Wetlands Inventory. No wetlands, as defined by the USACE or USEPA, occur in the proposed project area. The Navy would apply for permits from the USACE under and Section 404 of the CWA and Section 10 of the Rivers and Harbors Act and, if required, would apply for a Water Quality Certification from the RIDEM for compliance with CWA Section 401. As a result, impacts to wetlands would not be significant.

Floodplains. The proposed shoreside support facilities must be situated near the new pier to support the functions of NOAA vessels; therefore, construction in the floodplain cannot be avoided, and there is no practicable alternative to the Proposed Action or Action Alternative. The administration/warehouse building would be sited outside of the 100-year floodplain (elevation 14.0 feet). However, the pier, boat repair building, portions of the parking lot, and exterior storage area would be located within the limits of the 100-yr floodplain. To reduce potential impacts from flooding, critical facilities would be raised above base flood elevation. To reduce potential impacts to the floodplain, stormwater would be managed to detain flows as close as possible to pre-development levels.

Pier Landing Site was historically developed as part of NAVSTA Newport and later as part of Derecktor Shipyard. This previous development activity irretrievably altered the floodplain, reducing the beneficial aspects of the natural floodplain and its functions. Because the Pier Landing Site are part of an unconstrained waterway (Narragansett Bay), the Proposed Action would not increase flood frequency or severity at the proposed project area or at downgradient or nearby locations. Therefore, with the incorporation of measures to reduce potential impacts to the floodplain or impacts from potential flooding, the impacts would not be significant.

Coastal Zone Management. The Proposed Action or Action Alternative would likely affect a coastal use or resource. A Coastal Consistency Determination has been prepared and NOAA determined that the Proposed Action would be undertaken in a manner consistent to the maximum extent practicable with the federally-approved, enforceable policies of the Rhode Island Coastal Resources Management Program. The Rhode Island Coastal Resources Management Council concurred with this finding. Therefore, impacts to the coastal zone would not be significant.

Noise. Under the Proposed Action or Action Alternative, the operation of heavy equipment, including pile drivers and trucks during construction at the project sites would result in short-term noise impacts. Long-term operational noise impacts are anticipated to be minimal due to the relatively low level of activity generated by NOAA operations. Airborne noise levels at sensitive receptors are anticipated to be above the existing ambient noise levels, which are assumed to be approximately 60 decibels (dB). The noise effects from construction activities would be intermittent, short-term, and would occur only during daytime hours. After construction, noise levels would return to those levels characteristic of the current noise environment. Therefore, airborne noise impacts would not be significant. The maximum distance to the airborne behavioral disturbance threshold for harbor seals (90 dB root mean square) is 189 meters during impact pile driving of 30-inch steel pipe piles. Potential impacts to marine mammals from airborne noise would be mitigated by the use of Protected Species Observers and shutdown procedures designed to protect marine mammals and would not be significant.

Marine mammals that may be present within the project area and subject to underwater noise impacts include harbor porpoise, short-beaked common dolphin, Atlantic white-sided dolphin, harbor seal, gray seal, hooded seal, and harp seal. Fin whale and NARW are known to occur in the waters off Rhode Island but are unlikely to occur in areas of Narragansett Bay where underwater noise would be present. In order to reduce the potential for injury or behavioral disturbance, monitoring would be implemented, and shutdown procedures would be put into effect if a marine mammal were to approach the prescribed shut down zone for the activity being performed. Impacts are expected to be insignificant, and no injury is anticipated because monitors would ensure the affected area is clear of mammals before pile driving begins. Additionally, soft starts would be employed during impact pile driving to allow marine mammals to leave the project area prior to the start of pile driving.

NOAA requested authorization from NMFS for the potential taking by incidental harassment of small numbers of marine mammals during pile driving and drilling activities associated with the Proposed Action. The NMFS-issued IHA is included in this Final EA. The takes are expected to have no more than a minor effect on individual animals and no effect on the populations of these species. Any effects experienced by individual marine mammals are expected to be limited to short-term disturbance of normal behavior or temporary displacement of animals near the source of the noise. These impacts would not be significant.

Transportation. Under the Proposed Action or Action Alternative, a short-term increase in truck and privately owned vehicle traffic in the vicinity of NAVSTA Newport would occur during construction. Assuming that workers would commute individually, commuter traffic would increase by approximately 282 trips per day over the course of the construction period. Once construction is completed, these impacts would cease to occur. Therefore, short-term traffic impacts to the surrounding community would not be significant.

Minor, long-term increases in traffic would occur as a result of NOAA personnel commuting to the proposed project areas. The proposed new facilities would employee approximately 180 people and, if commuting separately, would increase commuter traffic by 360 trips per day. Impacts would be greatest during commuting hours; Monday through Friday, 7 AM to 9 PM and 3 PM to 5 PM. These trips would increase daily traffic on the access road by approximately 2.5 percent and would not be significant.

Utilities and Solid Waste. The Proposed Action or Action Alternative would not result in increases in demand for utilities that would affect or require upgrade of utility infrastructure in the surrounding community. Therefore, the Proposed Action would not result in impacts on utility infrastructure outside of NAVSTA Newport.

Construction activities associated with the Proposed Action or Action Alternative would affect underground utility infrastructure. Existing abandoned utilities would need to be removed and new utilities would need to be installed. Disconnection of existing utilities would occur at the most practicable location possible to minimize any disruption that would occur to the utility and any work activities in the immediate area. Connections to existing potable water, wastewater, electrical, and telecommunication systems would be required, and, in some instances, these utilities would need to have feeder lines installed from mains located near each site. The additional demand on these utilities would not exceed the available capacity and impacts to these utilities would not be significant.

The stormwater system for the new bulkhead along Coddington Cove would require extending and improving the existing storm drain piping and outfalls located in the adjacent area to accept additional draining from the newly constructed impervious surfaces, to address existing deterioration of the drains, and/or prevent future maintenance issues. Due to restrictions prohibiting stormwater infiltration at Pier Landing Site, stormwater management would consist of catch basins, two bioretention filter basins, and storm sewer collection networks discharging to existing storm sewers and new stormwater outfalls. The stormwater system would include methods to improve water quality and detain flows as close as possible to pre-development levels. At Building 11 Parking Area, a bioretention area would be constructed along the western perimeter of the parking lot to manage stormwater runoff and maintain pre-development hydrology. All stormwater discharges would be monitored for compliance with applicable state and federal permits and would not be significant.

Increases in solid waste generation during construction and operations would continue to be managed under the existing protocols, and recycling would be implemented to the maximum extent practicable to minimize solid waste generation and disposal. Solid waste generation is not expected to exceed the capacities of regional recycling and landfill facilities; therefore, implementation of the Proposed Action or Action Alternative would have negligible short-term and long-term impacts on solid waste management at NAVSTA Newport and would not be significant.

Visual Resources. Under the Proposed Action or Action Alternative, in-water construction areas and the presence of construction equipment would result in short-term impacts on visual resources in the proposed project areas. Minor long-term impacts would be anticipated, as the improvements associated with the in-water projects would largely be visible only from Narragansett Bay and the nearshore areas of Coddington Cove. The design of new structures at Coddington Cove and on Coddington Point would be consistent with the surrounding development to minimize impacts to visual resources. The Proposed Action would cause limited changes in the appearance of the shoreline in Coddington Cove but would be consistent with the current industrial uses of the cove and with adjacent land uses. Therefore, implementation of either of the action alternatives would not result in significant impacts to visual resources.

Public Health and Safety. Implementation of the Proposed Action or Action Alternative would have long-term beneficial impacts to public health and safety. Repair of the bulkhead along Coddington Cove would eliminate subsidence hazards at Pier Landing Site and would prevent further releases of fill material into Coddington Cove, improving water quality of the Cove and in adjacent areas of Narragansett Bay.

All construction areas would be located within the secure boundary of NAVSTA Newport or the restricted area of Coddington Cove (33 CFR 334.81) and would not be publicly accessible. NOAA operations at the proposed new facilities are not anticipated to result in increased demands on emergency services that would exceed existing service capabilities.

The Navy has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children. Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to public health and safety.

Hazardous Materials and Wastes. Under the Proposed Action or Action Alternative, construction activities would cause a short-term increase in the use of hazardous materials and the generation of hazardous wastes that would end when the construction is finished. Hazardous materials and wastes used and generated during the construction period would be handled, stored, and disposed according to applicable BMPs, standard operating procedures, and federal and state regulations. Compliance with applicable regulations and procedures would ensure that accidental releases of these materials are minimized. Therefore, construction of the Proposed Action or Action Alternative would not have significant hazardous materials or wastes impacts.

Operation of the new facilities at Pier Landing Site and at Building 11 Parking Area would involve the use of hazardous materials, most of which would be used up and thus not require storage. Some of these hazardous materials, such as fluorescent light bulbs and fire extinguishers, would be stored in small quantities where they are being used. For those hazardous materials that are not used up, the materials would be properly managed and stored in accordance with federal and state regulations and the NAVSTA Newport Consolidated Hazardous Material Reutilization and Inventory Management Program (40 CFR 264.175 and 29 CFR 1910.106). Therefore, operations of the Proposed Action or Action Alternative would not have significant hazardous materials or wastes impacts.

No special hazards are known to be present in the proposed project areas. As a result, impacts from special hazards would not be significant.

Pier Landing Site is a known ERP site. BMPs for erosion and sedimentation control and engineered and operational controls would be included in project construction plans to protect human health and the environment and to comply with state and federal regulations. Therefore, impacts to ERP sites would not be significant.

Table ES-1 provides a tabular summary of the potential impacts to the resources associated with the Proposed Action and Action Alternative.

ES.6 Public Involvement

NOAA prepared this EA to inform the public of the Proposed Action and to allow opportunity for public review and comment. In conformance with Executive Order 11988, the public notice informs the public and interested stakeholders of a proposed federal action to be located within a floodplain. The Draft EA 30-day review period began June 26, 2022 with a public notice published in the *Providence Journal* indicating the availability of the Draft EA and how to request a copy. The Draft EA was also made available on the NOAA website at: https://www.noaa.gov/administration/draft-environmental-assessment. No public comments were received.

Table ES-1. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area*	*Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area*
Land Use	No impacts	**No significant impacts.** Change in existing land use consistent with facility and local land use plans	Same as the Proposed Action.
Geological Resources	Potential adverse impact from erosion of shoreline sediments	**No significant impacts.** Minor impact to topography of 500-year floodplain from excavation, grading, and filling. Temporary disturbance impacts to marine sediment from construction and anchoring of construction vessels. Minor impacts to marine sediments from fill.	Same as the Proposed Action, but larger impacts to marine sediment from fill.
Hydrological Processes		**No significant impacts.**	Same as the Proposed Action.
Air Quality	No impact	**No significant impacts.** Air emissions below applicable *de minimis* criteria.	Same as the Proposed Action.
Water Resources	Potential adverse impacts from erosion of shoreline soil and sediments	**No significant impacts.** No impacts to groundwater. Short-term sediment resuspension impacts on surface water quality, minimization through BMPs and compliance with conditions of permits. Loss of approximately 1,770 cy water column marine habitat from filling and pile installation.	Same as the Proposed Action, but loss of 2,450 cy water column marine habitat.
Cultural Resources	No impact	**No significant impacts.** No adverse effect on historic properties. NOAA has consulted with SHPO and Native American Tribes.	Same as the Proposed Action.
Flora and Fauna	No impacts	**No significant impacts.** Temporary noise impacts on terrestrial and marine wildlife. Temporary sediment resuspension impacts on marine species. Minor long-term habitat loss for marine species from filling, pile installation, and new pier (3,360 sf benthos, 1,770 cy open water, and 55,000 sf shading over water).	Same as the Proposed Action, but larger habitat losses from filling 5,500 sf benthos, 2,450 cy open water column habitat, and 40,000 sf shading over water. Takes of MMPA species likely during pile driving. May affect but is not likely to adversely affect EFH and ESA listed species.

Table ES-1. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area*	*Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area*
		Takes of MMPA species are likely during pile driving. MMPA request for IHA submitted to NMFS for incidental take of marine mammals. NMFS-issued IHA is included in Appendix E. May affect but is not likely to adversely affect EFH and ESA listed species. NOAA consulted with NMFS, and NMFS concurred with this finding. No effect on species under the jurisdiction of the U.S. Fish and Wildlife Service.	
Wetlands	No impacts	**No significant impacts.** No wetlands present.	Same as the Proposed Action.
Floodplains	No impacts	**No significant impacts.** Placement of facilities in 100- and 500-year floodplain required to support water-dependent uses.	Same as the Proposed Action.
Coastal Zone Management		**No significant impacts.** Consistent with the enforceable policies of the RI Coastal Resources Management Program.	Same as the Proposed Action.
Noise	No impacts	**No significant impacts.** Temporary, intermittent, typical airborne construction noise. Temporary underwater noise.	Same as the Proposed Action, but shorter duration of underwater noise.
Transportation	No impacts	**No significant impacts.** Temporary impacts from construction vehicle traffic. Minor long-term increases in traffic from operations.	Same as the Proposed Action.
Utilities and Solid Waste	No impacts	**No significant impacts.** Removal and extension of water, wastewater, stormwater, and electrical would not result in adverse impacts. NAVSTA Newport has sufficient capacity to support all required utilities. Minor increase in utility demand and solid waste during construction and operations.	Same as the Proposed Action.

Table ES-1. Summary of Potential Impacts to Resource Areas

Resource Area	***No Action Alternative***	***Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area***	***Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area***
Visual Resources	No impacts	**No significant impacts.** Proposed construction would be consistent with the current and adjacent land uses.	Same as the Proposed Action.
Public Health and Safety	Potential adverse impacts	**No significant impacts.** Beneficial impact on long-term water quality.	Same as the Proposed Action.
Hazardous Materials and Wastes	No impacts	**No significant impacts.** Temporary increase in hazardous materials and wastes during construction. Minor long-term increases in hazardous materials and wastes during operations. Potential for encountering soil contamination in excavated soils during construction, and potential need for coordination with federal and state regulators regarding any reporting requirements related to ERP sites. Any excess soils generated at Pier Landing Site would be tested for contaminants of concern and reused or disposed of according to RIDEM and USEPA criteria.	Same as the Proposed Action.

Notes: BMP = Best Management Practice; cy = cubic yard; EFH = Essential Fish Habitat; ERP = Environmental Restoration Program; ESA = Endangered Species Act; IHA = Incidental Harassment Authorization; MMPA = Marine Mammal Protection Act; NAVSTA = Naval Station; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; RI = Rhode Island; RIDEM = Rhode Island Department of Environmental Management; sf = square foot/feet; SHPO = State Historic Preservation Office(r); USEPA = United States Environmental Protection Agency.

Final Environmental Assessment For the Relocation of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport, Newport, Rhode Island

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Abbreviations and Acronyms

Acronym	Definition
ACM	asbestos-containing materials
APE	Area of Potential Effects
BMPs	best management practices
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liabilities Act
CFR	Code of Federal Regulations
CHRIMP	Consolidated Hazardous Material Reutilization and Inventory Management Program
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
cy	cubic yards
dB	Decibel
DPS	distinct population segments
EA	Environmental Assessment
EFH	essential fish habitat
ERP	Environmental Restoration Program
ESA	Endangered Species Act
EX	Research Vessel Okeanos Explorer
FEMA	Federal Emergency Management Agency
FMP	Fishery Management Plans
HAP	Hazardous Air Pollutant
HAPC	Habitat Areas of Particular Concern
HB	Research Vessel Henry B. Bigelow
LBP	lead-based paint
LID	Low Impact Development
LUC	Land Use Control
MLLW	mean lower low water
MMPA	Marine Mammal Protection Act
mg/L	milligrams per liter
NARW	North Atlantic right whale
NAVFAC	Naval Facilities Engineering Systems Command
NAVSTA	Naval Station
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NLEB	northern long-eared bat
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NRHP	National Register of Historic Places
NUWC	Naval Undersea Warfare Center
OU	operable unit
PCB	polychlorinated biphenyl
$PM_{2.5}$	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
PTS	Permanent Threshold Shift
RI	Rhode Island
RICRMC	Rhode Island Coastal Resources Management Council
RICRMP	Rhode Island Coastal Resources Management Program
RIDEM	Rhode Island Department of Environmental Management
RINHS	Rhode Island Natural History Survey
RIPDES	Rhode Island Pollutant Discharge Elimination System
RMS	root mean square
SEL	sound exposure level
SEL_{CUM}	cumulative sound exposure level
sf	square foot/feet
SHPO	State Historic Preservation Office(r)
SO_2	sulfur dioxide
SPL	sound pressure level
TTS	Temporary Threshold Shift
U.S.	United States
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile organic compound

1 Purpose of and Need for the Proposed Action

1.1 Introduction

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (Figure 1-1). The Proposed Action includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove. The proposed location of the pier and shoreside facilities would be at the Former Robert E. Derecktor Shipyard site (Former Derecktor Shipyard, also known as Environmental Restoration Program [ERP] site 19), in Coddington Cove, herein referred to as Pier Landing Site (Figure 1-2). Additional parking facilities would be constructed on a vacant site located near Building 11, approximately one quarter mile east of Pier Landing Site, herein referred to as Building 11 Parking Area (Figure 1-2). Structures that would be constructed at Pier Landing Site would be located outside of the Federal Emergency Management Agency (FEMA)-designated 100-year floodplain but would be within the FEMA-designated 500-year floodplain. Portions of the parking lots and exterior storage area would be located within the limits of the 100-year floodplain. The additional parking facilities at Building 11 Parking Area would not be located within any FEMA-designated floodplains. Construction is planned to begin in 2024 and take approximately 2 years to complete.

Currently, two of the four Atlantic region NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are located in Rhode Island at Pier 2 at NAVSTA Newport. Pier 2 does not meet NOAA requirements for NOAA vessels because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX was temporarily located at commercial waterfront facilities at the Quonset Development Corporation, Port of Davisville, in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicted with adjacent commercial activities and long-term uncertainties existed due to probable time limitations on lease agreements so the EX was relocated to NAVSTA Newport. The other two vessels that would be relocated and homeported at NAVSTA Newport would be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, South Carolina, or Mississippi.

Because many of NOAA's research cruises are conducted in the Northeast, permanently relocating and homeporting four vessels to this area presents logistical advantages as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for the four NOAA research vessels (Cardno, 2016a) (Cardno, 2016b).

This Final Environmental Assessment (EA) was prepared for NOAA by the United States (U.S.) Navy in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §4321, et seq.), as implemented by the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); and Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities, Companion Manual for NOAA Administrative Order 216-6A (Effective: January 13, 2017). In accordance with NEPA, the Navy is also preparing a Categorical Exclusion for the real estate agreement that would allow NOAA's use of the property.

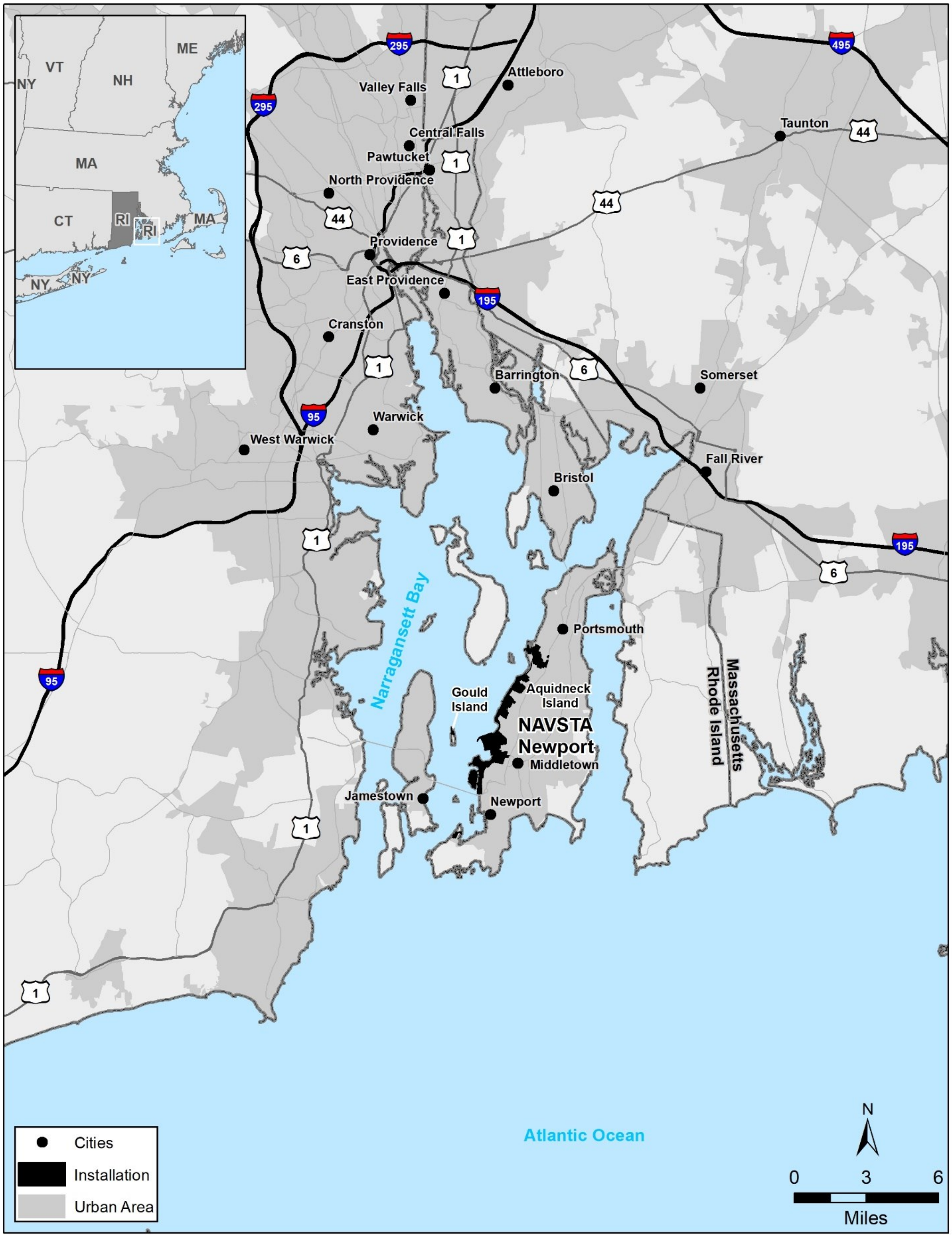

Figure 1-1. Location Map

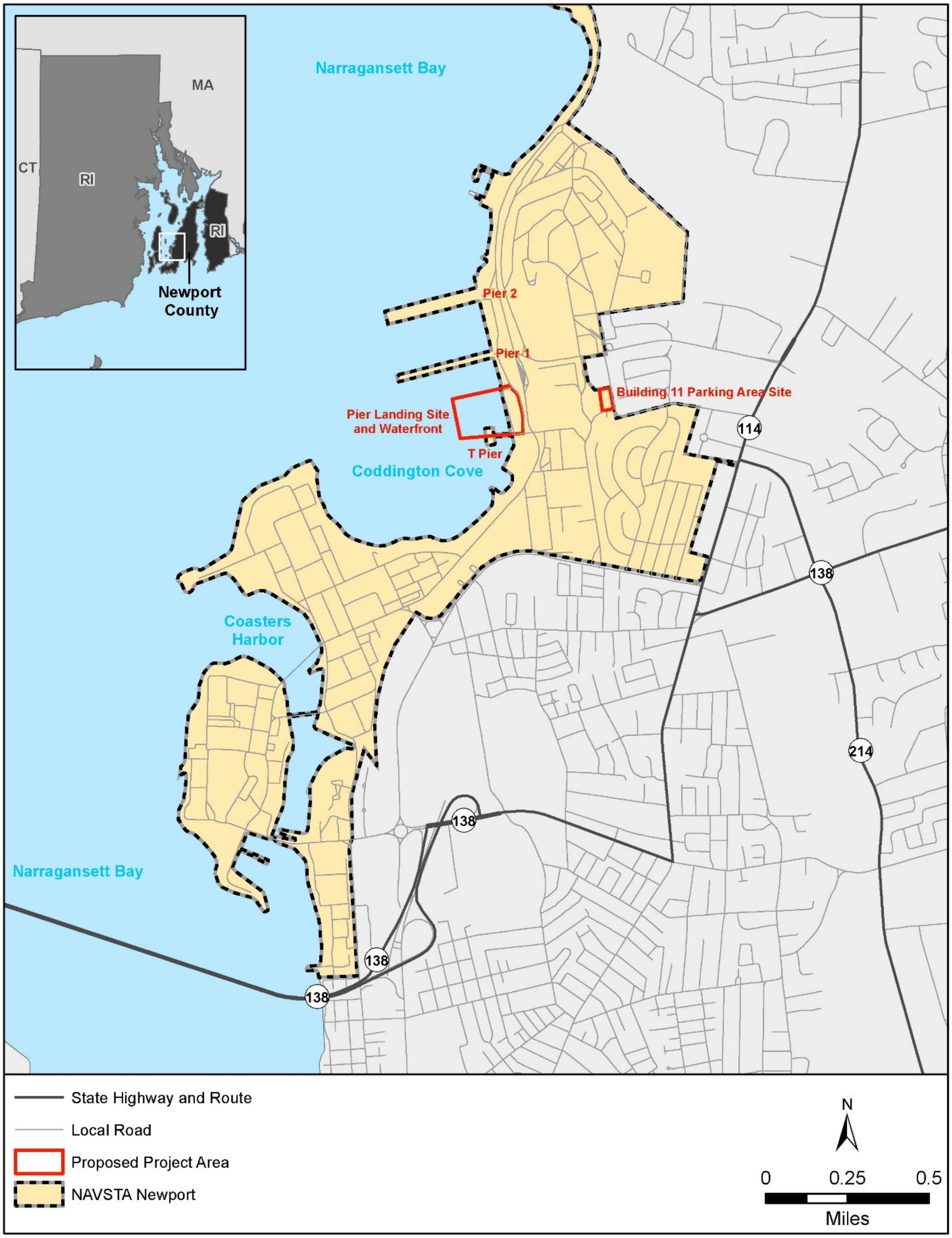

Figure 1-2. Project Area Site Map

1.2 Background

NAVSTA Newport is home to 50 Navy, U.S. Marine Corps, U.S. Coast Guard (USCG), NOAA, and U.S. Army Reserve commands and activities. NAVSTA Newport is the Navy's premier site for training officers, officer candidates, senior enlisted personnel, and midshipman candidates, as well as for testing and evaluating advanced undersea warfare and development systems. NAVSTA Newport's mission is to fulfill the diverse requirements of its tenant commands by providing the facilities and infrastructure essential to their optimum performance.

NOAA's Office of Marine and Aviation Operations operates a wide assortment of hydrographic survey, oceanographic research, and fisheries survey vessels. NOAA's Atlantic fleet consists of nine vessels and is managed by the Marine Operations Center, Atlantic, in Norfolk, Virginia. The EX and HB are currently located at NAVSTA Newport, Rhode Island. The primary objectives of the HB and EX are to study and monitor marine fisheries throughout the Northwest Atlantic for NOAA's National Marine Fisheries Service (NMFS) Northeast Fisheries Science Center at Woods Hole, Massachusetts; and to conduct undersea exploration and operations worldwide, including mapping the sea floor and characterizing largely unknown oceans, for NOAA's Office of Ocean Exploration and Research.

Vessel draft limitations, utility and operational constraints, and long-term lease uncertainties have prompted NOAA to relocate four of their research vessels. In 2016, NOAA prepared an Analysis of Alternatives to identify a preferred location for its Rhode Island vessels. The Analysis of Alternatives recommended the most effective "preferred" alternative for locating the HB and EX and identified NAVSTA Newport as the only location that could accommodate the requirements of the two vessels. The Analysis of Alternatives further identified that NAVSTA Newport, Rhode Island presented an opportunity to relocate and consolidate additional vessels and functions (Cardno, 2016a) (Cardno, 2016b).

The minimum requirements to accommodate four NOAA vessels and shore side and support facilities include:

- pier/berth length of 250 feet per vessel fully capable of supporting vessel mission readiness;
- buildable area totaling 20,000 gross square feet for office/support and warehouse areas; and
- available area totaling 100,000 square feet (sf) for vessel loading/laydown, exterior storage, and parking.

NAVSTA Newport identified several land areas for potential NOAA use that were further analyzed to confirm that the available development area was sufficient for NOAA requirements. Pier Landing Site at Coddington Cove was selected for development due to its proximity to the waterfront and pier areas. Building 11 Parking Area was selected for development because it is relatively close to the pier area and the existing land uses of the adjacent areas were compatible with the proposed NOAA uses (see Figure 1-2) (Cardno, 2016a) (Cardno, 2016b).

Following preliminary design sessions and initial consultation meetings with several regulatory agencies, NOAA determined that constructing a new pier at a new location approximately 450 feet north of an existing T-Pier (see Figure 1-2) was preferred. Additional requirements associated with stabilizing and/or demolishing the existing T-Pier and long-term maintenance requirements made use of the existing T-Pier less preferable but not unfeasible. After further study of existing conditions, NOAA decided that the bulkhead in the vicinity of the proposed new pier and shoreside facilities needed substantial reinforcement to support the new facilities and added the installation of 728 feet of new bulkhead to the project.

1.3 Location

NAVSTA Newport, established during the Civil War era, encompasses 1,341 acres extending more than 10 miles along the western shore of Aquidneck Island in the towns of Portsmouth and Middletown, Rhode Island, and the City of Newport, Rhode Island. The base footprint also includes the northern third of Gould Island in the town of Jamestown, RI. The base is located in the southern part of the state near where Narragansett Bay adjoins the Atlantic Ocean.

The proposed location of the new pier and shoreside facilities is at Pier Landing Site, the Former Derecktor Shipyard (currently ERP Site 19) at Coddington Cove. Additional parking facilities would be constructed at Building 11 Parking Area, to the east of Pier Landing Site (see Figure 1-2).

1.4 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to provide facilities and functions to meet the operational requirements necessary to support the relocation of four NOAA Atlantic Fleet research vessels at NAVSTA Newport.

The need for the Proposed Action is due to the insufficiency of current research vessel locations, including deteriorating conditions of Pier 2 at NAVSTA Newport and user conflicts at other locations. The Proposed Action would also gain efficiencies by co-locating NOAA vessels in support of NOAA's mission and operational requirements consistent with the NOAA – USCG Fleet Plan (2016) and Cooperative Maritime Strategy (2013). Relocation of NOAA vessels at NAVSTA Newport would establish and expand effective partnerships that would integrate operational capabilities, reduce redundancies, and unify commands resulting in greater mission success.

1.5 Scope of Environmental Analysis

This EA includes an analysis of potential environmental impacts associated with two action alternatives and the No Action Alternative. The environmental resource areas analyzed in this EA include land use, geological resources, hydrological processes, air quality, water resources, cultural resources, flora and fauna, wetlands, floodplains, coastal zone management, noise, transportation, utilities and solid waste, visual impacts, and hazardous materials. The study area for each resource analyzed may differ due to how the Proposed Action interacts with or impacts the resource. For instance, the study area for geological resources may only include the construction footprint of a building whereas the noise study area would expand beyond the construction footprint to include areas that may be impacted by construction noise.

The potential impacts to the following resource areas are considered to be negligible or non-existent so they were not analyzed in detail in this EA:

Recreational Resources: The Proposed Action would occur within the secure boundary of NAVSTA Newport on areas that do not generally support recreational uses. Fishing is allowed with authorization by the Commanding Officer, as further explained in Section 3.7.4.2. However, even with permission to fish, no fishing is allowed within the proposed project area. Therefore, no construction-related impacts to recreational resources would be anticipated. Operations at NAVSTA Newport would continue as they are currently conducted. Therefore, there would be no operations related impacts to recreational resources.

Farmlands: The proposed project areas do not occur on or adjacent to any farmland or farming activity. Site soils are not classified as farmland soils. Therefore, the Proposed Action would have no impacts on farmland.

Environmental Justice. Consistent with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, it is NOAA's policy to identify and address any disproportionately high and adverse human health or environmental effects of its actions on minority and low-income populations. Construction activities associated with the Proposed Action would occur entirely on the NAVSTA Newport property and waterfront. The Proposed Action would not change the local, regional, or statewide social or environmental conditions or affect any specific population or demographic group because the impacts would be limited to the NAVSTA Newport waterfront. NOAA vessels spend long periods at sea conducting research and would not substantially impact vessel traffic in Narragansett Bay. As such, the Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations or low-income populations.

1.6 Key Documents

Key documents are sources of information incorporated into this EA. Documents are considered to be key because of similar actions, analyses, or impacts that may apply to the Proposed Action. CEQ guidance encourages incorporating documents by reference. Documents incorporated by reference in part or in whole include:

- *Land Use Control Remedial Design for Site 19 – Former Derecktor Shipyard Operable Units 5 and 12 Naval Station Newport, Middletown/Newport, Rhode Island*. This document describes the Land Use Control (LUC) Remedial Design for Site 19 – the Former Derecktor Shipyard. Site 19 includes two operable units (OUs): OU 5, which is the marine sediment associated with the Former Derecktor Shipyard; and OU 12, which is the on-shore area of the Former Derecktor Shipyard, including soil and groundwater (Naval Facilities Engineering Systems Command [NAVFAC], 2014).
- *NAVSTA Newport Vision 2035*. This report is the Master Plan for the installation. It serves as a guide for site development, efficient facilities utilization, sustainable development, and land use over the next 25 years (NAVSTA Newport, 2008).
- *Record of Categorical Exclusion*. This document was prepared for NAVSTA Newport's proposed action for the development of a real estate agreement with NOAA for the use of pier space and equipment storage space at NAVSTA Newport. NOAA needed the space to homeport and operate the HB and EX at Pier 2 and provide parking for 35 people. With measures to comply with restrictions in place for NAVSTA Newport's ERP sites, there were no environmental impacts identified for this action (Navy, 2021).
- NOAA Policy and Procedures for Compliance with NEPA and Related Authorities (Companion Manual for NOAA Administrative Order 216-6A, January 13, 2017), which provides NOAA policy for implementing CEQ regulations and NEPA.

1.7 Relevant Laws and Regulations

NOAA has prepared this EA based upon federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action. Please refer to **Appendix A** for a list of relevant laws and regulations.

2 Proposed Action and Alternatives

2.1 Proposed Action

NOAA proposes to establish adequate pier, shoreside, and support facilities to support the permanent relocation of four NOAA Atlantic Fleet research vessels to NAVSTA Newport in Newport, RI. The Proposed Action, the Preferred Alternative, includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove (Pier Landing Site) and the construction of a parking lot near Building 11 to the east of Pier Landing Site. Construction is planned to begin in 2024 and take approximately 2 years to complete. In-water construction would occur over approximately 1 year.

2.1.1 Pier and Trestle

Under the Proposed Action, a new four-berth pier would be constructed approximately 450 feet north of the existing T-Pier (Figure 2-1) in Coddington Cove for the berthing of the HB and EX and two additional ships. The new pier would be approximately 62-feet wide and 587-feet long (approximately 36,400 square feet) and would be accessed by a 28-foot wide by 525-foot-long trestle (portion over water would be 506 feet and approximately 14,200 square feet). A plan view of the pier and trestle is provided in Figure 2-2.

The new pier and trestle would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that would be connected to shore utilities. Fueling activities and bilge water removal would be conducted using a tanker truck.

The pier would be a pile-supported concrete deck. Structural support piles for the new pier would consist of 120 steel pipe piles measuring 30 inches in diameter. The piles would have permanent high-density polyethylene grouted jackets. The piles would be driven into the cove bottom from the mudline by vibratory and impact hammers to depths required to achieve bearing capacity. If obstructions, such as glacial boulders, are encountered, a rotary drill may be used to clear the obstruction. Fender piles would be installed along the perimeter of the pier and would consist of 201, 16-inch diameter steel pipe piles. A typical cross section of the pier is shown in Figure 2-3.

The access trestle would span over two existing bulkheads: a U-pile wall with an internal wale that was noted as existing circa 1950, and a sheet pile (MZ 32) bulkhead with an external double channel wale placed circa 1980. The trestle access would be located upland, and the trestle would span the existing and new bulkhead and provide access (i.e., bridge) to the pier. The pier begins where there is adequate water depth (-25 feet MLLW). Structural support piles for the trestle concrete deck would consist of 36 steel pipe piles with permanent high-density polyethylene grouted jackets measuring 18-inches in diameter and two steel pipe piles measuring 30-inches in diameter. The piles would be driven to depths required to achieve bearing capacity. A typical trestle cross section is shown in Figure 2-4.

Trestle and pier piles would be installed using a template that would be secured by four, 16-inch pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of pier/trestle construction. The use of the template would require the driving and removal of the template piles approximately 19 times for the trestle and 30 times for the pier (196 total installation/extraction moves of pipe piles). A typical trestle cross section is shown in Figure 2-4.

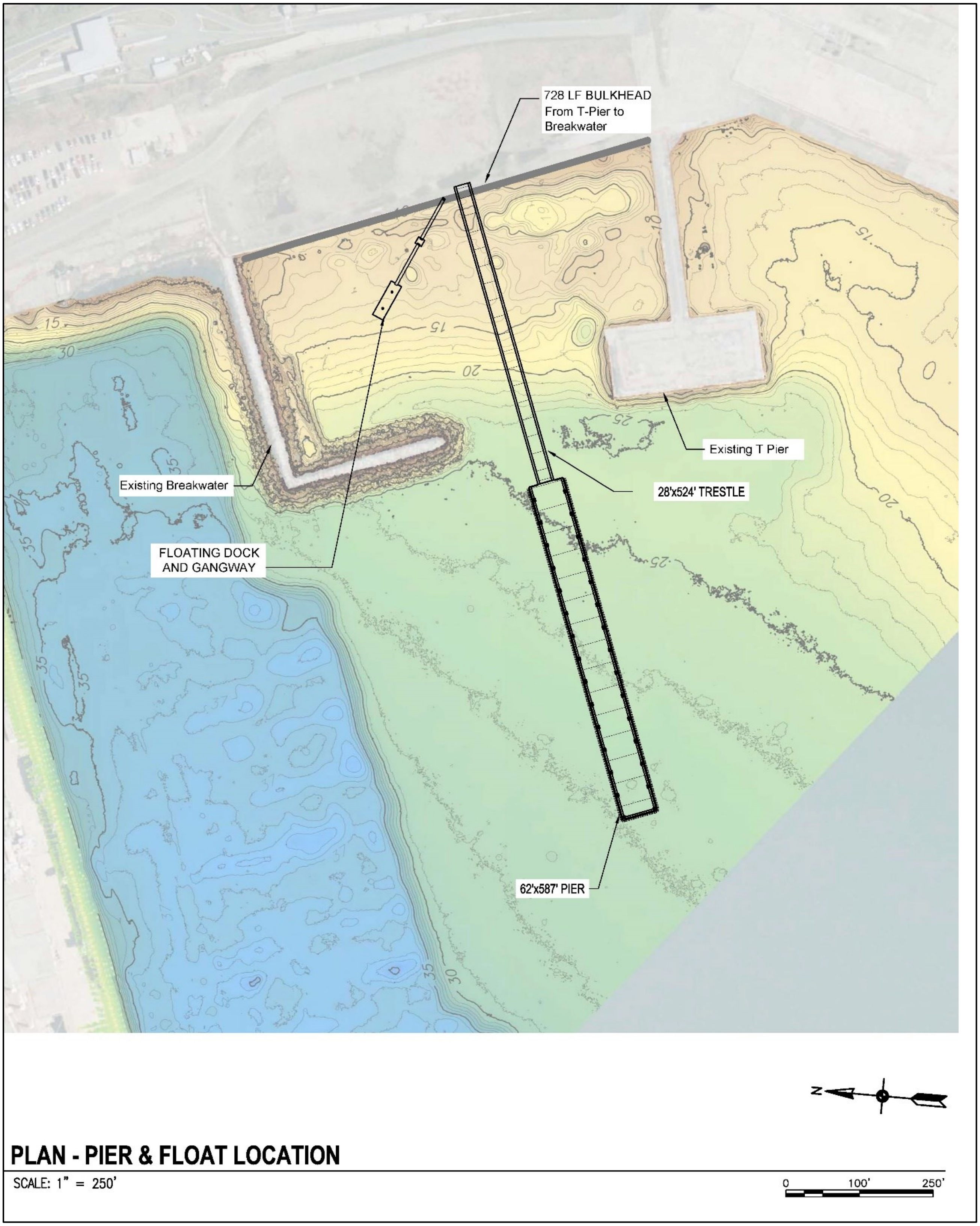

Figure 2-1. Plan View of Existing and Proposed Waterfront Facilities (Proposed Action)

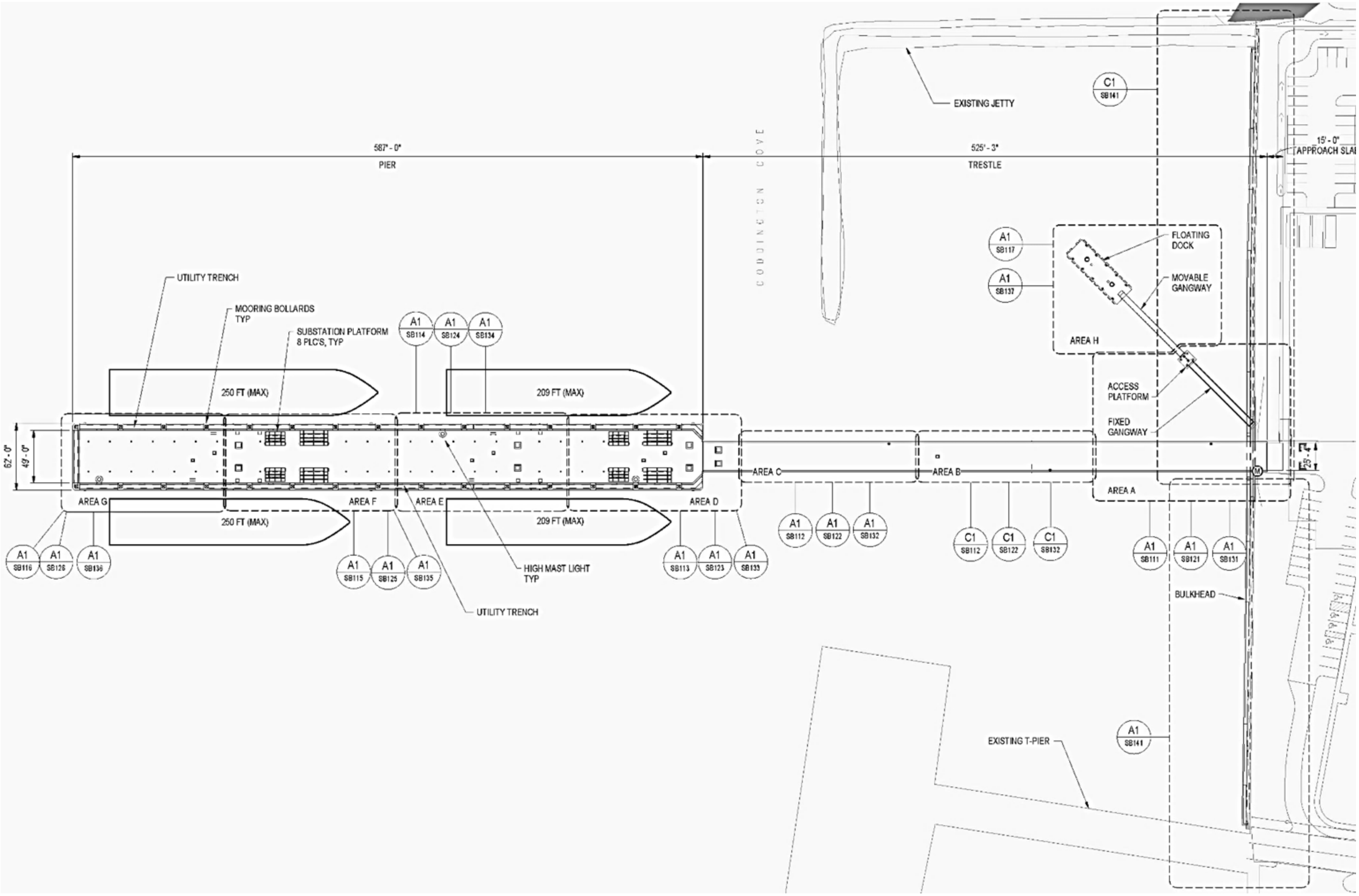

Figure 2-2. Plan View of Pier, Trestle, Floating Dock, and Bulkhead (Proposed Action)

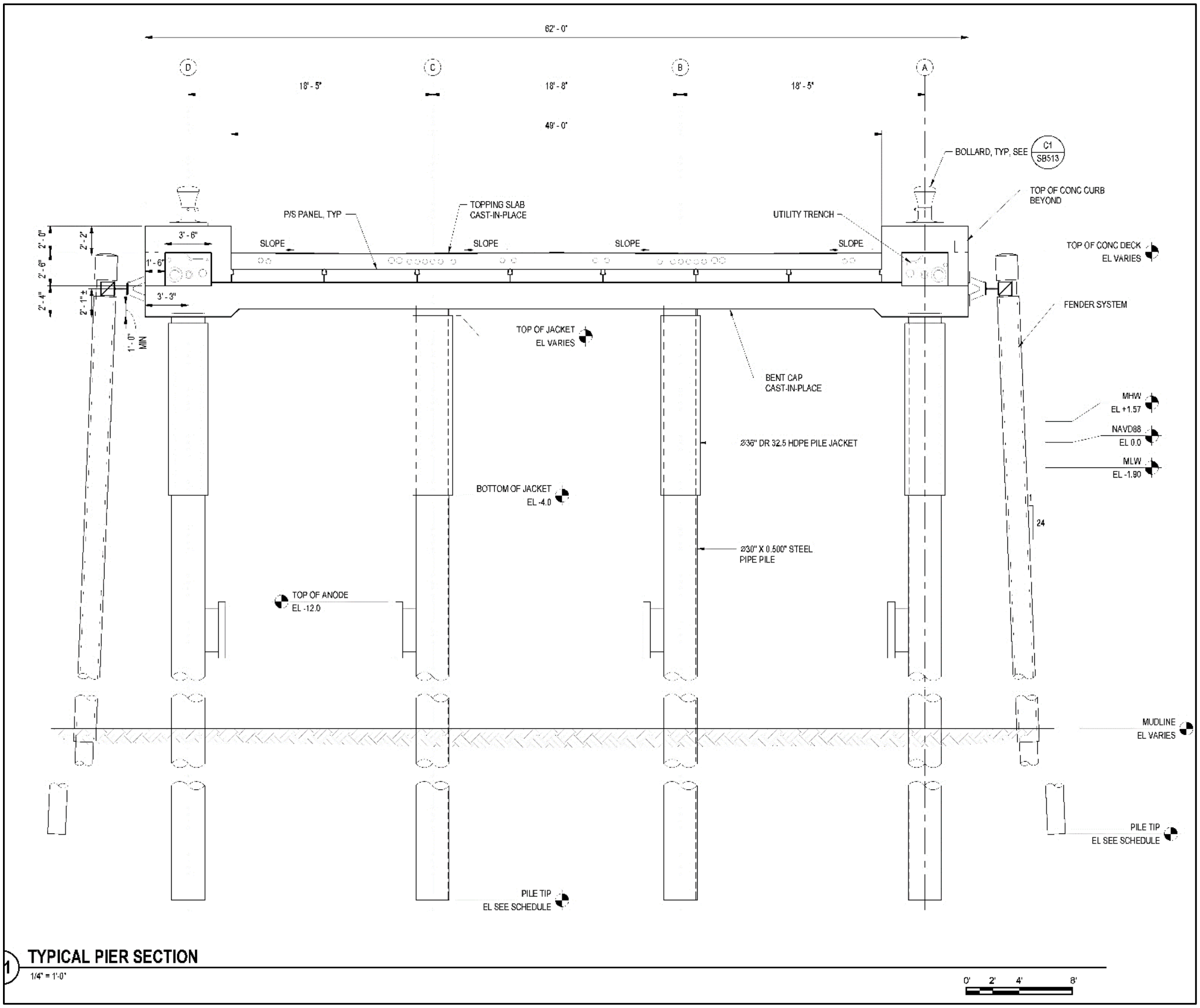

Figure 2-3. Cross Section of Pier (Typical)

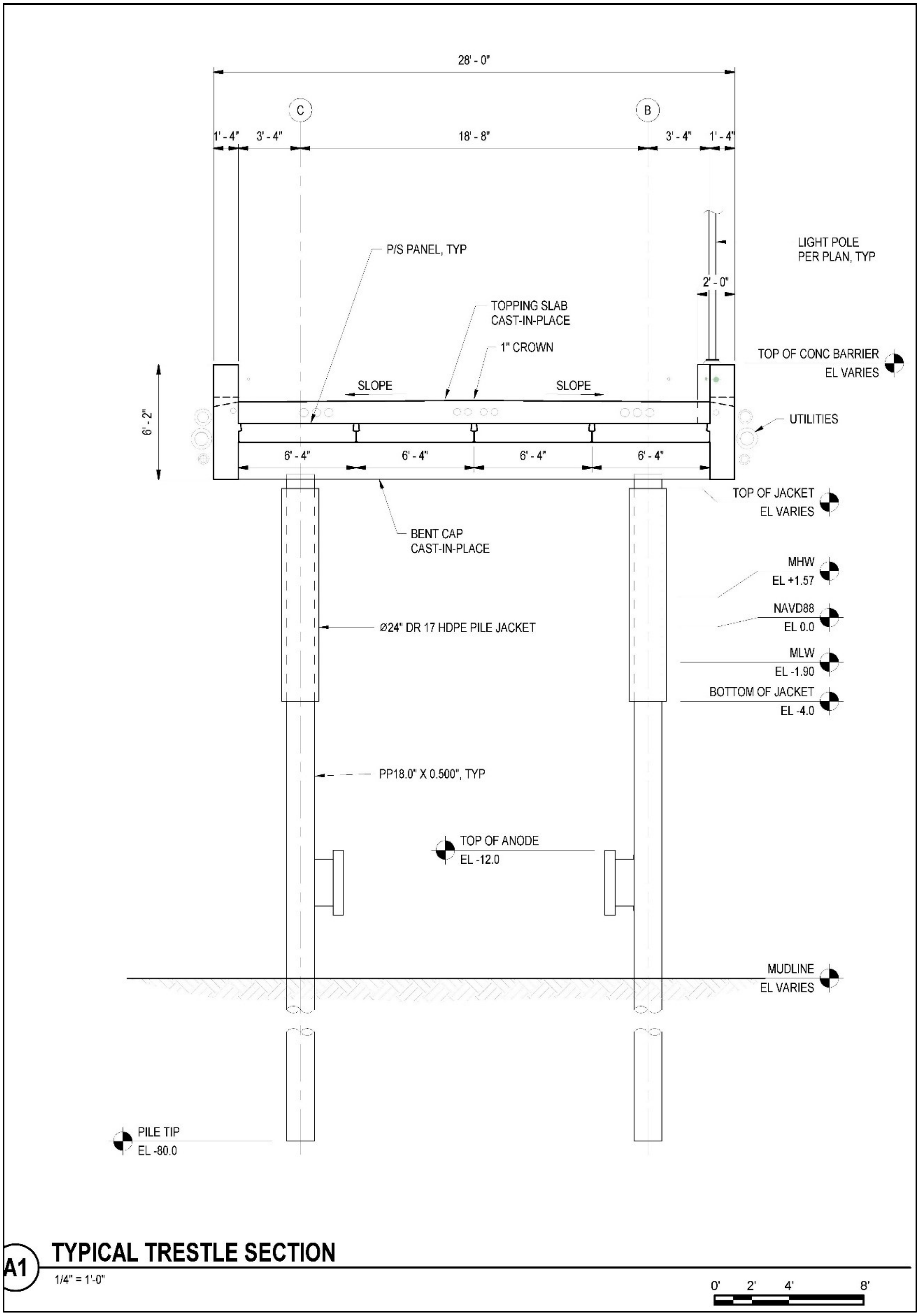

Figure 2-4. Trestle Cross Section (Typical)

The pier would have a deck elevation of 15.25 feet (North American Vertical Datum 1988), sloping down to 12 feet at grade level at the bulkhead. Critical equipment located on the pier deck, such as electrical transformers, would be elevated 3 feet above base flood elevation (Zone VE on the coastline, elevation 16.0 North American Vertical Datum 1988) to the elevation of 19.0 feet. Constructing the pier deck at 19.0 feet is not possible as it would negatively impact pier-side vessel operations.

2.1.2 Small Boat Floating Dock

The small boat floating dock would be constructed northwest of the main pier and trestle structures (see Figure 2-2). The floating dock is positioned at a location to provide a water depth of approximately 15 feet MLLW. The floating system would consist of a single heavy duty 20-foot by 66-foot concrete float (approximately 1,300 square feet) and two, 80-foot long and 5.5-foot-wide gangway segments (approximately 440 square feet each). Access to the floating pier would be provided directly from land with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway would be supported by four 18-inch diameter steel pipe piles and would be fully compliant with the Americans with Disabilities Act. The floating dock would provide berthing on three sides. Two 36-inch diameter, steel pipe guide piles would provide lateral support to the floating dock. The guide piles would be rock socketed into bedrock. The floating dock would be equipped with electrical shore power, lighting, communications, and potable water, but would not have fueling or sewage pump out capabilities.

Demolition would be required at the proposed site of the floating dock to remove an existing abandoned dock. Demolition would require vibratory extraction of three 12-inch diameter steel pipe piles and four 12-inch timber piles.

2.1.3 Bulkhead Reinforcement

Approximately 728 feet of bulkhead would be constructed at the Pier Landing Site (see Figure 1-2) to reinforce and stabilize the existing deteriorating bulkhead and to support the new facilities. The deterioration includes corrosion of the steel sheet piles and sinkholes in the fill behind the concrete cap (Childs Engineering Corporation, 2012).

The new bulkhead would be constructed in front of the existing bulkhead from the T-Pier to the existing breakwater (see Figure 2-1). A combination of approximately 115, 18-inch diameter pipe piles (king piles) and 230 steel Z-shaped, intermediate steel sheet piles would be installed along the face of the existing bulkhead (Figures 2-5 and 2-6). Piles would be installed in front of the existing double channel wale, which extends approximately 12 inches from the existing bulkhead face. The existing bulkhead wale cannot be removed to place the new bulkhead closer because such disturbance could cause collapse of the existing bulkhead. Thus, the bulkhead would project a total of approximately 30 inches into the water beyond the existing bulkhead. This space would be filled with pea gravel. The combination bulkhead would provide sufficient support so that anchors on land would not be required, thus avoiding disturbance of the existing shoreline anchoring system and soils. The new bulkhead would be topped with a concrete cap and a concrete façade that would extend to just below mean high water.

The pipe piles would be driven into the cove bottom from the mudline to weathered bedrock and sheet piles would be driven into dense glacial till by vibratory and impact hammers. If obstructions, such as boulders or debris are encountered, pile installation may require use of a “down-the-hole” hammer to break up rock or may require moving the obstruction aside using mechanical means with incidental sediment disturbance. Debris would be pulled from the water and disposed of appropriately. Rock would be stockpiled during pile driving and then reset as close to the original position as possible.

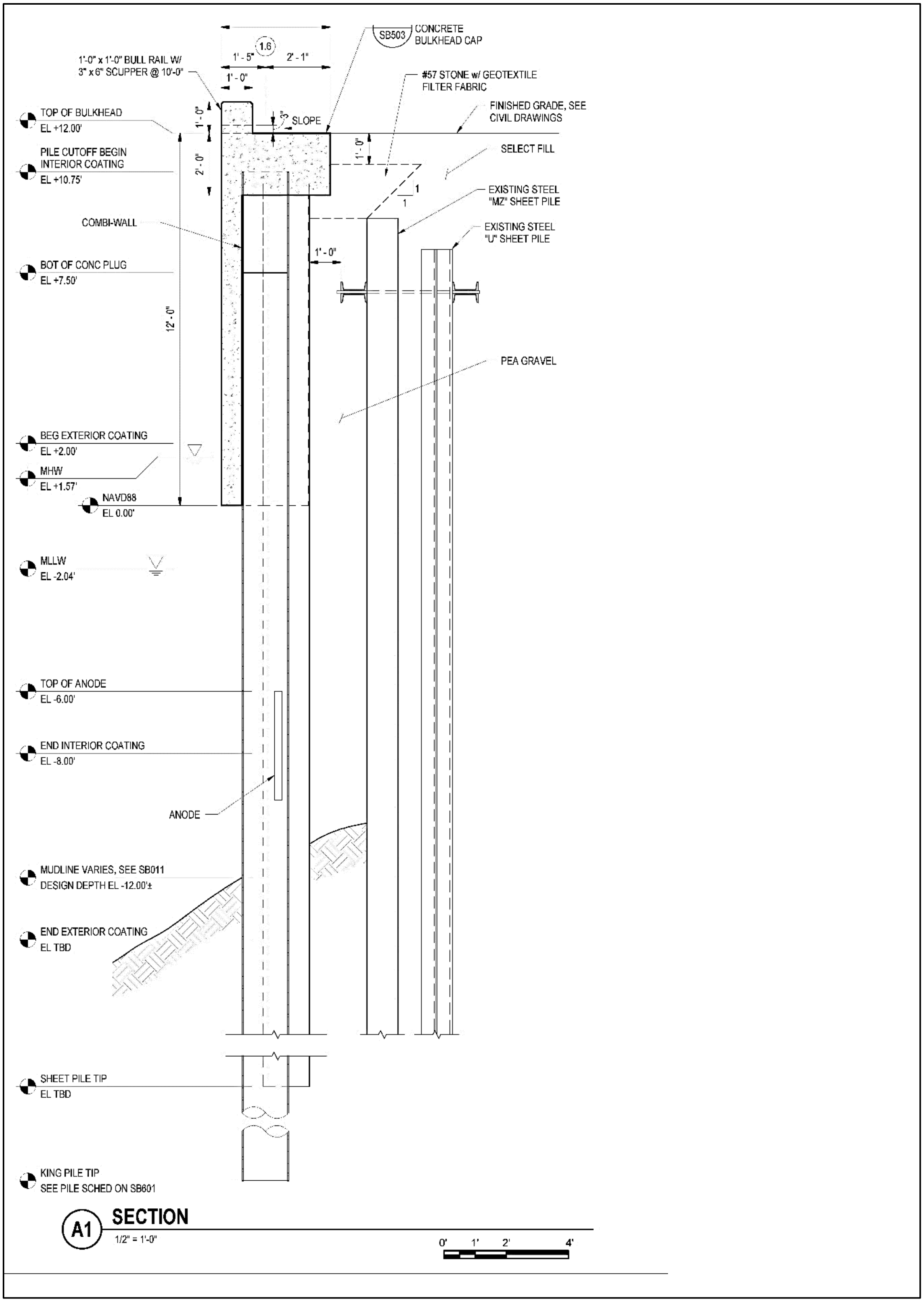

Figure 2-5. Bulkhead Cross Section (Typical)

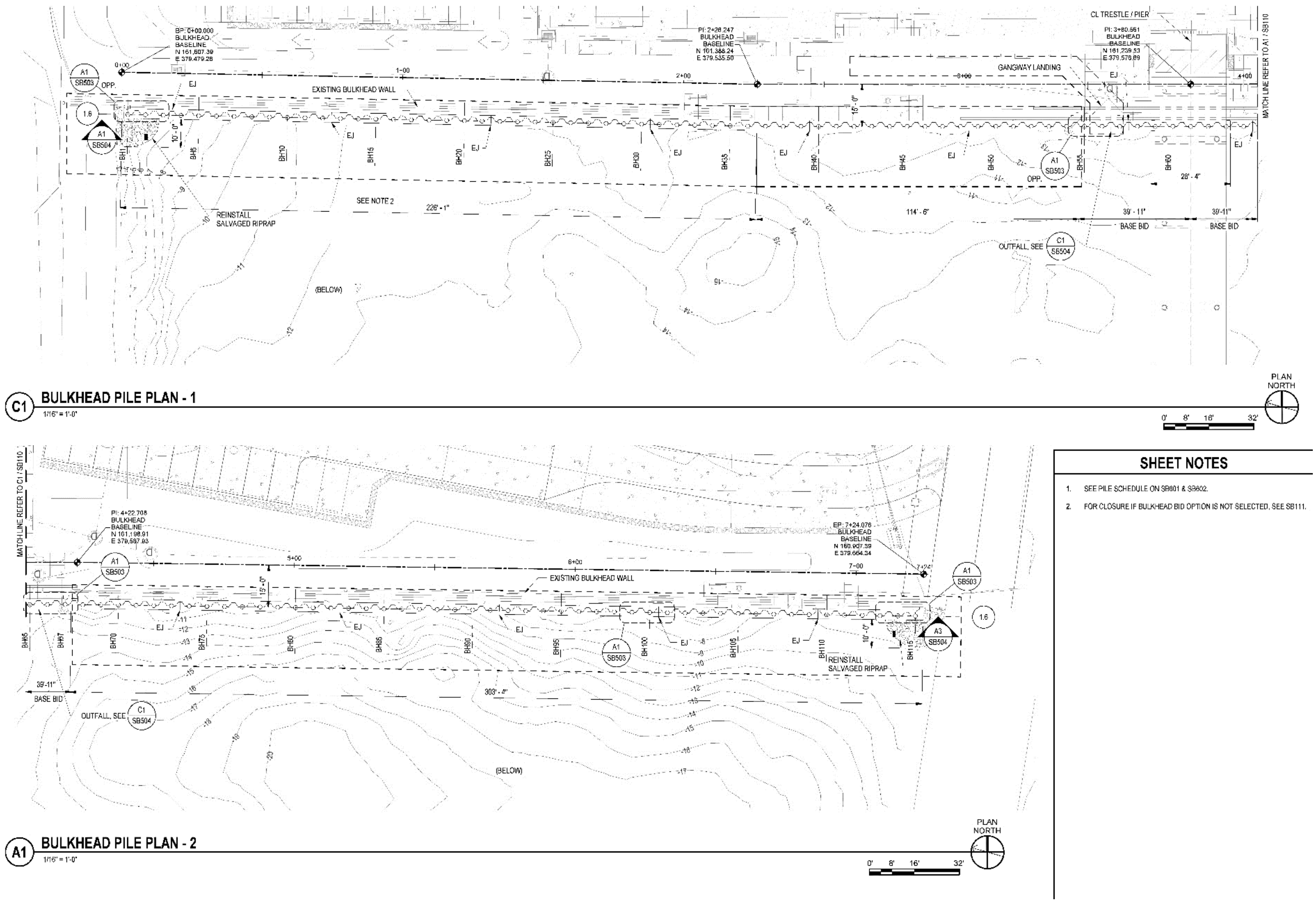

Figure 2-6. Bulkhead Plan View (Typical)

Minimal demolition would be required along the existing bulkhead. No demolition would occur in the water. The existing concrete sheet pile cap would be removed along with several feet of the steel sheet piles to enable construction of the new combination bulkhead. To tie in the ends of the new bulkhead, a portion of the existing revetment rock at the north and south ends would be removed and salvaged.

2.1.4 Shoreside and Support Facilities

Under the Proposed Action, the Pier Landing Site would be developed with a new administration and warehouse building (22,182 sf), 43,560 sf of exterior storage area, and associated parking. The plan includes a 30-space bituminous concrete parking lot located adjacent to the building and a separate, 45-space parking lot located north of the exterior storage area. Additionally, four small boat tie-down locations, eight CONEX boxes (storage containers), a pre-fabricated hazardous materials storage container, a 300-sf boat washdown area, and a 1,636-sf small boat repair building would be constructed on the site (Figure 2-7). An access road would be constructed between the new pier and existing Anderson Avenue Extension.

The administration and warehouse building would be sited outside of the 100-year floodplain (Zone AE Elevation 14.0 North American Vertical Datum 1988) but would be within the 500-year floodplain (Figure 2-7). Portions of the parking lots and exterior storage area would be located within the limits of the 100-year (Zone AE) floodplain. It is anticipated that the administration and warehouse building would be constructed at elevation 17 feet, 3 feet above base flood elevation (Zone AE at the Pier Landing Area, elevation 14.0 feet), to account for potential storm surges and projected sea level rise. Existing utilities on the site would be cut and capped and pavements removed. Several existing wood piles would be removed as required to construct new utilities and building foundations.

Utilities would include natural gas to supply heating and a backup generator, potable water lines, and sanitary sewer line including two lift stations, all of which would connect to existing utilities on NAVSTA Newport. Fire hydrants would be installed at Pier Landing Site for fire protection on the pier and for the administration/warehouse buildings.

The exterior storage area would be separated from the administration and warehouse building by the pier accessway which connects the new pier to the existing access road (Anderson Avenue Extension) parallel to Burma Road.

A new paved parking area would be constructed approximately 1,500 feet east of Pier Landing Site between the parking lot serving Building 11 and the installation perimeter along Chases Lane. The area is currently open lawn space with remnants of a basketball court and would be developed to contain a 50-space parking lot. Building 11 Parking Area is not within a FEMA-designated flood zone (Figure 2-8; also see Section 3.9 *Floodplains*).

Anti-terrorism and Force Protection measures would include the observance of required setbacks from roads and parking areas and the fortification of windows and doors commensurate with the occupancy requirements of the structures. The Pier Landing Site would also be enclosed by an 8-foot-high chain link fence.

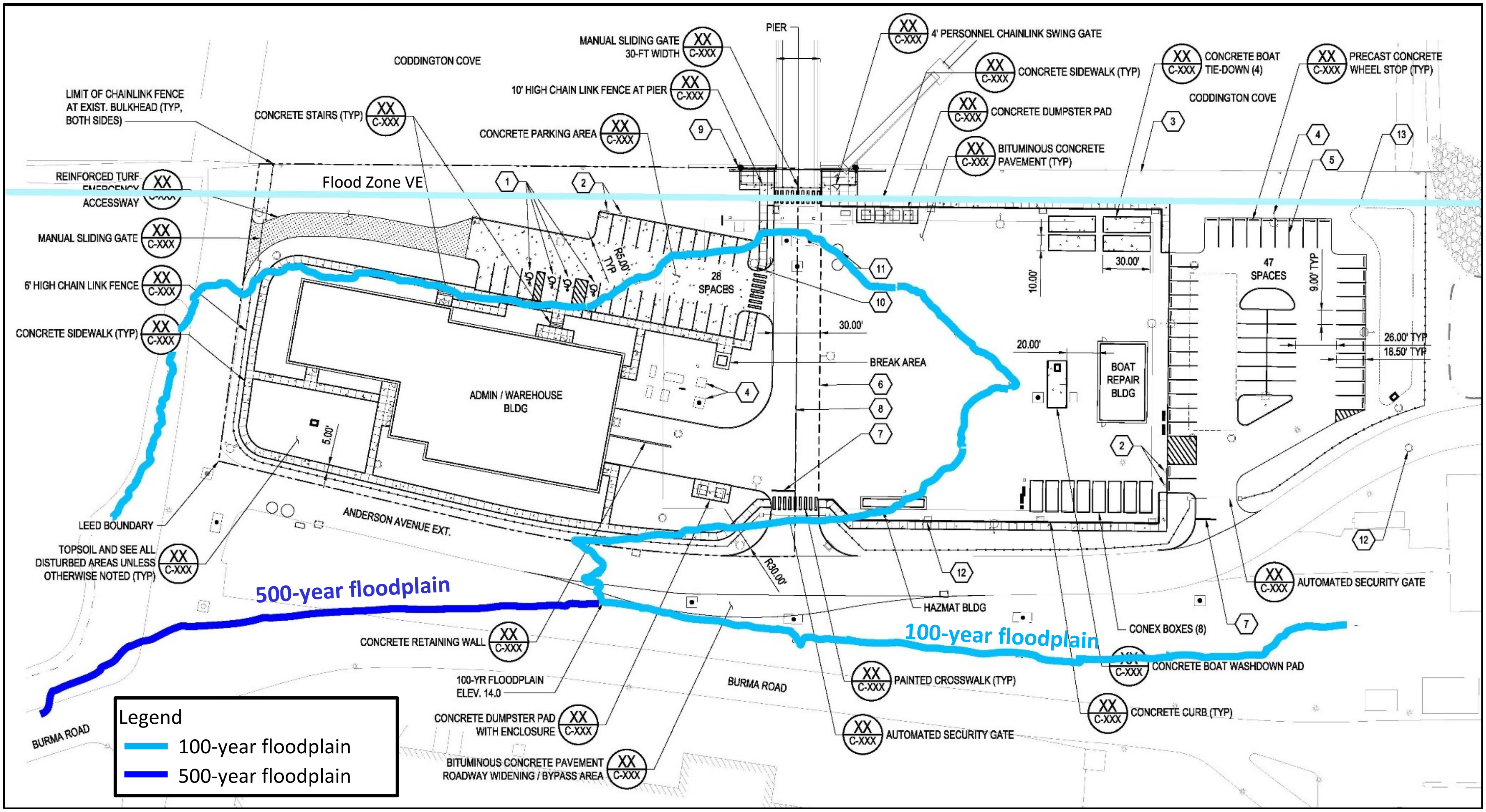

Figure 2-7. Shoreside Support Facilities at Pier Landing Site (Proposed Action)

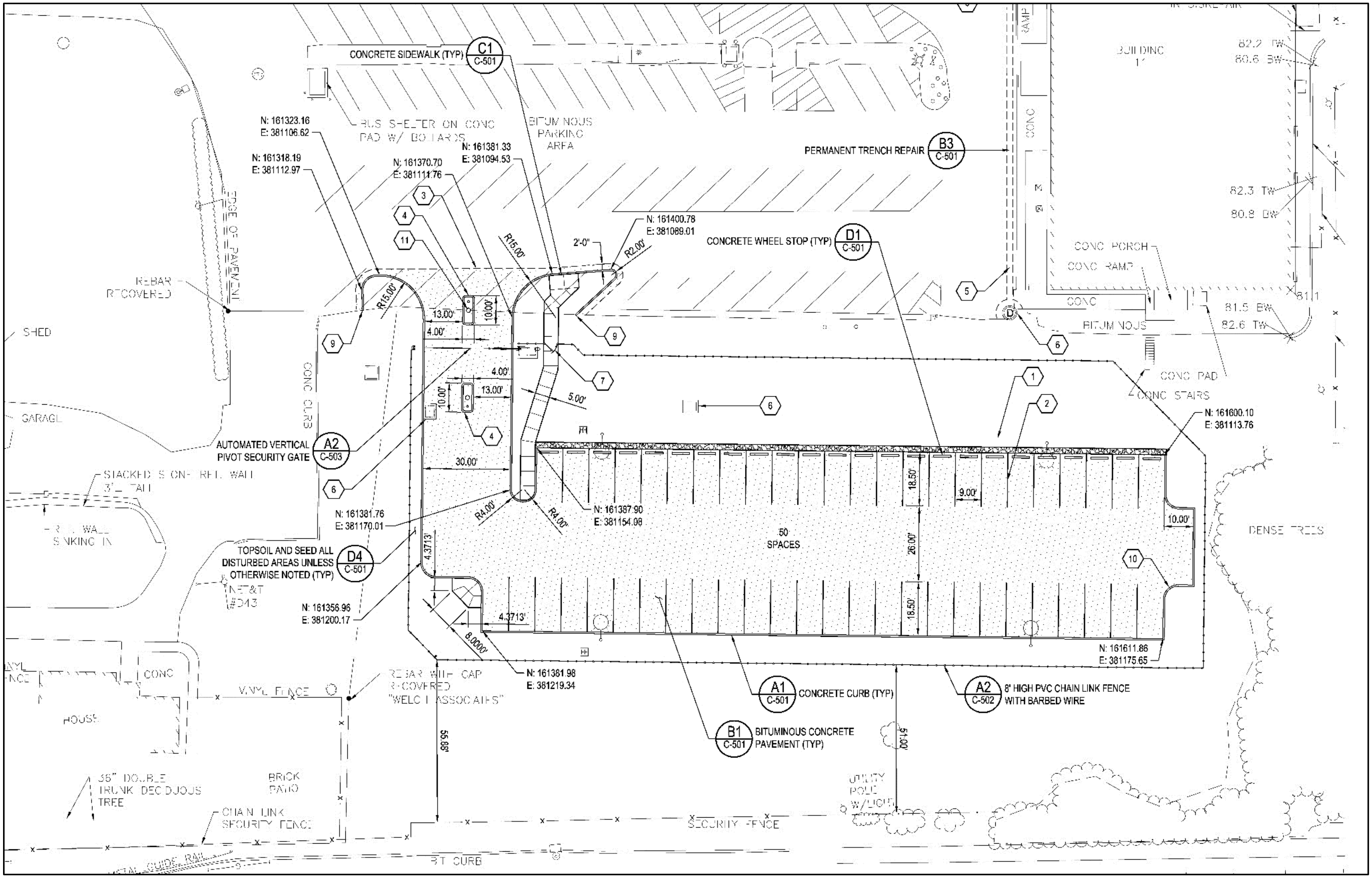

Figure 2-8. Building 11 Parking Area (Proposed Action and Action Alternative)

Due to restrictions prohibiting stormwater infiltration at Pier Landing Area, stormwater management would consist of traditional catch basin and storm sewer collection networks, and two bioretention filter basins, discharging to existing storm sewers directly to Coddington Cove via two new stormwater outfalls in the bulkhead. The stormwater system would include methods to improve water quality and detain flows as close as possible to pre-development levels. Alternate stormwater treatment and control methods include installing 4-foot sump catch basins, a shallow extended detention basin, vegetated bioretention filter basins, and landscaped bioretention filter basins with impermeable liners. The 45-space parking lot located north of the exterior laydown area would direct runoff via sheet flow to an adjacent bioretention filter basin. This basin would capture runoff and filter stormwater through 2 feet of planting soil medium to improve water quality. The basin would include an impermeable liner to prevent infiltration of stormwater into the surrounding subsoils. The basin would be drained through an 8-inch perforated underdrain and a high-level basin overflow. Accumulated sediments within the bioretention filter basin would be periodically removed to maintain water quality effectiveness.

Construction at Building 11 Parking Area would incorporate Low Impact Development (LID) design elements and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation. A bioretention filter area is proposed along the western perimeter of the parking lot to manage stormwater runoff and improve stormwater quality. In addition, an underground detention system is to be installed under the parking lot to maintain pre-development hydrology. The interconnected bioretention filter area and underground detention system would discharge to the adjacent existing storm drainage structure/network within the existing Building 11 parking lot.

Landscaping at the Pier Landing Site and Building 11 Parking Area would include shade trees, microclimate specific vegetation emphasizing coastal and pollinator habitats, and pedestrian pathways. Plantings would comply with the Rhode Island Coastal Resources Management Council (RICRMC) approved plant list. At the Building 11 Parking Area, an existing memorial tree and plaque dedicated to a former employee would be relocated to the corner of the site.

2.2 Screening Factors

NEPA's implementing regulations provide guidance on the consideration of alternatives to a federally Proposed Action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need for the Proposed Action require detailed analysis.

Potential alternatives that meet the purpose and need were evaluated against the following NOAA screening factors that were established to accommodate four vessels and support facilities:

- Physical Setting and Site Availability
    - Zoning compatible for industrial use
    - Pier berth and shore facilities available for NOAA's exclusive use
- Navigation and Pier Structure
    - Pier/berth length of 250 feet per vessel
    - Pier width ≥ 40 feet with ≥ 500 pounds per square foot live load capacity
    - Pier height 10–15 feet above MLLW (surge protection)

  - Berth maneuver width of 160 feet due to largest vessel beam (3 times largest vessel beam at 53 feet)
  - Pier infrastructure with suitable lighting, potable water, fire suppression, sewage, telecommunications (phone, internet, cable television), and electricity
  - Minimum channel, turning basin, and berth area depth of -23 feet MLLW
  - Minimum main channel width of 300 feet
  - No limitations to vessel access (e.g., presence of locks, drawbridges, etc.)
  - On-site small boat pier to accommodate a maximum of 120 linear feet of dock space
- Shore Facilities and Services
  - Shore facility available for exclusive use
  - A minimum of 20,000 gross square feet available for construction of shoreside facilities
  - A minimum of 100,000 exterior space available for laydown, storage, and parking
  - Controlled access of vehicle and foot traffic; compliance with Department of Commerce regulations, Department of Justice guidance and International Ship and Port Facility security code
  - Fuel terminal within 20 nautical miles or barge service capable of delivering 100,000 gallons
  - Waste oil, hazardous waste, and solid waste disposal services present on site
  - Parking to accommodate a maximum of 125 spaces for facility and long-term parking

Various alternatives were evaluated against the screening factors. The alternatives considered include:

- Proposed Action – Relocate vessels at NAVSTA Newport and construct a new pier at a new location in Coddington Cove
- Action Alternative – Relocate vessels at NAVSTA Newport and construct a new pier over the existing T-Pier location in Coddington Cove
- Alternative 3 – Relocate vessels at NAVSTA Newport, demolish existing T-Pier, and construct a new pier at the former T-Pier location in Coddington Cove
- Alternative 4 – Relocate vessels at NAVSTA Newport and recapitalize Pier 1
- Alternative 5 – Relocate vessels at NAVSTA Newport and recapitalize Pier 2

2.3 Alternatives Carried Forward for Analysis

Based on the reasonable alternative screening factors and meeting the purpose and need for the Proposed Action, one Action Alternative was identified and are analyzed within this EA.

2.3.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. The HB and EX would continue to be temporarily located at Pier 2 at NAVSTA Newport with short-term and periodic investments made to sustain current berthing/operations. Other facility uses would continue to be limited to temporary laydown/exterior storage at the waterfront (or other location as determined by the Navy), space-available use of the Navy's floating dock, and temporary parking. Off-site support and off-site storage would continue from Woods Hole (Port Captain, Vessel Support Assistants, Port Engineer, and Port

Electronics Technicians). Several operational requirements would continue to not be met (e.g., exclusive berthing, pier capacity, full capability to perform pier/in-water maintenance, on-site secure exterior storage, office space, floating dock). Off-site operations support would continue from Woods Hole (Port Captain, Vessel Support Assistants, Port Engineer, Port Electronics Technician), and some operational requirements would continue to not be met (e.g., zoning compatibility, exclusive berthing, full capability to perform pier/in-water maintenance, floating dock, loading/laydown without limitations). If a new lease could not be negotiated, the EX would need to find another homeport location. Similarly, the additional two vessels would remain at their existing locations. The No Action Alternative would not meet the purpose and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA. The No Action Alternative will be used to analyze the consequences of not undertaking the Proposed Action, not simply conclude no impact, and will serve to establish a comparative baseline for analysis.

2.3.2 Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

2.3.2.1 Pier, Trestle, and Small Boat Floating Dock

Under the Action Alternative, a new four-berth pier would be constructed at the location of the existing T-Pier in Coddington Cove for the relocation of the HB and EX and two additional vessels (Figure 2-9). The existing T-Pier was constructed in 1941 and consists of a 30-foot wide by 350-foot-long shore access approach leading to a 120-foot wide by 260-foot-long wharf. Historically, the T-Pier was reportedly used as a ferry terminal and later as a foundation for an office for the Former Derecktor Shipyard. A small wooden shipway is located at the west end of the T-Pier. The facility was constructed using steel sheet piles, secured by steel tie-rods, to form the perimeter. The interior of the sheet pile was backfilled and covered with a paved surface. There are no utilities or building structures on the T-Pier. The T-Pier is in disrepair with a severely corroded/failed sheet pile system/cap and failed surface.

The existing T-Pier would be repaired to avoid continued deterioration and loose debris falling into the water (approximately 1,700 linear feet). Approximately 50 linear feet of bulkhead on either side of the T-Pier would also be repaired. New sheet piles and pipe or H-piles would need to be installed around the perimeter of the T-Pier within 12 inches of the existing sheet piles (approximately 850, 2-foot-wide sheet piles and 20 pipe or H-shaped piles). The interstitial space between the new and old sheet pile would be filled. Once repaired, a new, 62-feet wide by 587-feet long (approximately 36,400 sf) pier would be constructed and would extend approximately 600 feet westward of the T-Pier head. The T-Pier head would be retained for use as a loading laydown area and truck turnaround. The new pier structure would be accessed by a 31-foot wide by 500-foot-long trestle that would be constructed over the T-Pier shore access approach. A small floating dock would also be constructed off the trestle as described under the Proposed Action.

Similar to the Proposed Action, the new pier and trestle would be pile-supported structures and would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that would be connected to shore utilities. Construction would be similar to that shown in Figures 2-3 and 2-4.

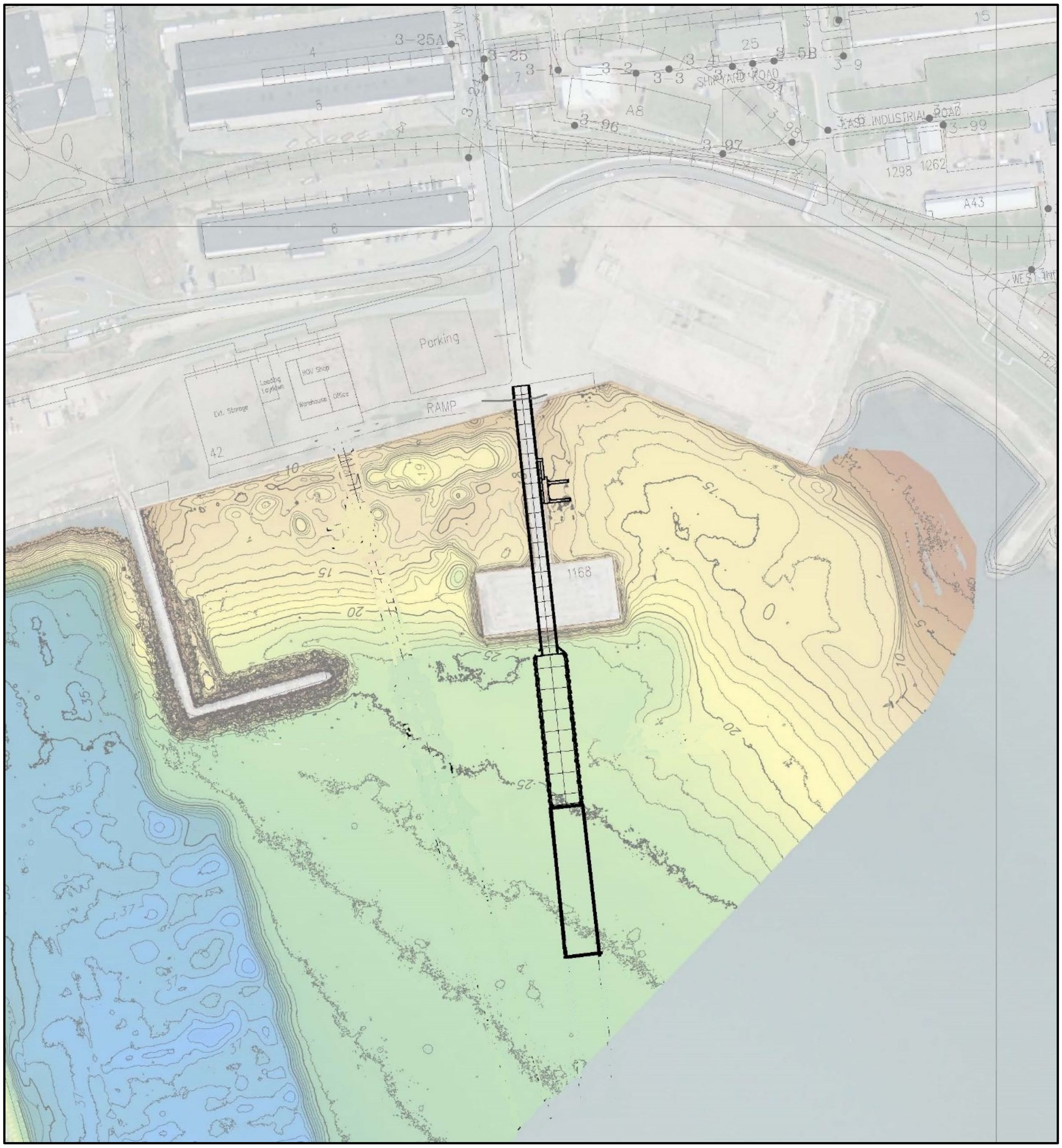

Figure 2-9. Plan View of Existing and Proposed Waterfront Facilities (Action Alternative)

Fueling activities and bilge water removal would be conducted using a tanker truck. Structural support piles for the new pier would consist of 180 steel pipe piles measuring 30-inches in diameter and 85-feet long. The piles would be driven into the cove bottom from the mudline to depths required to achieve bearing capacity. Fender piles would be installed and would consist of 330, 16-inch diameter by 65-foot-long steel pipe piles. Structural support piles for the trestle would consist of 38 steel pipe piles measuring 24-inches in diameter and 85-feet long. The piles would be driven through the existing T-Pier and access way. It is estimated that the installation of the support piles would occur within one calendar year with fender piles being installed in a following year, after the superstructure is largely complete. The floating dock would be similar as described under the Proposed Action.

2.3.2.2 Shoreside and Support Facilities

Development of the shoreside area (Pier Landing Site) would be similar to the Proposed Action except the laydown area would be located near the T-Pier as depicted in Figure 2-10. Development of Building 11 Parking Area would be the same as described under the Proposed Action (see Figure 2-7).

2.4 Alternatives Considered but not Carried Forward for Detailed Analysis

The following alternatives were considered, but not carried forward for detailed analysis in this EA as they did not meet the purpose and need for the project and satisfy the reasonable alternative screening factors presented in Section 2.2.

2.4.1 Relocate Vessels at NAVSTA Newport, Demolish Existing T-Pier, and Construct a New Pier at the Former T-Pier Location in Coddington Cove

Under this alternative, NOAA would demolish the existing T-Pier in Coddington Cove and construct a new pier in its place. This alternative was dismissed from further consideration due to the risks associated with the quality and management of the fill material within the T-Pier structure. Additionally, seasonal restrictions on dredging activities associated with pier demolition would not permit the required construction schedule to be met. Therefore, this alternative was not carried forward for detailed analysis in the EA.

2.4.2 Relocate Vessels at NAVSTA Newport and Recapitalize Pier 1

Under this alternative, NOAA would plan, design, and recapitalize the southeast portion of Pier 1. A portion of the pier (45 feet wide by 500 feet long) would be improved with new pilings, structural repairs, and 250 feet of steel sheet pile bulkhead at the pier access to meet berthing requirements. New pier utility services, fender system, mooring hardware, and lighting would also be constructed as well as a new floating dock. Shoreside facilities consisting of an operations building, warehouse, parking, and exterior loading/laydown area would also be constructed. Priority use berthing for NOAA vessels is not guaranteed due to uncertainty regarding potential pier use by the Navy. Therefore, because this alternative does not meet the operational requirement for exclusive use, it was not carried forward for detailed analysis in the EA.

2.4.3 Relocate Vessels at NAVSTA Newport and Recapitalize Pier 2

Similar to Pier 1, under this alternative, NOAA would plan, design, and recapitalize the northeast portion of Pier 2. The Pier 2 location would present the same challenges described for Pier 1 and would present additional challenges from competing uses both at the pier and at shoreside areas. Therefore, this alternative was not carried forward for detailed analysis in the EA.

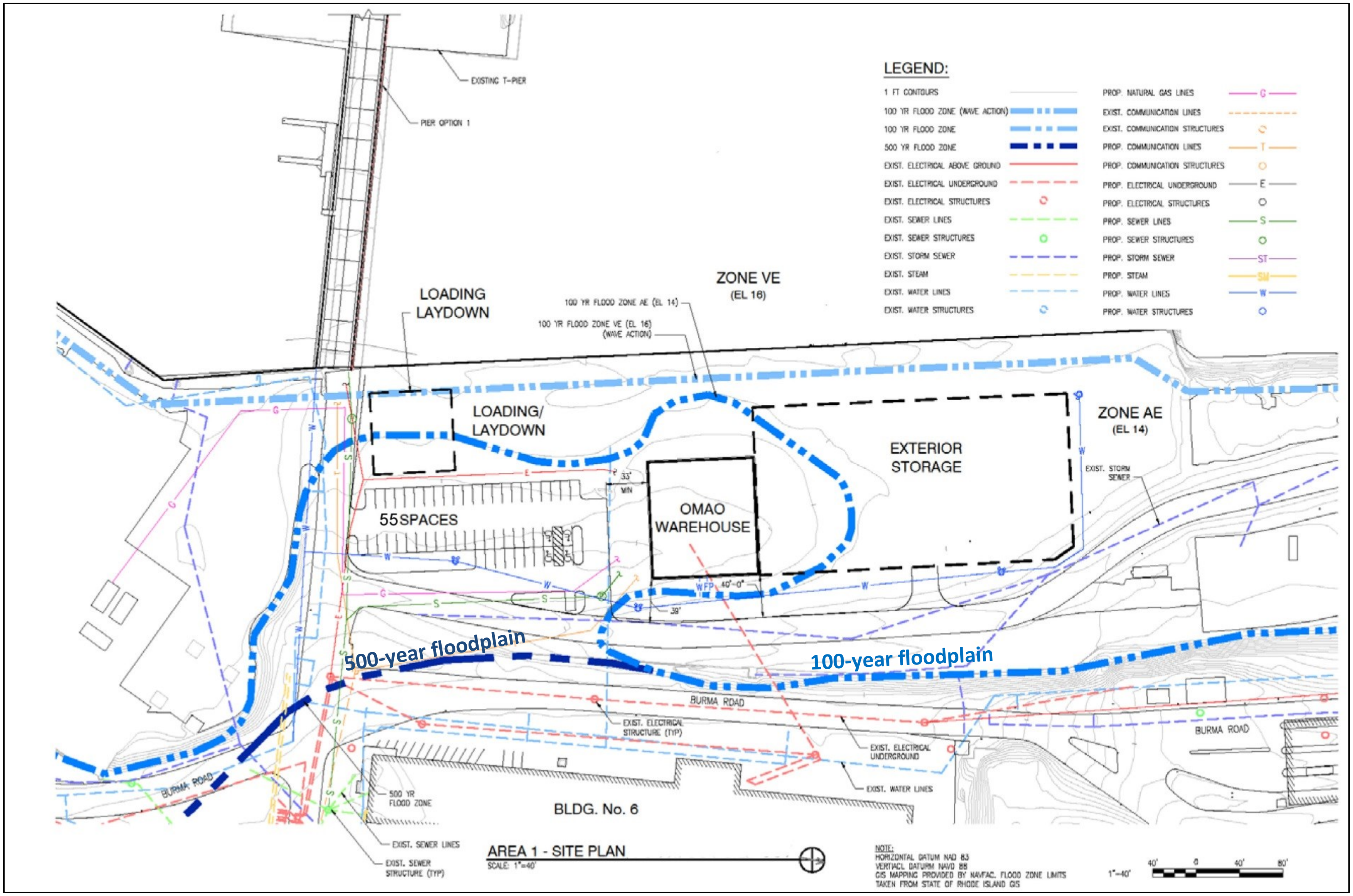

Figure 2-10. Shoreside Support Facilities at Pier Landing Site (Action Alternative)

2.5 Best Management Practices Included in Proposed Action

This section presents an overview of the best management practices (BMPs) that are incorporated into the Proposed Action in this document. BMPs are existing policies, practices, and measures that NOAA would adopt to reduce the environmental impacts of designated activities, functions, or processes. Although BMPs mitigate potential impacts by avoiding, minimizing, or reducing/eliminating impacts, BMPs are distinguished from potential mitigation measures because BMPs are (1) existing requirements for the Proposed Action, (2) ongoing, regularly occurring practices, or (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action. Table 2-1 includes a list of BMPs. Mitigation measures are discussed separately in Chapter 4.

Table 2-1. Best Management Practices

BMP	*Description*	*Impacts Reduced/Avoided*
Low Impact Development (LID)	LID measures, such as pervious pavement, would be incorporated into the facility design, where permitted, to the extent practicable.	Minimize adverse water quality impacts on receiving waters.
Soft Starts During Impact Pile Driving	Before the start of impact pile driving, the hammer would be operated at a reduced speed to allow sensitive species to move away from the area before pile driving begins.	Minimize impacts to sensitive species.
Spill Prevention, Control, and Countermeasures Plan	The Spill Prevention, Control, and Countermeasures Plan would describe appropriate methods for materials handling and storage to minimize the potential for accidental releases into the environment and the appropriate response procedures should an accidental release occur.	Minimize adverse impacts to soils, groundwater, and surface water from accidental releases.
Sedimentation and Erosion Controls	Erosion control measures would be installed prior to construction, and a soil and erosion control plan would be implemented to guide appropriate placement of control measures on the site. Construction activities would comply with the applicable regulations regarding Erosion and Sedimentation and Stormwater Management Law.	Prevent direct and indirect adverse impacts to water quality of receiving waters.

3 Affected Environment

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and NOAA guidelines, the discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts from the Proposed Action and Action Alternative. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact. This section includes land use, geological resources, hydrological processes, air quality, water resources, cultural resources, flora and fauna, wetlands, floodplains, coastal zone management, noise, transportation, utilities and solid waste, visual impacts, and hazardous materials.

3.1 Land Use

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term land use refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel.

Local zoning regulations do not apply to federally owned land. However, federal property may be located within zoning districts. This occurs at NAVSTA Newport. As federally owned land, NAVSTA Newport is not required to comply with municipal zoning ordinances, provided the land remains under federal ownership. Currently, Pier Landing Site and Building 11 Parking Area are zoned public (P) by the town of Middletown (Town of Middletown, 2015). This district is established to provide for major public lands owned by federal, state, or municipal governments. The purpose of this district is to relate the zoning map to major elements of actual land use and to the Comprehensive Community Plan, and to provide zoning controls if the public use is abandoned or the land is sold for private use.

Coddington Cove is the industrial core of NAVSTA Newport. Directly north of the industrial area on Coddington Cove are the principal research, development, test, and evaluation functions under the Naval Undersea Warfare Center (NUWC). The waterfront of Coddington Cove is limited to NUWC research facilities and other Navy research, development, training, and education buildings, as well as use by the USCG. NAVSTA Newport's two piers are located north of Pier Landing Site and provide berthing for two inactive ships, the USCG, and other visiting vessels. They are not currently designated for any Navy missions.

Building 11 Parking Area is also located within the industrial core of NAVSTA Newport. However, due to the proximity of the site to the installation boundary, residential land uses are also supported in adjacent areas.

3.2 Geological Resources

This discussion of geological resources includes topography, geology, soils, bathymetry, and marine sediments. Topography is typically described with respect to the elevation, slope, and surface features found within a given area. The geology of the area includes bedrock materials and mineral deposits. Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Bathymetry is described in terms of the topography of the Bay floor where the Proposed Action would occur.

Sediments are the solid fragments of organic and inorganic matter created from weathering rock transported by water, wind, and ice and deposited at the bottom of bodies of water.

The affected environment for geological resources is limited to lands that would be disturbed by the Proposed Action.

3.2.1 Topography

According to U.S. Geological Survey (USGS) topographic maps, Pier Landing Site is relatively flat with a gradual slope towards the west. The site lies between 10 and 20 feet above sea level. Building 11 Parking Area is also relatively flat with a gradual slope to the southwest. Building 11 Parking Area lies between 80 and 90 feet above sea level.

3.2.2 Geology

A subsurface site investigation of Pier Landing Site was performed in February 2020 and geophysical surveys were conducted in March 2019. Strata encountered at the site in order of increasing depth below surficial pavements or mudline typically consist of fill, estuarine deposits, glacial till, weathered bedrock, and Rhode Island formation shale bedrock. The thickness, depth, and properties of the strata vary by area locations. Pier Landing Site is underlain by granular fill soils comprised of medium dense heterogeneous uncontrolled fills overlying loose suspected dredge spoils (NAVFAC MIDLANT, 2022).

Test borings conducted at the Building 11 Parking Area in 2021 found the area to generally consist of granular fill soils underlain by either glacial till and/or weathered bedrock. According to FEMA seismic hazard maps, the State of Rhode Island has a seismic hazard classification of “B” indicating that the area could experience shaking of moderate intensity (FEMA, 2021). USGS seismic hazards maps indicate that Rhode Island could experience four to ten occurrences of damaging earthquake shaking every 10,000 years (USGS, No date).

3.2.3 Soils

According to the U.S. Department of Agriculture, soils at Pier Landing Site are classified as Urban land. This map unit is defined as areas consisting mostly of sites for buildings, paved roads, and parking lots. Most areas are in intensely built-up portions of Providence and Newport Counties. The areas are mostly rectangular and range from 5 to 100 acres. Slopes range from 0 to 10 percent but are dominantly 0 to 5 percent (USDA, 2017).

According to project-specific geotechnical sampling conducted in February 2020, Pier Landing Site is underlain by granular fill soils comprised of medium dense heterogeneous uncontrolled fills overlying loose suspected dredge spoils (NAVFAC MIDLANT, 2022).

Extensive soil sampling throughout the installation has shown widespread arsenic in soil at levels exceeding regulatory limits. The arsenic is either natural or attributable to past installation activities. As a result, excavated soils are managed in accordance with the installation Soil Management Plan. Soils on NAVSTA Newport contain naturally occurring arsenic at concentrations (approximately 7 parts per million) that may exceed state residential and industrial/commercial direct exposure criteria under the remediation regulations (Navy, 2015).

Soils at Pier Landing Site are part of the Former Derecktor Shipyard, which is also known as ERP Site 19; OU 12 (NAVFAC, 2014a). A Human Health Risk Assessment performed on-site soils determined that:

- concentrations of metals and polycyclic aromatic hydrocarbons in soil pose an unacceptable risk to human health under hypothetical future residential scenarios,

- several metals were present in soil at concentrations exceeding state regulatory direct exposure criteria, and
- recent construction activities may have resulted in a release of asbestos-containing material (ACM).

A Record of Decision for the selected remedy was issued by NAVSTA Newport, with the concurrence of the U.S. Environmental Protection Agency (USEPA), in September 2014. The selected remedy for soil contamination was a combination of soil removal, soil coverage (soil, concrete, or pavement) and the establishment of LUCs and operation and maintenance requirements designed to isolate any remaining contaminants and prevent human exposure (NAVFAC, 2014a). The LUCs restrict the parcel to industrial land use and require maintenance of monitoring wells throughout the on-shore area. The LUCs also require maintenance of the new and existing soil covers and pavement to prevent exposure to subsurface soil. Long-term monitoring of the cover is required to ensure that contaminants remain contained (NAVFAC, 2014a). The selected remedy was implemented in 2017.

Recent sampling and analysis (December 2020) of soil at Pier Landing Area and along the bulkhead (December 2021) detected benzene(a)pyrene and metals (arsenic) in site soils above regulatory action levels. Arsenic is known to occur at elevated levels across NAVSTA Newport and is largely attributed to area geology. No asbestos was detected in any samples (NAVSTA Newport, 2021).

Soils at Building 11 Parking Area are classified as Udorthents-Urban land complex. This complex consists of moderately well drained to excessively drained soils that have been disturbed by cutting or filling, and areas that are covered by buildings and pavement. The areas are mostly larger than 5 acres. The complex is about 70 percent Udorthents, 20 percent Urban land, and 10 percent other soils. Most areas of these components are so intermingled that it was not practical to map them separately (USDA, 2017). Subsurface soils were found to be unfavorable for stormwater infiltration, which would require installation of a bioretention filter area and underground detention system.

Soil sampling conducted in December 2020 at Building 11 Parking Area detected arsenic in site soils above regulatory action levels. Arsenic is known to occur at elevated levels across the NAVSTA and is largely attributed to area geology. No asbestos was detected in any samples (NAVSTA Newport, 2021).

3.2.4 Bathymetry

Coddington Cove is located on the western side of Aquidneck Island and is a protected embayment formed by Coddington Point to the south and a 4,000-foot-long rubble-mound breakwater to the north. It covers an area of 1.6 square nautical miles with water depths up to 50 feet. According to a 2015 bathymetric survey of Coddington Cove, water depths in the proposed project area are less than 34 feet MLLW (Figure 3-1). Water depths within the protected area between the breakwater and the T-Pier range between approximately 6 feet and 26 feet MLLW. Beyond the protected areas water depths gradually deepen towards Narragansett Bay to a maximum depth of approximately 36 feet MLLW (Figure 3-2) (NAVFAC, 2015).

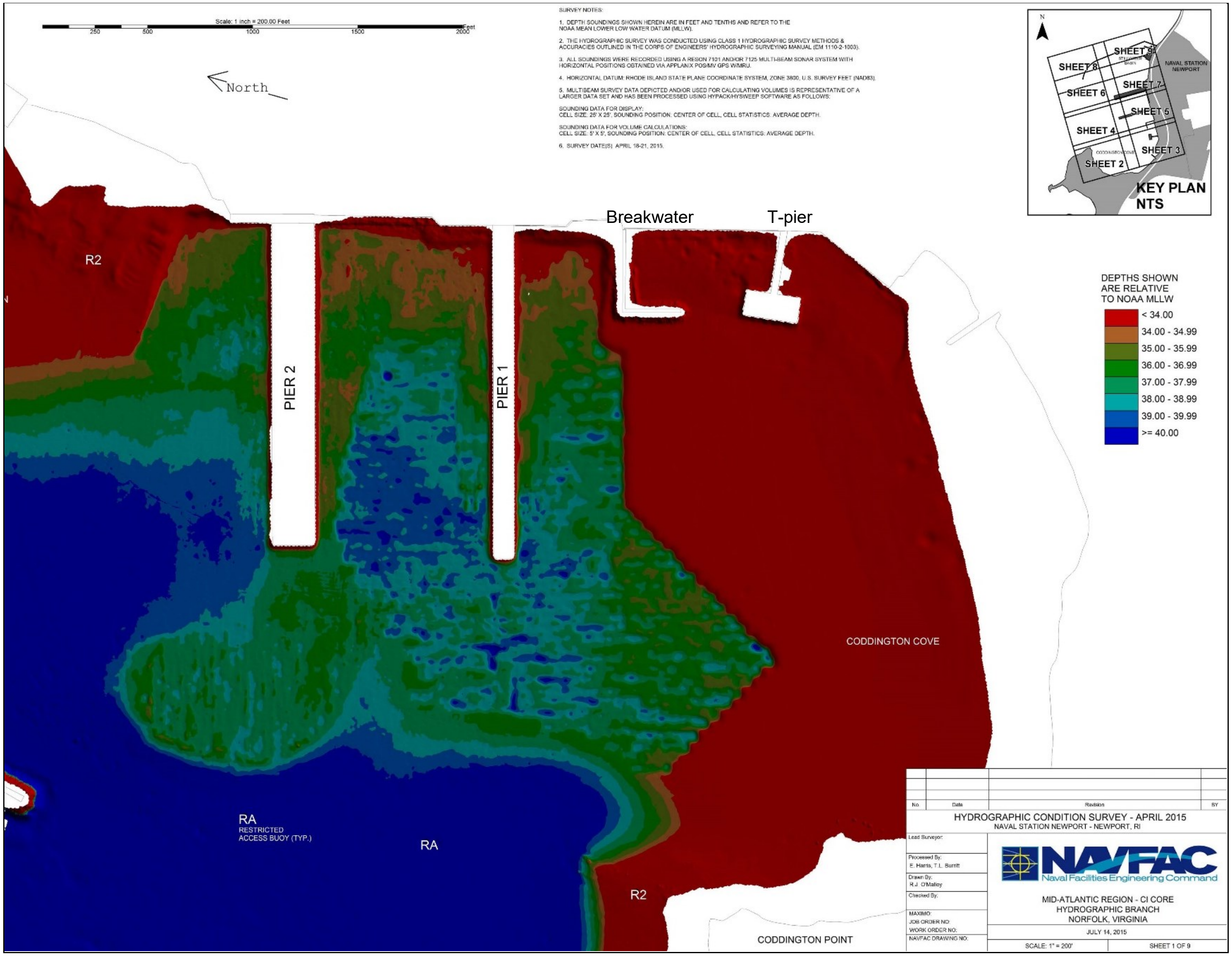

Figure 3-1. Bathymetry of Coddington Cove

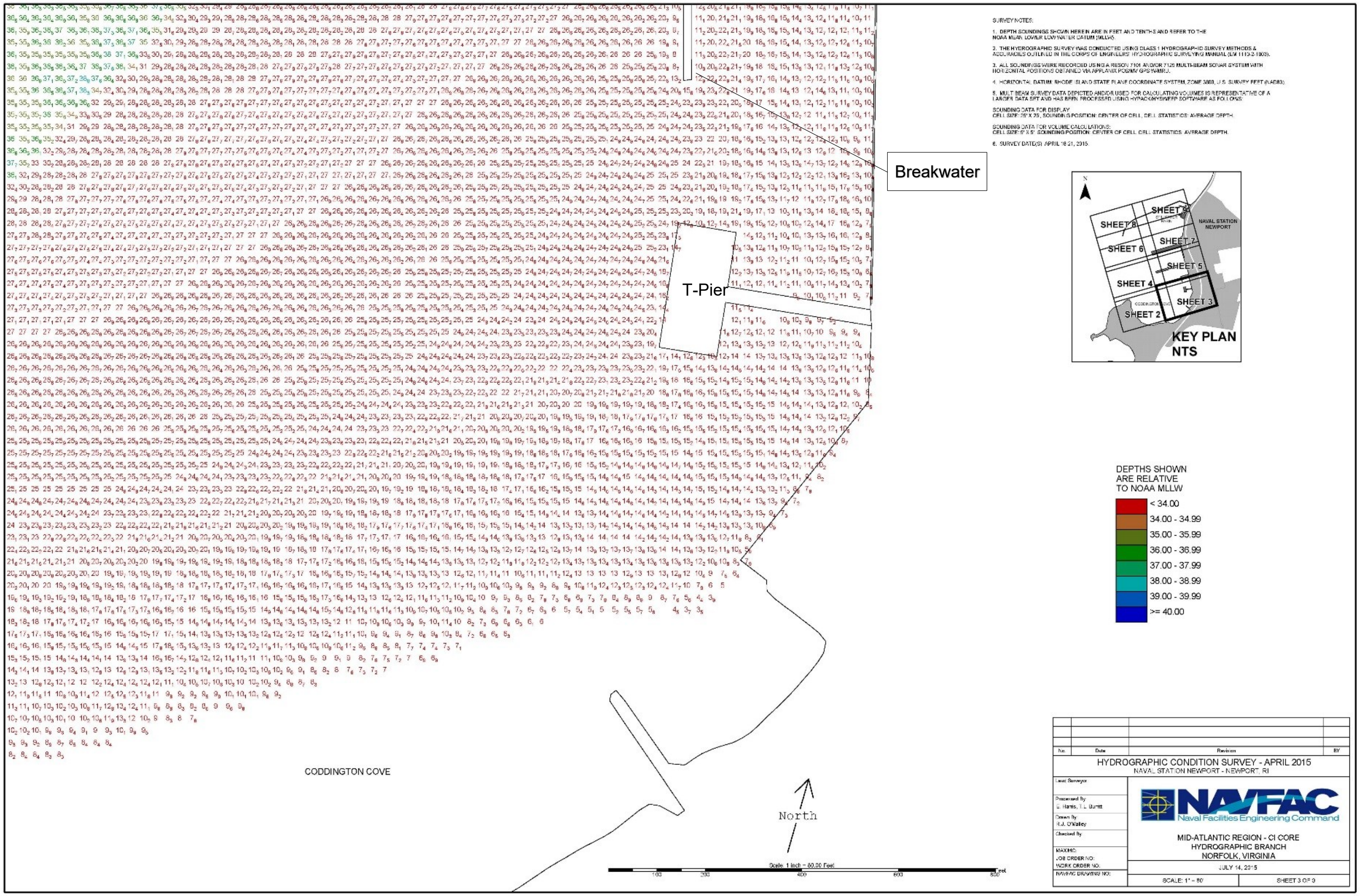

Figure 3-2. Bathymetry Between Breakwater and T-Pier

3.2.5 Marine Sediments

Surface sediments in Coddington Cove tend to be finer grained (contained more silt and clay) than underlying sandy sediments, probably due to the significantly decreased bottom energy and increased likelihood of fine-grained sediment deposition resulting from construction of the Coddington Cove breakwater in 1957 (NAVFAC, 2014).

Marine sediments in Coddington Cove are part of the Former Derecktor Shipyard, which is also known as ERP Site 19, OU 5. A Human Health Risk Assessment determined that concentrations of benzo(a)pyrene in shellfish pose unacceptable risk to potential future subsistence fishermen, and a marine ecological risk assessment identified concentrations of high molecular weight polycyclic aromatic hydrocarbons, polychlorinated biphenyls (PCBs), and lead in sediment posing an unacceptable risk to environmental receptors within OU 5.

Asbestos was also detected in sediment, presenting a potential inhalation hazard should the sediment be dredged and allowed to dry out (NAVFAC, 2014). The selected remedy for sediment contamination was a combination of dredging and off-site disposal and placement of a sand/gravel cap beneath Pier 2 to the north of the breakwater to eliminate potential unacceptable exposure of human and environmental receptors to contaminants. A Record of Decision for the selected remedy was issued by NAVSTA Newport, with the concurrence of the USEPA, in September 2014 (NAVFAC, 2014). The remedy of dredging and upland disposal of contaminated sediment was completed in 2017.

3.3 Hydrological Processes

Hydrographic surveys of the Former Director Shipyard Coddington Cove system were conducted in 1997 to determine the general circulation patterns and bottom energies responsible for controlling resuspension and deposition dynamics of sediments. A consistent counterclockwise circulation pattern was observed at the mouth of Coddington Cove with tidal water inflowing at the southern extent of the cove near Coddington Point and outflowing at the northern extent near the breakwater. As the flood tide increases, the region of inflow expands towards the north, and maximum velocities of greater than 20 centimeters per second become concentrated near the bottom. Strong (up to 50 centimeters per second) outflow also occurs at the northern end of the cove near the break water. At maximum flood conditions the flow at the mouth of the cove is vertically stratified with inflow at the bottom and outflow at the surface. While some variability is seen in the details of the flow pattern at the mouth, the basic lateral structure of inflow at the southern end of the cove and outflow at northern end also occurs during slack and receding (ebb) tides (SAIC/URI, 1997). Within Coddington Cove, the characteristic counterclockwise flow pattern recorded at the mouth of the cove sets up a net counterclockwise circulation within the interior of the cove (SAIC/URI, 1997).

Water velocities within the proposed project area were found to range between 8.5 and 11.5 centimeters per second and tended to increase towards the end of the floodtide. Although the water column appeared well mixed vertically, water flows in the enclosed area between the T-Pier and breakwater displayed a circular swirling motion, suggesting that the flushing of water within this area is less than that of the open cove areas (SAIC/URI, 1997).

Water quality within Coddington Cove is relatively homogeneous. Water quality observations obtained in the fall of 1997 indicated low biomass productivity and low ammonia relative other areas of Narragansett Bay. Dissolved oxygen concentrations ranged from 7.22 to 8.48 milligrams per liter or greater than 90 percent saturation. Sediment oxygen demand measurements, corrected for a temperature of 20 degrees centigrade, ranged from 0.17 to 0.27 grams of oxygen per square meter per day. These rates suggest a moderate sediment oxygen demand exerted on the water column relative to literature values showing a range from 2 to 33 grams of oxygen per square meter per day in the vicinity of municipal wastewater treatment and paper mill outfalls to 0.05 to 0.10 grams of oxygen per square meter per day for some U.S. rivers. Dissolved oxygen in the cove was predicted to approach a minimum of 6 milligrams per liter during the summer indicating that low dissolved oxygen is not adversely impacting biota within Coddington Cove. However, localized hypoxia may occur in the enclosed area between the T-Pier and the breakwater (SAIC/URI, 1997).

The overall pattern of circulation and bottom energy in Coddington Cove is such that the majority of sediment is carried out with the vigorous outflow. A portion is expected to fall out of suspension depending on bottom energies. The sediments, once resuspended or imported into the cove, are transported, sorted, and deposited by particle size in a counterclockwise pattern. Within the enclosed area between the T-Pier and the breakwater some deposition occurs, and the circular currents tend to retain particulates (SAIC/URI, 1997).

3.4 Air Quality

The Clean Air Act is the primary federal statute governing the control of air quality. Under the Clean Air Act, the USEPA has established National Ambient Air Quality Standards. The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. A conformity applicability analysis is the first step of a conformity evaluation and assesses if a federal action must be supported by a conformity determination. The Clean Air Act is further defined in **Appendix A**, Laws and Regulations.

NAVSTA Newport is in Newport County, which is within the Metropolitan Providence Interstate Air Quality Control Region. Newport County (and all of RI) is identified as an orphan nonattainment area for the revoked 1997 ozone standard as a result of a 2018 court case between the South Coast Air Quality Management District and EPA (US DC Court of Appeals 2018). The Rhode Island Department of Environmental Management (RIDEM) is responsible for implementing and enforcing state and federal air quality regulations in Rhode Island. NAVSTA Newport installation is within the Ozone Transport Region. The Ozone Transport Region was established by the 1990 amendments to the Clean Air Act and includes Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont, as well as the District of Columbia and portions of the Northern Virginia suburbs.

The most recent emissions inventory for Newport County is shown in Table 3-1. Volatile organic compound (VOC) and nitrogen oxides (NO_x) emissions are used to represent ozone because they are precursors of ozone.

Table 3-1. Newport County, Rhode Island Air Emissions Inventory (2017)

Location	*NO_x (tpy)*	*VOC (tpy)*	*CO (tpy)*	*SO_2 (tpy)*	*PM_{10} (tpy)*	*$PM_{2.5}$ (tpy)*
Newport County	1,841	3,514	8,748	74	573	284

Notes: tpy = tons per year; CO= carbon monoxide; SO_2=sulfur dioxide; PM_{10}=particulate matter less than 10 microns; $PM_{2.5}$=particulate matter less than 2.5 microns.
Source: (USEPA, 2020).

NAVSTA Newport is considered a major source for air pollutants. The primary air pollutants emitted at NAVSTA Newport are NO_x and SO_2 from the combustion of fuel. NAVSTA Newport also emits lower quantities of VOCs, CO, and PM. As a major source for air pollutants, NAVSTA Newport emits or has the potential to emit 50 tons per year or more of VOCs or NO_x or 100 tons per year of any other regulated pollutant. In 2015, NAVSTA Newport emitted approximately 65 tons of criteria air pollutants.

NAVSTA Newport's emissions are covered under a Title V Operating Permit (No. RI-25-07) issued by the State of Rhode Island. Current stationary emissions at NAVSTA Newport consist of boilers, storage tanks, and other light industrial sources associated with the various base facilities. Mobile emission sources come from motor vehicles and boats. Recent annual stationary source criteria pollutants emissions for NAVSTA Newport are shown in Table 3-2.

Table 3-2. Air Emission Inventories for Naval Station Newport, 2017 – 2020

Year	*VOC (tpy)*	*NO_x (tpy)*	*CO (tpy)*	*SO_2 (tpy)*	*PM (tpy)*
2017	6.28	16.87	10.19	14.77	2.27
2018	5.78	19.35	11.83	15.15	2.45
2019	7.29	16.51	12.61	11.61	2.24
2020	2.61	16.58	12.17	13.86	2.18

Notes: tpy = tons per year.

3.5 Water Resources

This discussion of water resources includes groundwater, surface water, and shorelines. Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Surface water resources generally consist of marine and fresh water such as oceans, estuaries, lakes, rivers, and streams. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur. Shorelines can be located along marine (oceans), brackish (estuaries), or fresh (lakes) bodies of water. Shoreline ecosystems are vital habitat for multiple life stages of many fish, birds, reptiles, amphibians, and invertebrates. Different shore zones provide different types of habitats.

The following sections provide a description of the existing conditions for each of the categories under water resources at NAVSTA Newport.

3.5.1 Groundwater

Groundwater in the east bay section of Rhode Island is supplied primarily through aquifers in glacial till and bedrock. The average depth to ground water is 5 to 12 feet (NAVFAC Mid-Atlantic, 2021a). Groundwater resources at NAVSTA Newport can be found at relatively shallow depths because of the installation's low elevation relative to sea level. However, no shallow or artesian wells currently exist at NAVSTA Newport for human consumption purposes. The City of Newport provides NAVSTA Newport with potable water (NAVFAC Mid-Atlantic, 2021a).

The groundwater in the project areas (Pier Landing Site and Building 11 Parking Area) is classified by RIDEM as class B (GB), or groundwater that without treatment may not be suitable for drinking water; areas under this classification are served by public water systems (RIDEM, 2010).

Groundwater at Pier Landing Site is part of the Former Derecktor Shipyard, which is also known as ERP Site 19; OU 12. Groundwater at Pier Landing Site was assessed during site investigations conducted as part of the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA) clean-up of the Former Derecktor Shipyard site. A Human Health Risk Assessment of the site determined that concentrations of metals and VOCs in groundwater pose an unacceptable risk to human health under industrial worker and hypothetical future residential scenarios and present potential vapor intrusion risks. The selected remedy for groundwater contamination was to monitor natural attenuation to document the expected reductions in groundwater contamination. A Record of Decision for the selected remedy was issued by NAVSTA Newport, with the concurrence of the USEPA, in September 2014 (NAVFAC, 2014a).

Recent sampling and analysis (December 2020) at Pier Landing Site measured the depth to groundwater in the superficial aquifer from 8.04 to 15.81 feet below ground surface. Recent sampling also detected benzene(a)pyrene and metals (arsenic) in site soils above regulatory action levels. Arsenic is known to occur at elevated levels across NAVSTA Newport. No asbestos was detected in any samples. Soil gas samples collected from the site detected total petroleum hydrocarbons, benzene, and naphthalene at concentrations above regulatory thresholds (NAVSTA Newport, 2021).

3.5.2 Surface Water

Coddington Cove is approximately 395 acres and is partially protected by the mass of Coddington Point to the south and east and by a breakwater to north. However, the northwestern section of the cove is exposed to the open water conditions of Narragansett Bay.

Narragansett Bay covers approximately 147 square miles, and its watershed encompasses 1,705 square miles, of which over 60 percent is located in Massachusetts. Approximately 1.95 million people live within the watershed. Historically, population growth was the main factor affecting the condition of the Narragansett Bay watershed, as it led to severe pollution. Industrial operations released lead, chromium, and other contaminants; sewer systems discharged untreated sewage; and pavement and rooftops enabled rainwater to carry pollutants directly into waterways. In recent decades, government agencies and private-sector partners have sharply reduced some contaminants, nutrient pollution, and harmful bacteria by upgrading wastewater treatment facilities and stormwater systems. In the last two decades, upper estuary water quality has improved, and the acreage open for shellfishing has increased (Narragansett Bay Estuary Program, 2017).

The waters of Coddington Cove are classified as SB water by RIDEM. Class SB waters are designated for primary and secondary contact recreational activities; fish and wildlife habitat; and good aesthetic value (RIDEM, 2010). According to the 2018 state water quality assessment conducted under Section 303(d) of the Clean Water Act (CWA), Newport Harbor/Coddington Cove is listed as impaired or Category 5 and does not support its designated use as fish and wildlife habitat due to the presence of pollutants in sediments (sediment bioassay for estuarine and marine water). Category 5 waters are identified as impaired and require a total maximum daily load (RIDEM, 2018). Pier Landing Site contains several permitted stormwater outfalls that discharge into Coddington Cove. A nearshore survey conducted in 2017 that measured water quality in Coddington Cove found total suspended solids to range from 4 to 7 milligrams per liter (mg/L) (AECOM, 2017).

In addition to the RIDEM classification, the waters of Coddington Cove are also classified as Category 6 Industrial Waterfronts and Commercial Navigation Channels by the RICRMC. This category includes water areas that are extensively altered in order to accommodate commercial and industrial water-dependent and water-enhanced activities (RICRMC, 2017).

3.5.3 Shorelines

The proposed project area along the shoreline of Coddington Cove is classified by the RICRMC as “Manmade Shoreline.” As defined by the Rhode Island Coastal Resources Management Program (RICRMP), manmade shorelines are those characterized by concentrations of shoreline protection structures and other alterations, to the extent that natural shoreline features are no longer dominant.

They commonly abut Category 5 and 6 waters (RICRMC, No date). The waters adjacent to the proposed project area are Category 5 and 6 (refer to Section 3.5.2 *Surface Water*).

3.6 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.
- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

Inventories of cultural resources at NAVSTA Newport have been conducted to identify resources that are listed or potentially eligible for listing in the National Register of Historic Places (NRHP) (Department of the Navy, 2015). The most recent inventory, an architectural survey of Cold War resources built between 1946 and 1968, was conducted in 2016 and completed in 2020 (Department of the Navy, 2020).

The area of potential effect (APE) for cultural resources includes the Coddington Cove area of NAVSTA Newport. For archaeological resources, potential effects would be limited to the proposed project sites in Coddington Cove as those are the areas within the APE where ground disturbance would occur (see Figure 1-2). Combined, the proposed project sites include approximately 19 acres.

3.6.1 Archaeological Resources

There are no recorded terrestrial archaeological sites in the Coddington Cove area of NAVSTA Newport, and no archaeologically sensitive areas are within the terrestrial APE for cultural resources where ground disturbance would occur (Department of the Navy, 2015).

The APE for the Proposed Action and Action Alternative also includes the potential for submerged archaeological resources, which can include shipwrecks or prehistoric sites. Multiyear underwater archaeological investigations in the Newport area of Narragansett Bay have documented a number of marine archaeological sites along the Aquidneck Island shoreline. None of the documented sites is located on U.S. Navy property (Department of the Navy, 2015) and, according to Rhode Island State Historic Preservation Officer (SHPO), there are no aquatic sites or sensitive areas in the Coddington Cove area (Barlow, 2021).

The pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact, now submerged, landform. Therefore, there is no potential to impact archaeological resources associated with an intact submerged landform.

Building 11 Parking Area currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

3.6.2 Architectural Resources

The APE includes two identified historic architectural properties, Quarters NB-1 (Taylor-Chase-Smythe House) and the Destroyer Piers Historic District (Figure 3-3; Table 3-3). Quarters NB-1 is the former Commanding Officer's house, or Flag Quarters. The house was built in the mid-eighteenth century, with additions and modifications dating to the mid-nineteenth and early twentieth centuries. It was listed in the NRHP in 1989 under its historic name, Taylor-Chase-Smythe House, for its association with the Chase family and for demonstrating, through a series of alterations to the dwelling, the history of this nineteenth-century rural family and its economic fortunes (Friedlander & Bowie, 1986).

Table 3-3. Historic Architectural Properties in the APE

Historic Properties	*Date*	*NRHP Status*
NB-1 CC (Quarters NB-1)	Mid-18th century	Listed
Destroyer Piers Historic District	1955-1966	9 Contributing elements to the NRHP-eligible Destroyer Piers Historic District (Pier 1 CC, 394 CC, 395 CC, 396 CC, Pier 2 CC, 70U CC, 71U CC, S33 CC, S63 CC)

Notes: CC = Coddington Cove

The Destroyer Piers Historic District has a non-contiguous boundary and contains nine contributing elements and one non-contributing element (Table 3-3). The district was determined in the 2020 NAVSTA Newport Architectural Survey Update report (1946-1968) as eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer/Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. It also meets Criteria Consideration G, for properties that are less than 50 years old but have achieved exceptional significance. The period of significance for the historic district is from 1955, following the construction of Pier 1, to when the Command Cruiser-Destroyer Force's homeport was relocated to Norfolk, Virginia from Newport, Rhode Island in 1973. The district also meets the Criteria Consideration G, for resources that have achieved significance within the last 50 years (Department of the Navy, 2020).

NAVSTA Newport evaluated the NRHP eligibility of the T-Pier as part of a survey of architectural resources from the earlier Cold War period (1946–1968) (Department of the Navy, 2020). The Navy determined the T-Pier does not meet the NRHP criteria and, therefore, is not eligible for listing in the NRHP.

3.6.3 Traditional Cultural Properties

There are no known traditional cultural properties present within the NAVSTA Newport installation areas. Three federally-recognized Native American Tribes, the Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and Wampanoag Tribe of Gayhead Aquinnah, have an interest in NAVSTA Newport property. NOAA initiated consultation with these tribes to identify if there are any traditional cultural properties or any cultural or religious properties significant to the tribes located within the APE. NOAA did not receive responses from the tribes.

Figure 3-3. Historic Architectural Properties in the APE for the Proposed Action

3.7 Flora and Fauna

Flora and fauna include living, native, or naturalized plant and animal species and the habitats within which they occur. Habitat can be defined as the resources and conditions present in an area that support a plant or animal. Within this EA, flora and fauna are discussed in five categories: (1) terrestrial vegetation, (2) marine vegetation, (3) terrestrial wildlife, (4) marine wildlife, and (5) threatened and endangered species. The following discussions provide a description of the existing conditions for each of the categories under biological resources at NAVSTA Newport. Threatened and endangered species are discussed in Section 3.7.5.

The Rhode Island Natural History Survey (RINHS) Natural Resources Inventory and Assessment of Naval Station Newport was completed in 2006. The 2006 RINHS created, to the extent possible, a baseline inventory of flora and fauna and surveyed and assessed ecologically significant habitat on NAVSTA Newport land. A survey conducted in summer 2013 confirmed many of the native species that had been previously identified on NAVSTA Newport by the RINHS (2006) and added species not previously noted for different areas of the installation. A natural resources survey was conducted from July 2020 to June 2021 at NAVSTA Newport with its primary objective to update the 2006 RINHS inventory (NAVFAC Mid-Atlantic, 2021b). Secondary objectives included documenting all species and habitat community types observed on NAVSTA Newport with a particular focus on threatened and endangered species, providing an updated delineation of community types, and developing recommendations related to proposed ecological Special Interest Areas and opportunities for future habitat improvement activities. The proposed project area is located within one of the nine survey areas, the main installation.

3.7.1 Terrestrial Vegetation

Pier Landing Site is an industrialized waterfront with little vegetation. Any vegetation present would be common, weedy species that can tolerate frequent disturbance.

The Building 11 Parking Area is located approximately 1,500 feet east of the Pier Landing between the parking lot serving Building 11 and the installation perimeter along Chases Lane. The area is open lawn and landscaping, included an existing memorial tree and plaque. There are also remnants of either tennis or basketball courts within the space proposed for the parking improvements.

3.7.2 Marine Vegetation

Marine vegetation includes plants occurring in marine or estuarine waters. These may include algae and various grasses and is collectively referred to as submerged aquatic vegetation.

Available mapping indicates that eelgrass (*Zostera marina*) beds are prolific along the Newport shoreline including southwest of Coddington Point, but not within Coddington Cove (Northeast Ocean Data, 2021). Eelgrass can be found on sand or silt substrate on the lee side of Narragansett Bay islands where they are protected from predominant winds, at depths of depths of 6 to 10 feet at low tide (Figure 3-4). Macroalgal beds and eelgrass are protected as Special Aquatic Sites by the CWA and frequently share the same habitat. They are a primary source of food for many animals in Narragansett Bay and a critical nursery and shelter for shellfish and finfish; a filter of pollutants; a key place for nutrient cycling; and a guard against shoreline erosion by dampening wave energy and storms (SAIC/URI, 1997).

An eel grass survey of the proposed project area was conducted on July 10 and 11, 2018, during the time of peak biomass in New England, in accordance with an approved work plan (AECOM, 2018).

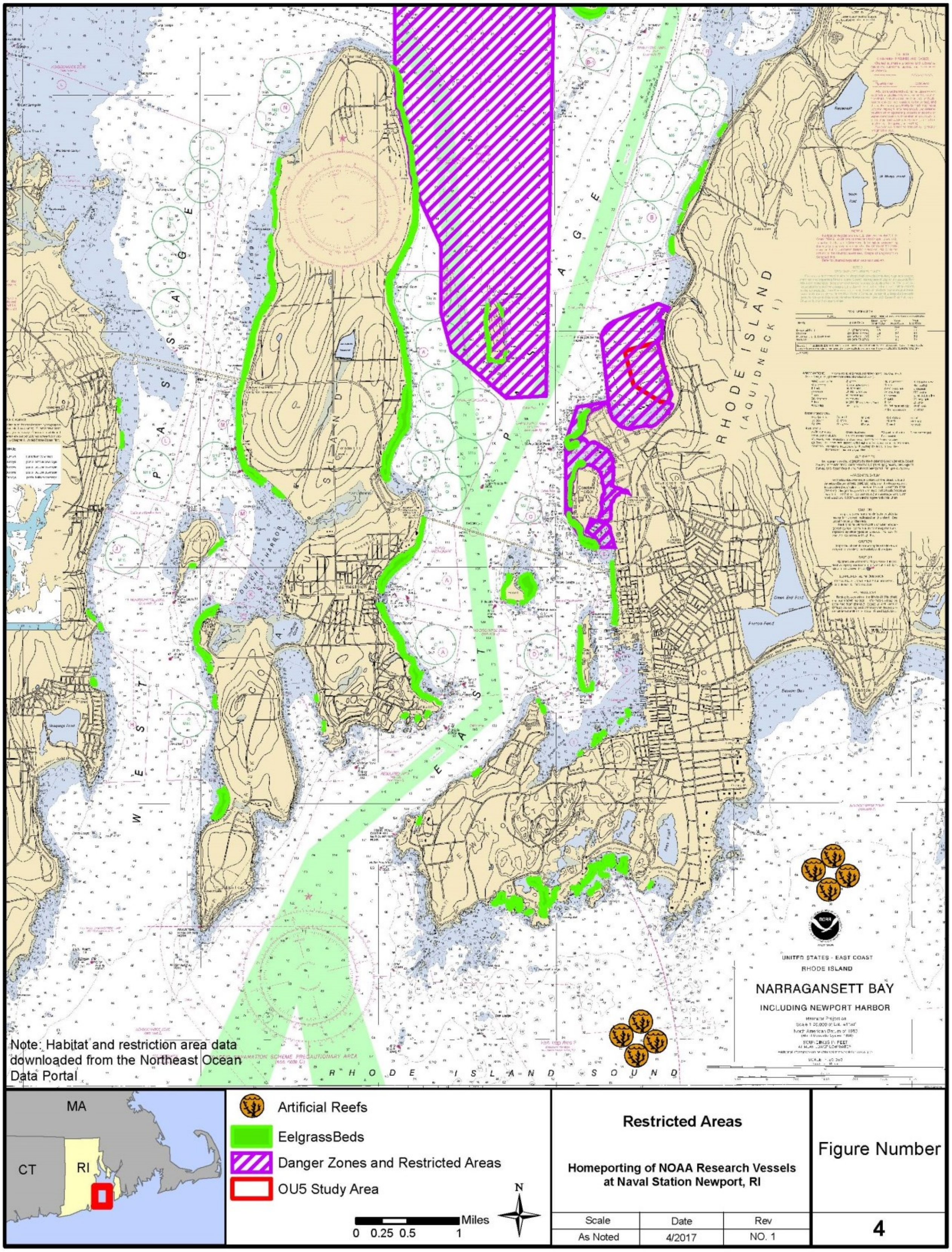

Figure 3-4. Restricted Areas and Eelgrass Beds in Narragansett Bay

The survey was conducted in general accordance with the protocols outlined in the *Joint Federal Agency Submerged Aquatic Vegetation Survey Guidance for the New England Region* prepared in 2016 by members of NOAA, USEPA, and U.S. Army Corps of Engineers (USACE) (USACE, 2016). Live eelgrass was not observed in the proposed project area. Additional observations west of the survey area (beyond the breakwater [greater than 500 feet from the bulkhead]) also confirmed that live eelgrass was not present at the site. There were limited observations of dead eelgrass blades present at the site (likely transported by currents from other portions of Narragansett Bay), but no live eelgrass was observed within or near the study area during survey activities.

A benthic survey was performed in March 2017 by AECOM that included a towed camera video survey in order to assess a broad area of the proposed project area for general habitat and megafauna. Three habitat types were observed in the area of Coddington Cove that was surveyed: 1) silty sand/sandy silt areas where much of the bottom is visible, and macroalgae is sparse; 2) areas of narrow bands where the substrate is covered by shells and macroalgae is abundant; and 3) large expanses of silt bottom with little to no macroalgae. The silt bottom habitat was the most prevalent within the survey area (AECOM, 2017).

3.7.3 Terrestrial Wildlife

Wildlife includes all animal species (i.e., insects and other invertebrates, freshwater fish, amphibians, reptiles, birds, and mammals), with this discussion focusing on the species and habitat features of greatest importance or interest.

3.7.3.1 Mammals

A total of 16 species of mammals were identified at NAVSTA Newport with 11 species observed through live capture methods and five additional species through visual encounter surveys and trail cameras (NAVFAC Mid-Atlantic, 2021b). Only the eastern gray squirrel (*Sciurus carolinensis*) and eastern cottontail (*Sylvilagus floridanus*) were observed on the main installation, where the proposed project would be located, during the 2020-2021 survey (NAVFAC Mid-Atlantic, 2021b). Species recorded at other survey areas of NAVSTA Newport include the white-footed mouse (*Peromyscus leucopus*), common raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), shorttail shrew (*Blarina brevicauda*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), feral cat (*Felis catus*), and groundhog (*Marmota monax*).

The proposed project area is located within the known range of the endangered northern long-eared bat (NLEB) (*Myotis septentrionalis*). Critical habitat for this species is not found in the proposed project area. Bat surveys have not been conducted within the proposed project areas at the installation but have been conducted near Bishop Rock and within scrub shrub fields in the Tank Farm 4 area. During these surveys seven bat species were recorded (see Section 3.7.5, *Threatened and Endangered Species*).

3.7.3.2 Amphibians and Reptiles

A total of seven species of amphibians and reptiles were observed at NAVSTA Newport during the 2020-2021 survey (NAVFAC Mid-Atlantic, 2021b)**.** These included the eastern garter snake (*Thamnophis sirtalis sirtalis*), Dekay's brown snake (*Storeria dekayi*), eastern red-backed salamander (*Plethodon cinereus*), northern two-lined salamander (*Eurycea bislineata*), gray treefrog (*Hyla versicolor*), northern green treefrog (*Lithobates clamitans melanota*), and spring peeper (*Pseudacris crucifer*). The highest concentration of herpetofauna activity occurred around bodies of freshwater and freshwater wetland habitat. All survey areas where herpetofauna were observed contain some type of hardwood forest habitat as well as proximity to water (i.e., breeding habitat) (NAVFAC Mid-Atlantic, 2021b). These habitats are not present in the project area, and the observed species would not be expected to occur or would be present infrequently in the project area.

3.7.3.3 Birds

A total of 113 bird species were recorded at NAVSTA Newport; a complete species listing is presented in the NAVSTA Natural Resources Inventory and Assessment (NAVFAC Mid-Atlantic, 2021b). The installation's location along the coast makes it a potential stopover or feeding habitat for birds that migrate along the Atlantic flyway. Coddington Cove is visited by many migratory birds such as grebes, bitterns, egrets, herons, dabbling ducks, diving ducks and coots. However, there is a great deal of human activity in the area that can affect bird use patterns. Seabirds such as gulls, terns, and cormorants are commonly observed forging in the vicinity of the project area. The developed nature of Coddington Cove and Building 11 Parking Area provides habitat for human tolerant bird species such as European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), American crow (*Corvus brachyrhynchos*), and mourning dove (*Zenaida macroura*). Bald eagles (*Haliaeetus leucocephalus*) may transit the area to forage at intertidal areas but do not nest at NAVSTA Newport.

3.7.3.4 Invertebrates

A total of 218 species of invertebrates were identified at NAVSTA Newport (NAVFAC Mid-Atlantic, 2021b). Invertebrate species observed were categorized as follows: 116 species of moths and butterflies (*Lepidoptera*), 34 beetles (*Coleoptera*), 13 bees, wasps, and ants (*Hymenoptera*), 10 dragonflies and damselflies (*Odonata*), 8 spider and mites (*Arachnida*), 8 true bugs (*Hemiptera*), 6 grasshoppers (*Orthoptera*), 6 flies (*Diptera*), 5 snails and slugs (*Gastropoda*), and 12 species of singular orders (NAVFAC Mid-Atlantic, 2021b).

3.7.4 Marine Wildlife

3.7.4.1 Benthic Invertebrates

Animals that live on the sea floor are referred to as benthic. Most of these animals lack a backbone and are called invertebrates. Typical benthic invertebrates include sea anemones, sea stars, sea urchins, worms, bivalves, crabs, and many more.

In 2017, AECOM and C.R. Environmental performed a benthic survey within the proposed project area in which benthic grab samples were taken for macroinvertebrate identifications and enumeration (AECOM, 2017). A towed camera video survey was also completed to assess a broad area of the proposed project area for general habitat and megafauna assessment. The findings are included in the appendices of the Essential Fish Habitat (EFH) Assessment in **Appendix D**. Approximately 96 percent of the individual animals sorted from the benthic samples were identified to the species level. Polychaetes comprised approximately 43 percent of the individuals that were identified to species, with mollusks comprising approximately 32 percent, arthropods another 17 percent, oligochaetes 8 and nemerteans less than 1 percent. No echinoderms, anemones, or any other taxa were found in the samples. The top dominant species found in the 2017 benthic samples included annelids (polychaetes and oligochaetes), mollusks (bivalves and gastropods), and crustaceans (amphipods and tanaids) (AECOM, 2017).

During the towed camera survey, video was collected along five transects within the proposed project area: three east/west and two north/south. In total, a distance of approximately 6,000 feet was covered by the east/west transects and approximately 3,000 feet through the north/south transects. Commonly observed throughout all of the video segments were slipper snails (*Crepidula ornicate*), burrowing anemones (*Ceriantheopsis americanus*), hermit crabs (most likely *Pagurus* spp.) and amphipods. No fish or large pelagic or benthic invertebrates (squid, lobster, urchins, etc.) were observed in any of the videos. Empty quahog valves (*Mercenaria mercenaria*) were commonly seen on the sediment surface. Shrimp and spider crabs (possibly *Libinia emarginata,* the common spider crab in New England) were rarely seen. Macroalgae was encountered in all videos and throughout the port area. *Enteromorpha, Spermothamnion,* and *Codium* were the most abundant species, but others were present as well. No eelgrass beds were observed (AECOM, 2017).

3.7.4.2 Fish and Essential Fish Habitat

Fish are vital components of the marine ecosystem and have great ecological and economic value. To protect this resource, NMFS works with the regional fishery management councils to identify the essential habitat for every life stage of each federally managed species using the best available scientific information.

The Greater Atlantic Regional Fisheries Office, the New England and the Mid-Atlantic Fishery Management Councils have designated EFH for the species they manage. The highly migratory species (tunas, swordfish, sharks, and billfish) are managed by NMFS headquarters. The fish in the project area fall under all three of these management units. EFH is mapped throughout the U.S., and for areas managed by the Greater Atlantic Regional Fisheries Office, the data is available online and can be queried to determine a list of species with EFH within any proposed project area (NOAA Habitat, 2020).

Table 3-4 summarizes the fish and invertebrate species, respective jurisdiction, correlating Fishery Management Plans (FMPs), and EFH life stages for species within the project area. In total, 23 species have EFH designated for all, or a portion, of their life stages within the Proposed Action area.

Table 3-4. Summary of Essential Fish Habitat Designations in the Proposed Project Area

Species	*Scientific Name*	*Eggs*	*Larvae*	*Juveniles*	*Adults*
Summer Flounder, Scup, Black Sea Bass FMP (Mid-Atlantic Fishery Management Council)					
Summer Flounder	*Paralichthys dentatus*		X	X[2]	X[2]
Scup	*Stenotomus chrysops*	X	X	X	X
Black Sea Bass	*Centropristis striata*			X	X
Atlantic Mackerel, Squid & Butterfish FMP (Mid-Atlantic Fishery Management Council)					
Atlantic Mackerel	*Scomber scombrus*	X	X	X	X
Longfin Inshore Squid	*Doryteuthis pealeii*			X	X
Atlantic Butterfish	*Peprilus triacanthus*	X	X	X	X
Bluefish FMP (Mid-Atlantic Fishery Management Council)					
Bluefish	*Pomatomus saltatrix*			X	X
Northeast Multispecies FMP (New England Fishery Management Council)					
Atlantic Cod	*Gadus morhua*	X	X	X[2]	
Pollock	*Pollachius virens*			X	
Ocean Pout	*Macrozoarces americanus*	X			
Winter Flounder	*Pseudopleuronectes americanus*	X	X	X	X
Windowpane Flounder	*Scophthalmus aquosus*	X	X	X	X
Small Mesh Multispecies FMP (New England Fishery Management Council)					
Red Hake	*Urophycis chuss*	X	X	X	X
Silver Hake	*Merluccius bilinearis*	X	X		X
Atlantic Herring FMP (New England Fishery Management Council)					
Atlantic Herring	*Clupea harengus*		X	X	X

Table 3-4. Summary of Essential Fish Habitat Designations in the Proposed Project Area

Species	Scientific Name	Eggs	Larvae	Juveniles	Adults
Northeast Skate Complex FMP (New England Fishery Management Council)					
Little Skate	*Leucoraja erinacea*			X	X
Winter Skate	*Leucoraja ocellate*			X	X
Atlantic HMS FMP (Secretarial)					
Sand Tiger Shark	*Carcharias taurus*		X	X[1]	
White Shark	*Carcharodon carcharias*			X[1]	
Yellowfin Tuna	*Thunnus albacares*			X	
Albacore tuna	*Thunnus alalunga*			X	
Skipjack tuna	*Katsuwonus pelamis*				X
Bluefin tuna	*Thunnus thynnus*			X	

Notes: [1] Life stage is juvenile/neonate for sharks.
[2] HAPC identified for this life stage.

Within the EFH designated for various species are Habitat Areas of Particular Concern (HAPCs), which have also been identified and mapped throughout the U.S. HAPCs either play important roles in the life history (e.g., spawning areas) of federally managed fish species or are especially vulnerable to degradation from fishing or other human activities. In many cases, HAPCs represent areas where detailed information is available on the structure and function within the larger EFH. Only two species with EFH within the project area have identified HAPC: summer flounder and Atlantic cod. The summer flounder HAPC is defined as all species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile EFH. The findings of a site-specific benthic survey (details provided in Sections 3.2.1 and 3.2.2) include previously unmapped macroalgae that would be considered part of HAPC for this species. The inshore areas of the Gulf of Maine and southern New England between 0-66 feet (0-20 meters) relative to mean high water have been approved as an HAPC for juvenile cod. Coddington Cove would qualify as HAPC for this species.

In addition to species covered under EFH, there are other non-federally managed fish species potentially found in the proposed project area. Several species are important to commercial and recreational fisheries but are either not covered under federal FMPs or are managed differently within state waters. These species include American lobster, Jonah crab, striped bass, Atlantic menhaden, tautog, horseshoe crab, weakfish, and American eel. Full descriptions of both the federally managed and non-federally managed species discussed above are provided in the EFH Assessment in **Appendix D**.

All of Coddington Cove is located in a restricted area (see Figure 3-4). Code of Federal Regulations (33 CFR 334.81) defines a restricted area as, "*A defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government's use of that area.*" All persons, swimmers, vessels, and other craft, except those vessels under the supervision or contract to local military or Naval authority, vessels of the USCG, and local or state law enforcement vessels, are prohibited from entering the restricted area without specific permission from the Commanding Officer, NAVSTA Newport or his/her authorized representative.

NAVSTA Newport allows recreational fishing according to conditions specified in Navy Instruction 5090.26C *Naval Station Newport Recreational Fishing Procedures*, including authorization from the Commanding Officer, and state regulations. A base fishing license is required (except for minors under the age of 16 years old, any blind person, or any disabled veteran), along with a state license. Only line fishing is allowed. However, fishing is prohibited at ERP Site 19 (OU 5) Former Director Shipyard and therefore would not occur in the immediate project area. Unauthorized/prohibited fishing sites at NAVSTA Newport include Pier 1, Pier 2, and ERP Site 19 Former Derecktor Shipyard, Stillwater Basin and Breakwater, Gould Island, and seven other sites.

3.7.4.3 Marine Mammals

Jurisdiction over marine mammals potentially occurring in the proposed project area is maintained by NMFS. NMFS maintains jurisdiction over whales, dolphins, porpoises, seals, and sea lions. All the marine mammals discussed in this section are protected under the Marine Mammal Protection Act (MMPA).

Seven species of marine mammals may occur in Narragansett Bay. These include three cetacean species, the short-beaked common dolphin (*Delphinus delphis*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*) and harbor porpoise (*Phocoena phocoena*), as well as four pinniped (seal) species, the harbor seal (*Phoca vitulina*), gray seal (*Halichoerus grypus*), harp seal (*Pagophilus groenlandicus*), and hooded seal (*Cystophora cristata*) (CETAP (Cetacean and Turtle Assessment Program), 1981) (Kenney & Vigness-Raposa, 2010)**.** These species are described in detail in the Request for Incidental Harassment Authorization (IHA) contained in **Appendix E**.

Atlantic white-sided dolphin are very abundant small cetaceans that can occur in the area in all seasons of the year (Kenney & Vigness-Raposa, 2010). There are occasional unconfirmed opportunistic reports of white-sided dolphins in Narragansett Bay, typically in fall and winter. Seasonal occurrence of Atlantic white-sided dolphins decreases significantly following spring with 21 percent of records in summer, 10 percent in winter, and 7.6 percent in fall (Kenny and Vigness-Raposa, 2010).

Short-beaked common dolphins occur in the Rhode Island waters (encompassing Narragansett Bay, Block Island Sound, Rhode Island Sound, and nearby coastal and continental shelf areas) year-round. A short-beaked common dolphin was most recently recorded in Narragansett Bay in October of 2016 (Hayes S.A., 2020).

Harbor porpoise are the most stranded cetacean in Rhode Island. Their occurrence is strongly seasonal with the highest occurrence in spring and the lowest occurrence in fall (Kenney & Vigness-Raposa, 2010). It is possible harbor porpoise occur in Narragansett Bay during the winter, but reports are second- and third-hand anecdotal reports (Kenney R. D., Marine Mammals of Rhode Island, Part 4 Harbor Porpoise, 2013).

Harbor seals are regularly observed around all coastal areas throughout Rhode Island and are the only marine mammal that is a year-round resident of Narragansett Bay. They are frequently sighted offshore of the installation, hauling out near Coddington Point on “the Sisters” formation near Bishop’s Rock (Figure 3-5) (NAVSTA Newport, 2011). Other harbor seals sightings have been observed within the breakwater in Coddington Cove and off McAllister Point (Department of the Navy, 2015) (Rasmussen, 2011). Seasonal nearshore marine mammal surveys conducted between May 2016 and February 2017 sighted one harbor seal on May 12, 2016 and a group of three harbor seals on February 1, 2017 (Moll T. E., et al., 2016) (Moll T. E., et al., 2017) (Navy, 2017a).

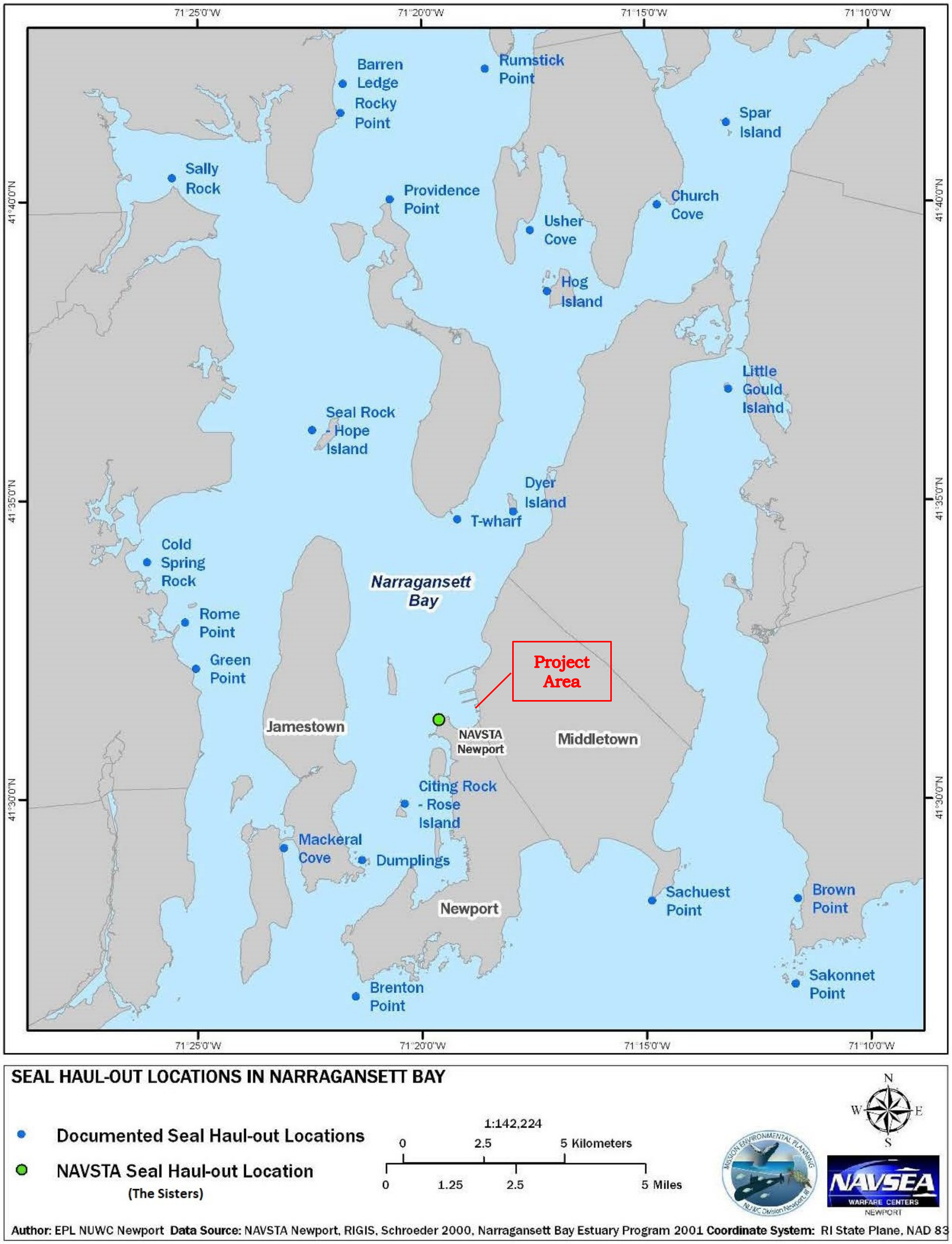

Figure 3-5. Seal Haul Outs in Narragansett Bay

There are very few observations of gray seals in Rhode Island other than strandings. Gray seal occurrences in Rhode Island are primarily in the spring with fewer occurrences in all other seasons. Habitat use by gray seals in Rhode Island is poorly known. The very strong seasonality observed in gray seal occurrence in Rhode Island between March and June is clearly related to the timing of pupping in January–February. Most stranded individuals encountered in the Rhode Island area appear to be post-weaning juveniles and starved or starving juveniles (Nawojchik, 2002); (Kenney R. D., 2005). Annual informal surveys conducted since 1994 observed a small number of gray seals in Narragansett Bay in 2016 (ecoRI News, 2016).

The harp seal is the most abundant pinniped in the North Atlantic Ocean (Stenson, Haug, & and Hammill, 2020). Harp seals in Rhode Island are known almost exclusively from strandings. Harp seal occurrences are predominantly in the spring and winter with the species being nearly absent in summer and fall. During late winter of 2020, a healthy harp seal was observed hauled out and resting near “The Sisters” haul out site (DeAngelis, 2020).

Hooded seal occurrences in Rhode Island are predominately from stranding. They are rare in summer and fall but most common in the area during spring and winter (Kenney R. D., 2005) (Kenney & Vigness-Raposa, 2010). Hooded seals have been recorded in Narragansett Bay but are considered occasional visitors and are expected to be the least encountered seal species in the bay (RICRMC, 2010).

Although no whales have been sighted within Narraganset Bay, minke whale (*Balaenoptera acutorostrata*), humpback whale (*Megaptera novaeangliae*), North Atlantic right whales (NARWs) (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*) regularly occur between Block Island, Martha’s Vineyard, and Aquidneck Island where NOAA vessels operating under the Proposed Action may transit. Due to the recent deaths of several NARWs in Canada, NMFS is closely monitoring whale movements and closely scrutinizing any activity that may cause them harm such as increased vessel traffic and vessel traffic noise (Tritt, 2017). All whale species are protected under the MMPA; however, the NARW and fin whale are also protected under the Endangered Species Act (ESA) and are discussed further in Section 3.7.5, *Threatened and Endangered Species*.

The minke whale is the smallest baleen whale in North American waters and is found throughout the northern Atlantic and Pacific Oceans. Their range extends from the ice edge in the Arctic during the summer to close to the equator during winter. These whales can be found in both coastal/inshore and oceanic/offshore areas. Minke whales can occur in polar, temperate, and tropical waters in most seas and areas worldwide. Minke whales migrate seasonally and are capable of traveling long distances. Some animals and stocks of this species have resident home ranges and are not highly migratory. The distribution of minke whales varies by age, reproductive status, and sex. Older mature males are commonly found in the polar regions in and near the ice edge, and often in small social groups, during the summer feeding season. Mature females migrate farther into the higher latitudes, but generally remain in coastal waters. Immature animals are more solitary and usually stay in lower latitudes during the summer (NMFS, 2015a).

In continental shelf waters off the northeast U.S. and eastern Canada, minke whales are abundant in spring and summer, less abundant but still common in fall, and largely absent in winter (Kenney & Vigness-Raposa, 2010). In the coastal waters of Rhode Island, minke whales occur in all four seasons being most abundant during the spring (48.8 percent) and summer (41.7 percent), and relatively rare in the fall (7.1 percent) and winter (2.4 percent). Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina (NOAA Fisheries, 2021a)

Humpback whales live in all major oceans from the equator to sub-polar latitudes. They occur off southern New England in all four seasons, with peak abundance in Rhode Island coastal waters occurring in the Great South Channel during the summer. Their presence in the region varies between years depending on prey availability; they tend to be most abundant in southern New England in years when stocks of sand lance, a principal fish prey species, are low in Cape Cod Bay and Massachusetts Bay (Kenney & Vigness-Raposa, 2010). In the western North Atlantic Ocean, humpback whales feed during spring, summer, and fall over a range that encompasses the eastern coast of the United States, the Gulf of St. Lawrence, Newfoundland/Labrador, and western Greenland (NMFS, 2017a).

3.7.5 Threatened and Endangered Species

There are more than 1,900 species listed under the ESA. A species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become endangered in the future. The U.S. Fish and Wildlife Service (USFWS) and the NMFS, share responsibility for implementing the ESA.

The USFWS Information, Planning and Conservation database was used to determine threatened and endangered species in the proposed project area under their jurisdiction. The NMFS ESA species mapper was used to determine ESA-protected species that may be present in the project area under their jurisdiction (NOAA Fisheries, 2022). USFWS identified one bird species, one bat species, and one invertebrate species as having the potential to occur in the proposed project area (USFWS, 2022) as listed in Table 3-5.

Table 3-5. Threatened and Endangered Species Known to Occur or Potentially Occurring in the Project Area and Critical Habitat Present in the Project Area

Common Name	*Scientific Name*	*Federal Listing Status*	*State Listing Status*	*Critical Habitat Present?*
Roseate tern	*Sterna dougallii dougallii*	FE	SH	No
Northern long-eared bat[1]	*Myotis septentrionalis*	FE	-	No
Monarch butterfly	*Danaus plexippus*	FCT	-	No
Loggerhead sea turtle[2]	*Caretta caretta*	FT	-	No
Kemp's ridley sea turtles	*Lepidochelys kempi*	FE	-	No
Green sea turtle[3]	*Chelonia mydas*	FT	-	No
Leatherback sea turtles	*Dermochelys coriacea*	FE	-	No
Atlantic sturgeon[4]	*Acipenser oxyrhynchus*	FE	-	No
Shortnose sturgeon	*Acipenser brevirostrum*	FE	-	No
North Atlantic right whale	*Eubalaena glacialis*	FE	-	No
Fin whale	*Balaenoptera physalus*	FE	SH	No

Notes: FE = federal endangered, FT = federal threatened, FCT = federal candidate threatened, SH = state historical

[1] On March 23, 2022, the USFWS issued a proposed rule to reclassify the NLEB from a threatened to an endangered species (87 Federal Register 16442).

[2] Nine distinct population segments (DPSs) of loggerhead turtles were determined within the global population (76 CFR 58868). The only DPS that occurs within the effects area of this EA—the Northwest Atlantic Ocean DPS—is listed as threatened.

[3] As a species, the green turtle is listed as threatened, but the Florida and Mexican Pacific coast nesting populations are listed as endangered.

[4] Sturgeon from any of the five DPSs may be present. Atlantic sturgeon originating from the New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs are listed as endangered, while the Gulf of Maine DPS is listed as threatened (50 CFR 223 and 224).

The NMFS identified two species of marine mammal, four species of sea turtle, and two fish species as having the potential to occur in the proposed project area (Table 3-5). These species are discussed briefly in the following section and in detail in the Biological Assessment contained in **Appendix F**. No critical habitats were identified in the proposed project areas. The RIDEM was also contacted to determine if there were any records of rare species present in the study area. The Rhode Island Natural Heritage Database had no records of any rare species present in the study area (RIDEM, 2022). Detailed information on ESA species potentially present in the project area and documents prepared for regulatory agencies are contained in **Appendix F**.

3.7.5.1 Terrestrial

The USFWS Information, Planning and Conservation database lists the roseate tern, NLEB, and monarch butterfly as ESA species or ESA candidate species potentially occurring in the proposed project area (USFWS, 2022). Refer to **Appendix F** for a detailed description of these species.

Roseate tern

The North American subspecies of the roseate tern is divided into two separate breeding populations: one in the northeastern United States and Nova Scotia and another in the southeastern United States and Caribbean. The northeastern population is listed by the USFWS as endangered in 1987 due to the declining numbers of both colonies and individuals, while the other population is listed as threatened (USFWS, 2011).

Habitat for this species is not found within the proposed project areas and has not been observed at NAVSTA Newport. As a result, this species is not likely to be present within the project area.

Northern Long-eared Bat

The NLEB is listed by the USFWS as endangered[1]. Bat acoustic monitoring surveys were undertaken as part of the permitting process for a proposed wind energy project at NAVSTA Newport beginning in 2009 and occurred seasonally until the fall of 2011. A second bat acoustic survey was conducted from spring 2009 to the fall of 2013. Bat acoustic monitoring was continued in 2018 with a passive acoustic survey performed from May to December 2018 (TetraTech, 2019a). During the 2009 to 2013 surveys, seven bat species were recorded, including the NLEB (NAVFAC, 2014b), which was not detected in 2018 (Tetra Tech, 2019b). In the earlier surveys, the NLEB was documented at a coastal location on the southwestern tip of Coddington Point near Bishop Rock and in the early successional scrub shrub fields of Tank Farm 4 north of Coddington Cove.

Mist netting surveys were conducted on four nights in July 2013 at NAVSTA Newport. No NLEB or any other Myotis species were captured (Tetra Tech Inc., 2014).

During the 2018 acoustic survey, 877 detector-nights were sampled over the course of 215 calendar nights between May 9 and December 10, 2018, at five sampling sites based on representative habitats within the installation, on potential high bat activity, potential forest clearing, and accessibility. Three detectors were located in the northern portion of NAVSTA Newport (one each near Tank Farms 2, 3, and 4), one was located in the southern end of NAVSTA Newport in an area managed as a bird sanctuary by

[1]Effective January 30, 2023 (87 Federal Register 73488).

the State of Rhode Island, and one was located on Gould Island. A total of 40,169 bat passes were recorded and identified to the species level or frequency group. Presence of six of the eight species of bats known to occur in Rhode Island were detected (big brown bat [*Eptesicus fuscus*], eastern red bat [*Lasiurus borealis*], hoary bat [*L. cinereus*], silver-haired bat [*Lasionycteris noctivagans*], little brown bat [*Myotis lucifugus*], and tri-colored bat [*Perimyotis subflavus*]). Activity was dominated by big brown bat, eastern red bat, and unidentified high frequency species with the highest rates of bat activity recorded at stations within or adjacent to a closed canopy (TetraTech, 2019a). The NLEB was not detected during this survey.

A low-level short-term acoustic survey specifically targeted for the NLEB was conducted in 2018 during its maternity period (May 15 to August 15) to determine if it is present in suitable NLEB habitat at NAVSTA Newport (Tetra Tech, 2019b). All five monitoring locations were located in the northern portion of NAVSTA Newport, two near Tank Farm 2 and three near Tank Farm 3. The presence/absence survey did not identify the presence of NLEB at NAVSTA Newport.

There is no appropriate habitat for bat foraging or roosting in the proposed project areas. Both locations of the project area are developed and lack suitable habitat or forested areas for roosting and to support sufficient insect prey.

Monarch Butterfly

On December 17, 2020, the USFWS announced a 12-month finding to list the monarch butterfly as threatened species under the ESA. Eastern North American monarch butterflies undergo long-distance migration. In the fall, monarchs begin migrating to their overwintering sites, a migration that can take monarchs distances up to 2,500 miles and last for over two months (Watt, 2021).

Monarch butterflies forage on vegetation during their migration. The vegetation at the Pier Landing Site is limited and consists of common, weedy species that can tolerate frequent disturbance. The Building 11 Parking Area is vegetated with maintained lawn grasses and landscaped trees and shrubs. These areas contain low quality habitat that the monarch butterflies could use in the absence of higher quality habitat. However, as higher quality vegetation is found in other areas of the installation, the likelihood of monarch butterflies foraging in the area is considered to be low.

3.7.5.2 Marine

The NMFS has identified the following ESA species as potentially occurring in the proposed project area: NARW, fin whale, loggerhead sea turtle, Kemp's ridley sea turtle, green sea turtle, leatherback sea turtle, Atlantic sturgeon, and shortnose sturgeon. Refer to **Appendix F** for a detailed description of these species. The USFWS and the NMFS share federal jurisdiction for sea turtles with the USFWS having lead responsibility on the nesting beaches and NMFS for the marine environment. There is no sea turtle nesting in Rhode Island, and therefore, the sea turtles discussed in this section are under the jurisdiction of the NMFS.

No whales are likely to occur in Coddington Cove; however, NOAA vessel operations could traverse the waters between Block Island, Martha's Vineyard, and Aquidneck Island, where whale species have been documented, when leaving and returning to the homeport.

North Atlantic Right Whale

Right whales are large baleen whales that are the rarest of all large whale species. NARWs regularly occur between Block Island, Martha's Vineyard, and Aquidneck Island (Tritt, 2017), where a seasonal management area has been established (Figure 3-6).

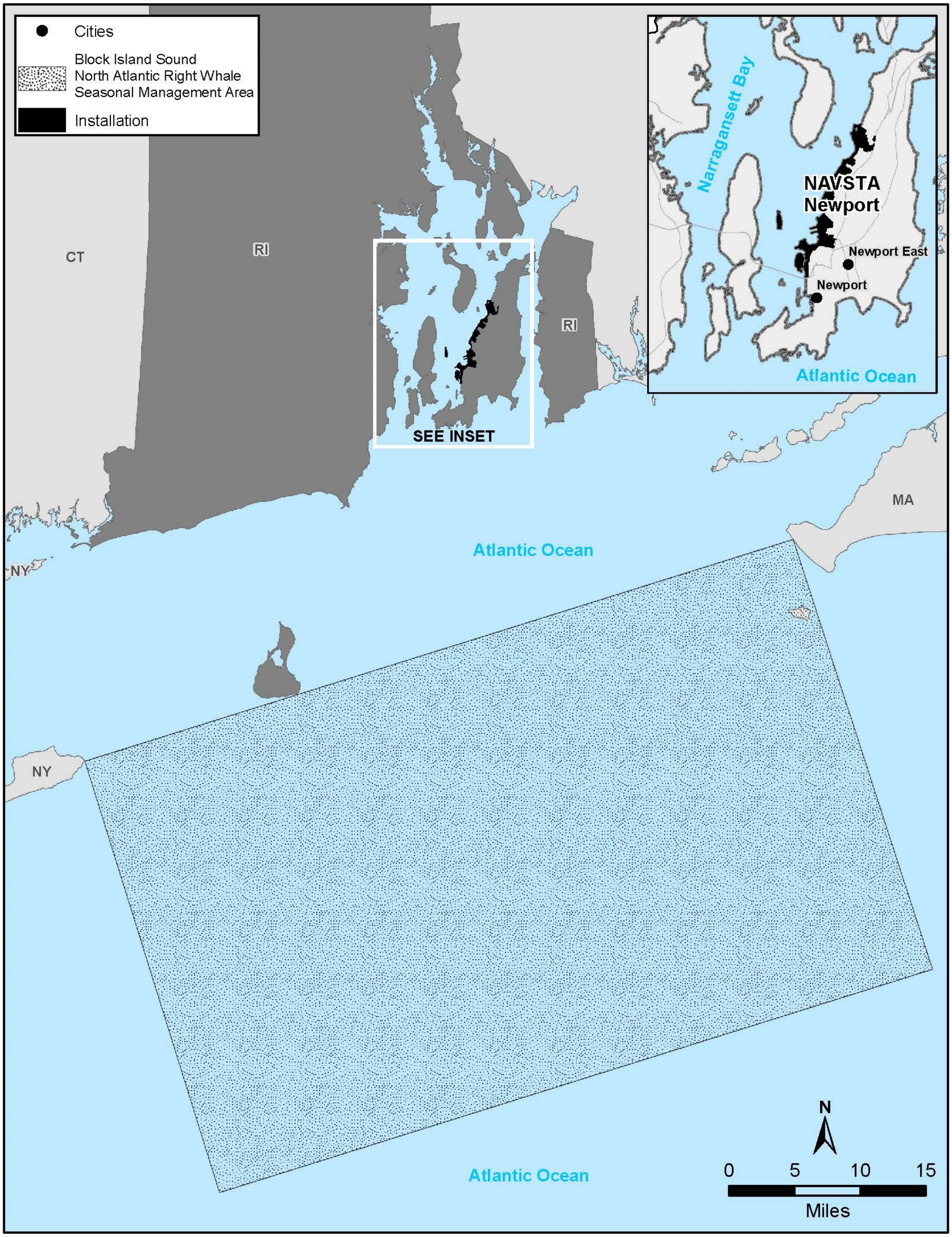

Figure 3-6. Block Island Sound Northern Right Whale Seasonal Management Area

Within this area, vessel speed is restricted to 10 knots from November 1 through April 30 in order to reduce the potential for vessel strikes (78 Federal Register 73726).

Fin Whale

Fin whales, with a maximum length of about 75 feet, are the second- largest species of whale in the Northern Hemisphere. Fin whales are the most abundant large whale in southern New England and are widespread in continental shelf waters. They can occur in the waters of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf in all seasons, and are most common in summer (Kenney & Vigness-Raposa, 2010).

Leatherback Sea Turtle

The endangered leatherback sea turtle is the largest living sea turtle. They are the most likely sea turtle species to be encountered in the water of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf (Kenney & Vigness-Raposa, 2010). Their occurrence is during the warmest part of the year, generally from July through November. Narragansett Bay may provide an important foraging area to leatherback juvenile and sub-adult turtles during late summer and early fall.

Loggerhead Sea Turtle

There are nine loggerhead DPSs within the global population of which Northwest Atlantic Ocean DPS is classified as threatened (NMFS, 2017). Long Island Sound, Cape Cod Bay, and Chesapeake Bay are the most frequently used juvenile developmental habitats along the northeast U.S. Continental Shelf Large Marine Ecosystem. It is possible for loggerheads to occur occasionally in the waters of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf in summer or fall (Kenney & Vigness-Raposa, 2010).

Kemp's Ridley Sea Turtle

The endangered Kemp's ridley sea turtle is the smallest extant sea turtle. Kemp's ridley sea turtles have occurred in the waters of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf, but they are much rarer than leatherbacks or loggerheads. In addition, small juveniles, too small to be detected during surveys, are known to utilize shallow developmental habitats around eastern Long Island and may transit through Rhode Island Sound (Kenney & Vigness-Raposa, 2010).

Green Sea Turtle

The green sea turtle is listed as two populations under the ESA, the Florida and Mexico Pacific coast breeding colonies, and sea turtles from all other populations. The Florida and Mexico Pacific coast breeding colonies are designated as endangered, and all other colonies are designated as threatened.

Green sea turtles have never been recorded in Rhode Island Sound and they are much rarer in the study area than leatherbacks or loggerhead. However, small juveniles that are too small to be detected during surveys are known to utilize shallow developmental habitats around eastern Long Island and may transit through Rhode Island Sound (Kenney & Vigness-Raposa, 2010).

Sturgeon

Two species of sturgeon are found in New England estuaries: the Atlantic sturgeon and shortnose sturgeon. All population segments of Atlantic sturgeon are listed as endangered under the Federal ESA with the exception of the Gulf of Mexico population segment, which is listed as threatened. Shortnose sturgeon are also listed as endangered under the Federal ESA. There is no critical habitat for Atlantic or shortnose sturgeon designated in Rhode Island.

Adult and sub-adult Atlantic sturgeon may occur in the proposed project area (NOAA Fisheries, 2022). Two Atlantic sturgeon were captured by RIDEM Trawl Survey from 1997 to 2007, one in 1997 in Narragansett Bay and another in 2005 in Rhode Island Sound (Atlantic Sturgeon Status Review Team (ASSRT), February 23, 2007). Since 2019, the Rhode Island Division of Marine Fisheries has been maintaining four acoustic array stations in Narragansett Bay. The acoustic array in Rhode Island consists of stations with a buoy, line, and anchor equipped with a receiver that 'listens' for tagged fish. The tagged fish cover 10 species that have been tagged as part of projects all along the coast by researchers for scientific studies, including the Atlantic sturgeon. In 2019, 21 unique individuals were detected a total of 490 times at 8 stations in Rhode Island waters (RIDMF, 2021). In 2020, 31 unique individuals were detected a total of 774 times at 15 stations in Rhode Island waters (RIDMF, 2021). Atlantic sturgeon were most frequently detected in Narragansett Bay in May and June (RIDMF, 2021).

Adult shortnose sturgeon are potentially present throughout Narragansett Bay where suitable foraging is present (NOAA Fisheries, 2022). They are unlikely to be found in the project area due to the absence of suitable foraging habitat and the distance from known populations, but occasional transient adults could potentially occur from April 1 through November 30 (NOAA Fisheries, 2021).

3.8 Wetlands

Coddington Cove is classified as waters of the United States under the CWA. According to National Wetlands Inventory maps, the waters of Narragansett Bay/Coddington Cove are classified as estuarine and marine deepwater subtidal wetlands with unconsolidated bottom (E1UBL). These wetlands are described by USFWS as an estuarine system consisting of deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines, there is appreciable dilution of sea water. Offshore areas with typical estuarine plants and animals are also included in the estuarine system. The substrate in these habitats is continuously covered with tidal water (i.e., located below extreme low water) with at least 25 percent cover of particles smaller than stones (less than 6-7 centimeters), and a vegetative cover less than 30 percent (USFWS, 2017a). Although classified as deepwater habitat in the National Wetlands Inventory, Coddington Cove does not meet the USACE or USEPA definition of a wetland.

The USACE (Federal Register 1982) and the USEPA (Federal Register 1980) jointly define wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Explicit in the definition is the consideration of three environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. Wetlands generally include swamps, marshes, bogs, and similar areas (USACE, 2013). With regards to the USACE/USEPA definition of wetlands, no wetlands are located on or adjacent to Pier Landing Site or Building 11 Parking Area.

3.9 Floodplains

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Executive Order 11988, *Floodplain Management*, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative.

Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by FEMA and provide a basis for comparing the locale of the Proposed Action to the floodplains. Pier Landing Site is depicted on FEMA Flood Insurance Rate Map 4005C0093J. According to the map, all of Pier Landing Site is within Zone AE, the 100-year floodplain, or the 500-year floodplain (Figure 3-7, and also refer to Figures 2-7 and 2-10 in Sections 2.1.4 and 2.3.2, respectively). The areas of the 100-year floodplain (Zone AE) have a designated base flood elevation of 14 feet. In addition, the coastline is classified as a coastal flood zone (Zone VE) with velocity hazard and a base flood elevation of 16 feet (FEMA, 2013a). Because the shoreside support facilities must be situated near the new pier to support the functions of NOAA vessels, construction in the flood zone cannot be avoided and there is no practicable alternative to the Proposed Action. NOAA has issued a public notice announcing the availability of the EA that evaluates proposed construction in a floodplain and soliciting comments on the Proposed Action.

Building 11 Parking Area is depicted on FEMA Flood Insurance Rate Map 4005C0089J and is not located within a floodplain (Figure 3-7) (FEMA, 2013b).

3.10 Coastal Zone Management

The Rhode Island coastal zone includes islands, intertidal areas, wetlands, and beaches and extends 200 feet inland from the ocean shoreline and further inland, as necessary, to include important natural coastal systems located landward of the zone's 200-foot boundary (RICRMC, 2017). Federal lands, defined as "lands the use of which is by law subject solely to the discretion of the Federal Government, its officers, or agents," are statutorily excluded from Rhode Island's coastal zone (RICRMC, 2017). If, however, the proposed federal activity affects coastal uses or resources beyond the boundaries of the federal property (i.e., has spillover effects), the Coastal Zone Management Act (CZMA) Section 307 federal consistency requirement applies.

Pier Landing Site is located within the coastal zone of Rhode Island, whereas Building 11 Parking Area is located outside of the coastal zone. Pursuant to the CZMA, Rhode Island has adopted a federally-approved Coastal Resources Management Program, the RICRMP. Section 307I of the CZMA requires that any federal activity that directly or indirectly affects any land or water use or natural resource of the coastal zone be consistent with the RICRMP to the maximum extent practicable. RICRMC is responsible for overseeing implementation of the RICRMP.

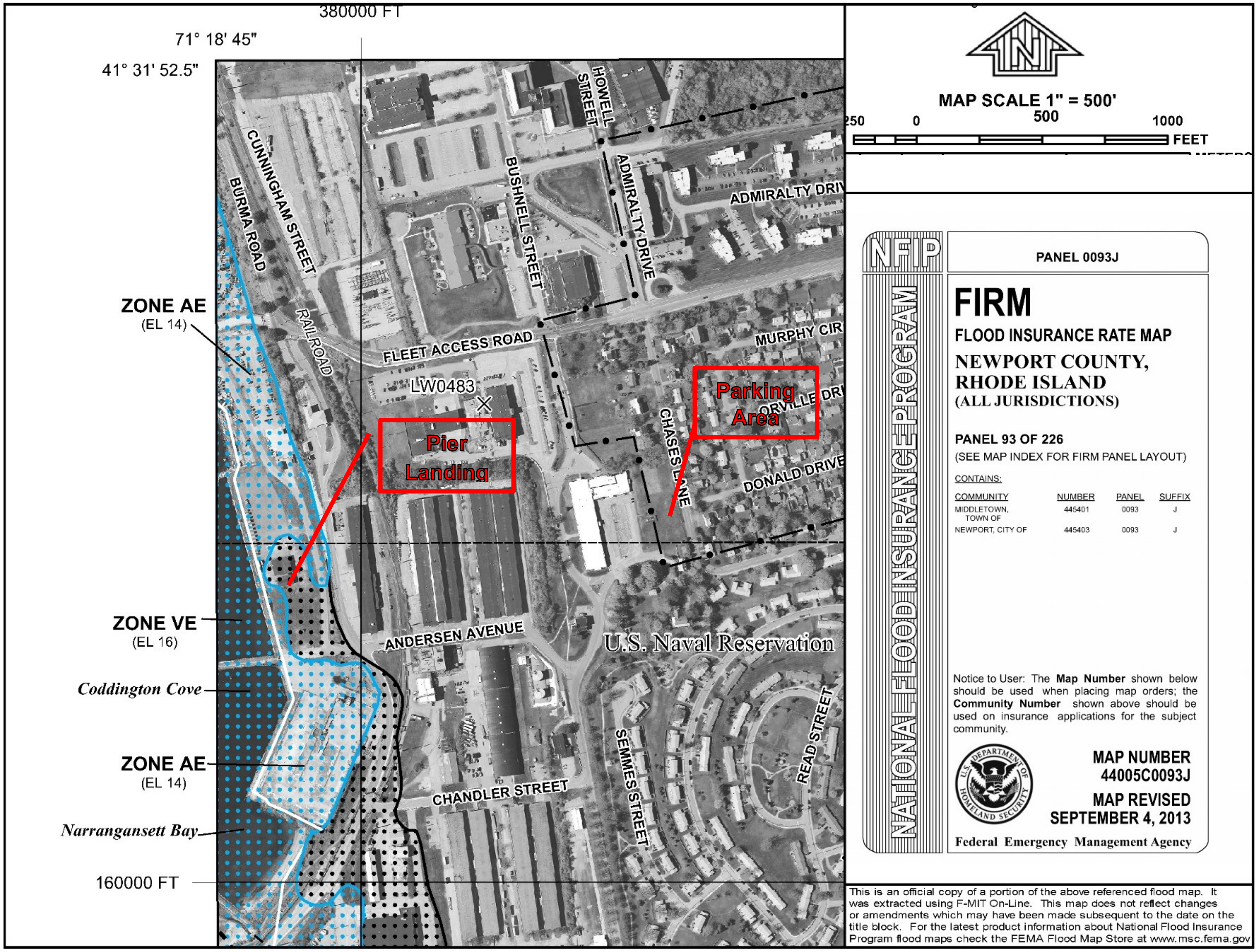

Figure 3-7. Floodplain Location

3.11 Noise

3.11.1 Airborne Noise

The federal government supports conditions free from noise that threaten human health and welfare and the environment. A noise-sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive cultural practices, some domestic animals, or certain wildlife species. The nearest sensitive receptors to Pier Landing Site are Navy housing areas located approximately 1,500 feet east of the project area and the Navy Youth Center located approximately 1,500 feet northeast of the project area. The nearest sensitive receptors to Building 11 Parking Area are the adjacent residential areas to the north, east, and west of the site, with some residences being located approximately 50 feet from the site boundary. Potentially noise-sensitive wildlife species are discussed in Section 3.7, *Flora and Fauna*.

The predominant noise sources consist of NAVSTA Newport operations, both at and around the waterfront. Other components such as construction, ground support equipment for maintenance purposes, and vehicle traffic produce noise, but such noise generally represents a transitory and negligible contribution to the average noise level environment.

The existing noise environment in the vicinity of the Pier Landing Site is typical of an industrial area. Although no specific data is available for the project area, sound levels in and around the area are expected to be similar to those found at other mixed industrial/commercial areas, with an expected Day-Night Average Sound Level of approximately 60 decibels (dB) (Navy, 2009).

The noise environment at Building 11 Parking Area is slightly quieter than at Pier Landing Site due to its proximity to residential areas and with fewer industrial activities occurring nearby.

3.11.2 Underwater Noise

Narragansett Bay is a heavily used resource that provides recreational opportunities to thousands of people who live, work, and play within its waters. It welcomes more than 100,000 anglers each year, and over 32,000 recreational boaters (Save the Bay, 2017). Additionally, the bay supports cargo vessel traffic to northern marine terminals in Providence.

The general level of ambient underwater noise in the project area is dependent on both natural and anthropogenic sources. Table 3-6 provides ambient noise level data for various environmental settings that may be used when analyzing impacts underwater noise.

Recent underwater noise data collected at the NUWC during testing indicated that true ambient conditions of underwater noise are approximately 120-123 dB re 1 µPa root mean square (RMS). The test site was directly adjacent to the wharf at Stillwater Basin, located approximately a half mile north of Pier Landing Site, and was conducted 1.5 meters below the surface. NUWC personnel indicated that a recording in the open water and at greater depth would likely be less (Iafrate, 2017).

Table 3-6. Reported Ambient Underwater Noise Levels (dB re: 1 µPa) Recorded at Various Open Water Locations in the Western United States

Environment	*Location*	*Ambient Noise Levels*	*Source*
Large marine bay, heavy industrial use, and boat traffic	San Francisco Bay – Oakland outer harbor	120 – 155 dB_{PEAK}, 133 dB_{RMS}	Strategic Environmental Consulting, Inc. 2004

Table 3-6. Reported Ambient Underwater Noise Levels (dB re: 1 µPa) Recorded at Various Open Water Locations in the Western United States

Environment	*Location*	*Ambient Noise Levels*	*Source*
Large marine bay and heavy commercial boat traffic	Elliot Bay – Puget Sound, Washington	147 – 156 dB_{PEAK}, 132 – 143_{RMS}	Laughlin 2006
Large marine inlet and some recreational boat traffic	Hood Canal, Washington	115 – 135 dB_{RMS}	Carlson et al. 2005
Open ocean	Central California coast	74 – 100 dB_{PEAK}	Heathershaw et al. 2001 cited in WSDOT 2006
Large marine bay, nearshore, heavy commercial, and recreational boat traffic	Monterey Bay, California	113 dB_{PEAK}	O'Neil 1998
Large marine bay, offshore, heavy commercial, and recreational boat traffic	Monterey Bay, California	116 dB_{PEAK}	O'Neil 1998
Marine surf	Fort Ord beach, California	138 dB_{PEAK}	Wilson et al. 1997

Source: (Caltrans, 2015).

3.12 Transportation

Traffic is commonly measured through average daily traffic and design capacity. Traffic entering NAVSTA Newport is regulated through the use of security gates. The closest security gate to the proposed project areas is Gate 17 located on at the intersection of Access and Burma Roads (Defense Highway). Pier Landing Site is accessed by traveling south on Burma Road (Defense Highway) from Gate 17. Building 11 Parking Area is accessed by traveling south on Burma Road from Gate 17 and turning east on to Anderson Avenue, then traveling to the grassy area east of Building 11 and west of Chases Lane. No level of service traffic data exists for the primary access roads to the proposed project areas, however, the Rhode Island Department of Transportation traffic count data collected near the main entrance gate to NAVSTA Newport at Admiral Kalbfus Road recorded 14,100 cars over a 24-hour period (RIDOT, 2000).

Pier Landing Site also serves as a parking area and can accommodate approximately 30 to 50 vehicles depending on the level of use as a storage area.

3.13 Utilities and Solid Waste

3.13.1 Utilities

3.13.1.1 Potable Water

The Navy purchases potable water from the City of Newport. The water is treated at either of Newport's two treatment plants before being distributed to NAVSTA Newport. A majority of the installation receives water from the City of Newport's Lawton Valley Treatment Plant. The remaining portion of the potable water comes from the Station 1 Treatment Plant in Newport. The treatment plants have a combined capacity of 16 million gallons per day (NAVSTA Newport, 2020). According to the City of Newport utilities department, average daily demand for potable water is approximately 5 million gallons per day with seasonal fluctuations (Newport Water Department, 2021).

There is an existing potable water line present near the Pier Landing Site. There is an existing 12-inch watermain that runs east-west along Anderson Avenue and Anderson Avenue Extension to the T-Pier (NAVFAC MIDLANT, 2022).

There are no potable water lines on Building 11 Parking Area. A water line associated with Building 11 is located to the west of the site (NAVFAC MIDLANT, 2022).

3.13.1.2 Wastewater

Currently, NAVSTA Newport utilizes approximately 10 percent of its existing wastewater system capacity on average and up to 20 percent of its capacity during rain events. (Simmons, 2021). Wastewater from NAVSTA Newport is conveyed to the Newport Wastewater treatment plant (WWTP), where it is treated and discharged. The Newport WWTP has a design flow capacity of 10.7 million gallons per day and an average daily flow of 8.4 million gallon per day (Woodard & Curran, 2017). Currently, NAVSTA Newport utilizes only a fraction of its allotted WWTP capacity (Simmons, 2021).

Sewer lines are not present on Pier Landing Site. Existing sewer pipelines are present along Anderson Avenue and terminate near the south side of Building 6 (NAVFAC MIDLANT, 2022).

There are no sewer lines on Building 11 Parking Area. A sewer line associated with Building 11 is located to the west of the site.

3.13.1.3 Stormwater

The CWA of 1987 requires that operators of facilities that discharge stormwater associated with certain activities obtain National Pollutant Discharge Elimination System permits to control the quality of stormwater discharges. Responsibility for issuing and enforcing discharge permits has been delegated from the USEPA to the RIDEM. NAVSTA Newport is currently discharging storm water under the RIDEM General Permit for Industrial Activities (Permit Number RIR800126). NAVSTA Newport's storm drain system discharges to Narragansett Bay. There are currently no total maximum daily load requirements in place for NAVSTA Newport (USEPA, 2017).

A stormwater collection system is present to the east of Pier Landing Site and west of Burma Road. The system runs in a north-south direction and discharges into Coddington Cove at an outfall located to the south of the existing T-Pier (NAVFAC MIDLANT, 2022).

There are no storm sewers on Building 11 Parking Area. A storm sewer system associated with the parking area for Building 11 is located to the west of the site (NAVFAC MIDLANT, 2022).

3.13.1.4 Solid Waste Management

NAVSTA Newport converted from the two-bin recycling system into a one-bin process on May 2, 2011, in order to advance its goal of achieving a 50 percent diversion rate (CNIC, 2017). Single stream recycling is offered in each of the NAVSTA Newport's barracks, inns, and suites. In 2020, NAVSTA Newport generated approximately 2,453 tons of solid waste and achieved a recycling rate of 51 percent (1,362 tons). Transport and disposal of solid waste to licensed disposal facilities is conducted by off-site contractors.

3.13.1.5 Energy

NAVSTA Newport is one of the largest electrical users in Rhode Island and the Navy spends more than $10 million annually just on this utility. The base load (i.e., the least amount of electricity the installation would require at any given moment in time) electric consumption at NAVSTA Newport is approximately 9 megawatts (CNIC, 2017). Currently the installation electrical distribution at the NAVSTA operates at less than 25 percent capacity (Bettencourt, 2017).

Underground electrical service lines are located east of Pier Landing Site along Anderson Avenue to the south of Building 6. These lines then extend north and south beneath Burma Road. There is one electrical feeder line that extends from Burma Road near the northwest corner of Building 6 and extends west to Pier Landing Site (NAVFAC MIDLANT, 2022).

The existing underground electrical service at Building 11 Parking Area runs east-west along the southern portion of the site. A second underground electrical line extends northward towards Building 11 to the west of Building 11 Parking Area (NAVFAC MIDLANT, 2022).

No gas lines currently service any of the proposed project areas. The closest natural gas connection point to Pier Landing Site is in the middle of a parking lot to the north of the site, at the corner of Burma and Access Roads (NAVFAC MIDLANT, 2022).

3.13.1.6 Communications

There are no communication systems currently established at Pier Landing Site or at Building 11 Parking Area (NAVFAC MIDLANT, 2022).

3.13.2 Solid Waste Management

NAVSTA Newport converted from the two-bin recycling system into a one-bin process on May 2, 2011, in order to advance its goal of achieving a 50 percent diversion rate (CNIC, 2017). Single stream recycling is offered in each of the NAVSTA Newport's barracks, inns, and suites. In 2020, NAVSTA Newport generated approximately 2,453 tons of solid waste and achieved a recycling rate of 51 percent (1,362 tons). Transport and disposal of solid waste to licensed disposal facilities is conducted by off-site contractors.

3.14 Visual Resources

This discussion of visual resources includes the natural and built features of the landscape visible from public views that contribute to an area's visual quality. Visual perception is an important component of environmental quality that can be impacted through changes created by various projects.

Pier Landing Site is characterized by deteriorated sheet pile bulkheads with solid fill behind. The T-Pier extends perpendicular from shore approximately 800 feet into Coddington Cove. Portions of the sheet pilings along the bulkheads of the shoreline and T-Pier have failed, resulting in large areas of subsidence where fill material has sloughed into Coddington Cove. The site is bounded to the east and south by Burma Road, to the north by a stone L-shaped breakwater, and to the west by Narragansett Bay. The site consists of undeveloped areas, relic foundations of former buildings, parking areas, storage areas utilized by the USCG for buoy maintenance, and ongoing construction and improvement projects. A paved road provides access to the central and northern portions of the site from Burma Road. The northern portion of the site is the location of a USCG buoy maintenance yard and a satellite parking area. South of this central area is a concrete slab foundation previously occupied by Building 234. An active natural gas station is located on a portion of the foundation.

Building 11 Parking Area is largely undeveloped with a derelict basketball court, a few landscaped trees and shrubs, and a maintained lawn area. The surrounding area contains institutional structures supporting administrative and commercial functions to the west and residential areas to the north, east, and south.

3.15 Public Health and Safety

Narragansett Bay is a heavily used commercial and recreational resource (Save the Bay, 2017). The bay supports recreational and commercial fishing and cargo vessel traffic to northern marine terminals in

Providence. The waters of Coddington Cove are restricted and commercial and recreation boating is prohibited. Similarly, NAVSTA Newport is a secure facility that is not accessible to the general public.

3.16 Hazardous Materials

This section discusses hazardous materials, hazardous waste, toxic substances, and contaminated sites. The NAVSTA has implemented a strict Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all activities. These programs are governed Navy-wide by applicable Navy instructions and at the installation by specific instructions issued by the Installation Commander. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes.

3.16.1 Hazardous Materials

Hazardous materials are used in many facilities at the installation, ranging from small quantities of cleaners and printing supplies to larger quantities of fuels, oils, and various chemicals (Navy, 2009). NAVSTA Newport utilizes a Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP) to achieve life cycle hazardous material control and management and pollution prevention at the command and facility levels. The CHRIMP program provides a standardized approach and guidance for the development and implementation of centralized hazardous material control and management practices that result in a reduction of hazardous materials procured, stocked, distributed, and eventually disposed of as waste. NAVSTA Newport is comprised of the host command and 37 other tenant commands. Each command is required to purchase and receive all their hazardous materials from the centralized hazardous materials center located at Building 1166CC. They are also required to ensure that all containers are returned to the hazardous materials center whether empty or partially full upon completion of project (CNIC, 2017).

3.16.2 Hazardous Waste

The Navy provides hazardous waste management services for all activities located at the installation. NAVSTA Newport is a large-quantity generator of hazardous waste with USEPA hazardous waste generator identification number RI1170024243. In 2020, the facility generated 35,296 pounds of hazardous waste (Rielly, 2021). Navy and tenant personnel are responsible for compliance with all laws regulating management of hazardous waste throughout the installation (Navy, 2009).

3.16.3 Special Hazards (Asbestos-Containing Materials, Lead-Based Paint, Polychlorinated Biphenyls)

Soils in Pier Landing Site are part of the Former Derecktor Shipyard, which is also known as ERP Site 19; OU 12 (NAVFAC, 2014a). As part of site investigations related to CERCLA actions at this site, it was determined that recent construction activities may have resulted in a release of ACM. The selected remedy for soil contamination was a combination of soil removal, soil coverage (soil, concrete, or pavement) and the establishment of LUCs and operation and maintenance requirements designed to isolate any remaining contaminants and prevent human exposure. A Record of Decision for the selected remedy was issued by NAVSTA Newport, with the concurrence of the USEPA, in September 2014 (NAVFAC, 2014a). The selected remedy was implemented in 2017. Recent site-specific sampling did not detect ACM in Pier Landing Site soils (NAVSTA Newport, 2021).

Marine sediments in Coddington Cove are part of the Former Derecktor Shipyard, which is also known as ERP Site 19, OU 5. Contaminants of concern for marine sediments at this site were polycyclic aromatic hydrocarbons, PCBs, lead, and asbestos. The selected remedy for sediment contamination was a combination of dredging and off-site disposal, placement of a sand/gravel cap under Pier 2 to eliminate potential unacceptable exposure of human and environmental receptors to contaminants. A Record of

Decision for the selected remedy was issued by NAVSTA Newport, with the concurrence of the USEPA, in September 2014 (NAVFAC, 2014). The remedy was implemented in fall-winter 2016-2017.

There are no known special hazards associated with Building 11 Parking Area.

Both project areas currently do not contain any buildings, and the presence of painted surfaces is minimal. Therefore, it is unlikely that lead-based paint (LBP) would be present in either of the proposed project areas.

The Navy is not aware of any PCB transformers on NAVSTA Newport, and no areas of PCB contamination are known to be present in the proposed project areas (CNIC, 2017).

3.16.4 Defense Environmental Restoration Program

NAVSTA Newport is involved in the DOD's ERP. The DOD's ERP is equivalent to the USEPA's Superfund program. The DOD's ERP identifies sites where contamination (i.e., soil, surface water, and groundwater) has occurred and where environmental remediation activities are warranted (Navy, 2009).

NAVSTA Newport area was designated as a National Priorities List site in 1989. The National Priorities List has the primary purposes of identifying releases of hazardous substances, pollutants, and contaminants and informing the public about sites that pose the most significant risk to public health, welfare, and the environment and warrant further investigation. A Restoration Advisory Board has been established with the purpose of promoting community awareness and obtaining constructive community review and comment on environmental clean-up and restoration actions of the ERP (Navy, 2009).

Soils in Pier Landing Site are part of ERP Site 19; OU 12 and marine sediments in Coddington Cove are part of ERP Site 19, OU 5. ERP Site 19 is the Former Derecktor Shipyard (NAVFAC, 2014). Soil conditions of the ERP are described in detail in Section 3.2.3. Sediment conditions of the ERP are described in detail in Section 3.2.5.

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4 Environmental Consequences

This chapter presents an analysis of the potential direct and indirect effects of each alternative on the affected environment. The following discussion elaborates on the nature of the characteristics that might relate to resources. “Significantly,” as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would be expected to be significant.

4.1 Land Use

Factors affecting the Proposed Action in terms of land use include its compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in an existing land use that is valued by the community. The study area for the Proposed Action and Action Alternative encompasses Pier Landing Site and Building 11 Parking Area and adjacent areas.

4.1.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to land use. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

4.1.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

Land use and development at NAVSTA Newport is guided by the installations Master Plan to ensure existing and future development and land use is compatible with the installation mission and adjacent land uses (NAVSTA Newport, 2008). Existing undeveloped and underutilized land at Coddington Cove (Pier Landing Site and Building 11 Parking Area) would be permanently converted from disturbed land and lawn, respectively, to active uses that are consistent and compatible with designated and adjacent land uses and intended long-term uses for the respective sites. As a result, the Proposed Action and the Action Alternative would have minimal impacts on land use at NAVSTA Newport. Therefore, implementation of the Proposed Action and Action Alternative would not result in significant impacts to land use.

4.2 Geological Resources

Geological resources are analyzed in terms of drainage, erosion, and seismic activity. The analysis of topography, geology, and soils focuses on the area of soils that would be disturbed, the potential for erosion of soils from construction areas, and the potential for eroded soils to become pollutants in downstream surface water during storm events. The analysis of bathymetry and marine sediments focuses on the area of sediments that would be disturbed, the potential for resuspended sediments in

Coddington Cove, and the potential for resuspended sediments to become pollutants in Coddington Cove and Narragansett Bay. The study area for geological resources is limited to upland and in-water areas that would be disturbed by the Proposed Action, Coddington Cove, and Narragansett Bay.

4.2.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to baseline geology, topography, or soils. Erosion problems associated with failures along the bulkhead and T-Pier would continue to affect site topography and adjacent sediment composition. This impact would be limited to the shoreline at Pier Landing Site and T-Pier and, if continued, could result in substantial shoreline losses over time.

4.2.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area

4.2.2.1 Topography

Long-term impacts to topography would occur under both the Proposed Action as a result of construction activity and grading at Pier Landing Site and at Building 11 Parking Area. The construction of buildings and structures at Pier Landing Site would result in a long-term, localized change to site topography. Additional minor long-term impacts would result from site grading that would direct stormwater flows away from the site structures and towards the stormwater system designed for the respective sites. Additional temporary impacts would result from the excavation and backfilling for utility connections at both Pier Landing Site and Building 11 Parking Area. These impacts, although long-term, are minor and would have no large-scale effect on topography. Therefore, impacts to topography would not be significant.

4.2.2.2 Geology

Impacts to bedrock may occur as a result of pile installation. Some pier, bulkhead, floating dock, and building foundation support piles may need to be drilled or hammered into the underlying bedrock. This impact would not adversely affect the overall geology of the area and would not be significant.

The new pier would be designed according to the appropriate seismic risk category outlined in United Facilities Criteria design standards for piers and wharves.

4.2.2.3 Soils

Short-term impacts to soil would occur under the Proposed Action and the Action Alternative as a result of disturbance from construction activities. Long-term impacts would result from the addition of impervious surfaces. In total, approximately 180,000 sf of soil would be disturbed by construction activities and utilities installation at Pier Landing Site. Activities disturbing 1 acre, or more are required to obtain a Rhode Island General Permit for Stormwater Discharge for Construction Action. Approximately 60,000 sf of this disturbance would be temporary and disturbed areas would be revegetated following the completion of construction activities. Approximately 120,000 sf of soil area would be permanently converted to impervious surface resulting from the construction of building, structures, sidewalks, roadways, and parking areas. Minor localized changes to surface soils could occur from land hardening activities designed to provide additional foundation support to the proposed buildings and structures (NAVFAC MIDLANT, 2022). However, these impacts would be limited to the project footprints, would not result in a change to site soil classification, and would not be significant.

Potential impacts to surface water from upland construction activities would be minimized via BMPs for sedimentation and erosion control and compliance with conditions set forth in the Rhode Island

Pollution Discharge Elimination System (RIPDES) General Permit for Storm Water Discharge Associated with Construction Action pursuant to Section 402 of the CWA (33 U.S. Code §1342).

Because Pier Landing Site is located on an ERP site, excavated soils would be managed in accordance with applicable land use restriction requirements and BMPs to minimize the potential for soil losses from erosion and exposure to potential contaminants. Any excess soils generated at Pier Landing Site would be tested for contaminants of concern and reused or disposed of according to RIDEM and USEPA criteria. Removal of contaminated soils would have a beneficial impact. Existing monitoring wells would be avoided during construction or relocated in coordination with USEPA. With protective measures and BMPs incorporated, any impacts from soil disturbance would be minimized and would not be significant.

Similar impacts would occur at Building 11 Parking Area where approximately 60,000 sf of soil disturbance would occur from construction activities and up to approximately 40,000 sf of soil would be converted to impervious surfaces as a result of the construction of the parking area. With BMPs and General Permit requirements incorporated, any impacts from soil disturbance would be minimized and would not be significant.

4.2.2.4 Bathymetry and Marine Sediments

Dredging would not be required under the Proposed Action, therefore, impacts to bathymetry and marine sediments would be limited to minor, localized, short-term disturbances of bottom sediments, and long-term changes in bottom shading and surface area.

The installation of piles would disturb bottom sediments and may cause a temporary increase in suspended sediment in the action area during construction activities. Based on available information collected from a project in the Hudson River, pile driving activities are expected to produce total suspended sediment (TSS) concentrations of approximately 5 to 10 mg/L above background levels within approximately 300 feet of the pile being driven. The small resulting sediment plume is expected to settle out of the water column within a few hours (NOAA Fisheries, 2021). Within the enclosed area between the T-Pier and the breakwater, sediments resuspended would be retained by the circular currents (SAIC/URI, 1997). Outside of this area, resuspended sediments are anticipated to disperse quickly in Narragansett Bay.

The Proposed Action would have short-term and long-term impacts to marine sediments from shading and pile installation. Impacts to sediments would be greater under the Proposed Action because the proposed pier location has not been previously developed under this alternative. Short-term impacts would result from vessels anchoring and from template installation and relocation during construction. These impacts would be minor and localized. Under the Proposed Action, approximately 55,000 sf of sediment would be shaded by the new pier, trestle, floating dock, and bulkhead and approximately 3,360 sf of sediment surface would be lost from pile and bulkhead installation. The incremental filling associated with the Proposed Action would be negligible when considered against the 147-square mile surface area of Narragansett Bay (less than one thousandth of a percent) and 395-acre surface area of Coddington Cove (0.02 percent). Therefore, impacts to bathymetry and marine sediments would not be significant under the Proposed Action.

Based on the analysis of topography, geology, soils, bathymetry, and marine sediments, implementation of the Proposed Action would not result in significant impacts to geological resources.

4.2.3 Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area.

4.2.3.1 Topography, Geology and Soils

Impacts to topography, geology and soils would be the same as described under the Proposed Action.

4.2.3.2 Bathymetry and Marine Sediments

Dredging would not be required under the Action Alternative, therefore, impacts to bathymetry and marine sediments would be limited to minor, localized, short-term disturbances of bottom sediments, and long-term changes in bottom shading and surface area.

The installation of piles would disturb bottom sediments and may cause a temporary increase in suspended sediment in the action area during construction activities as described for the Proposed Action.

The Action Alternative would have short-term and long-term impacts to marine sediments from shading and pile installation. Impacts to sediments would be less than the Proposed Action because the proposed pier location has been previously developed under the Action Alternative. Short-term impacts would result from vessels anchoring and from template installation and relocation during construction. These impacts would be minor and localized.

Under the Action Alternative, approximately 40,000 sf of sediment would be shaded by the new pier and floating dock, and approximately 4,000 sf of sediment surface would be lost from pile installation. However, additional localized impacts to bathymetry and marine sediments would be incurred under the Action Alternative as a result the repairs that would be required at the T-Pier. The stabilization of the shoreline and restoration of the T-Pier would result in the filling of approximately 1,500 sf of sediment surface along the existing bulkhead and T-Pier perimeter and require the placement of approximately 1,700 cubic yards (cy) of fill, assuming the fill would be placed within 1 foot of the existing bulkhead and T-Pier structure. In total, impacts to the cove bottom from bulkhead stabilization and pier construction would be 5,500 sf and total fill would be 2,450 cy.

The incremental filling associated with the Action Alternative would be negligible when considered against the 147-square mile surface area of Narragansett Bay (less than one thousandth of a percent) and 395-acre surface area of Coddington Cove (0.03 percent). Therefore, impacts to bathymetry and marine sediments would not be significant under the Action Alternative.

Based on the analysis of topography, geology, soils, bathymetry, and marine sediments, implementation of the Action Alternative would not result in significant impacts to geological resources.

4.3 Hydrological Processes

The analysis of hydrological process looks at the potential impacts on water dynamics and water quality, including both improvements and degradation of current water quality and impacts to physical and chemical characteristics. The study area for hydrological processes is Coddington Cove and the waters of Narragansett Bay adjacent to Coddington Cove.

4.3.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to hydrological processes.

4.3.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The implementation of either action alternative would have negligible impacts on the currents, hydrodynamics, salinity, and oxygen distribution in Coddington Cove. The construction of a new pile-supported pier at either location within Coddington Cove would not create obstructions that would greatly alter flow patterns and currents. Upland development would be designed and operated in compliance with National Pollutant Discharge Elimination System requirements to ensure that stormwater is managed so as to have no impacts on the temperature, salinity, and oxygen distribution in Coddington Cove or Narragansett Bay.

Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to hydrological processes.

4.4 Air Quality

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The study area for assessing air quality impacts is Newport County, RI.

Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations. Because General Conformity applies to proposed federal actions in Newport County, RI, the *de minimis* thresholds for VOCs and NOx were used to assess significance under the ozone standard. Similarly, the thresholds for the remaining criteria pollutants were used as comparative indicators, as these also represent the major source thresholds under Title V of the Clean Air Act and are representative of emissions within an air pollution source fence line.

4.4.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to baseline air quality. Therefore, no significant impacts to air quality or air resources would occur with implementation of the No Action Alternative.

4.4.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The Proposed Action or Action Alternative would result in direct emissions of criteria air pollutants during construction. Construction would result in temporary increases in air emissions from the combustion of fossil fuels in equipment and mobile sources during construction and operation, as well as emissions of fugitive dust. Construction equipment would be operated intermittently for the duration of construction and would produce low levels of ambient hazardous air pollutants in a localized area at NAVSTA Newport. For this reason, hazardous air pollutants were not carried forward for analysis.

The primary differences in air emissions for the two alternatives is that the Proposed Action includes construction of 728 linear feet of new bulkhead whereas the Action Alternative includes repair of 75 linear feet of existing bulkhead and repair of the T-Pier. These repairs would involve installation of sheet piles (850 two-feet wide sheets) around the entire perimeter of the T-Pier to stabilize the structure. For this reason, emissions from the Proposed Action would be lower than the Action Alternative, and so the Action Alternative was quantified to provide the most conservative estimate.

Table 4-1 shows estimated criteria pollutant emissions from construction activities and the first year of operations (2026) representing future annual steady state emissions for the Action Alternative. **Appendix I** includes the assumptions and calculations used to develop these estimates. The Action Alternative emissions for the ozone precursors VOCs and NOx are compared to their respective general *de minimis* thresholds to assess conformity applicability. As indicated by the results in Table 4-1, the total emissions associated with the Action Alternative would be well below the General Conformity *de minimis* thresholds and the proposed project is therefore exempt from the General Conformity regulations. For the remaining criteria pollutants, the *de minimis* threshold of 100 tons per year was used as a comparative indicator to assess emissions.

Table 4-1. Potential Annual Construction Emissions for Maximum Scenario (Action Alternative)

Year	*Action*	*VOC (tpy)*	*CO (tpy)*	*NO_x (tpy)*	*SO2 (tpy)*	*PM_{10} (tpy)*	*$PM_{2.5}$ (tpy)*	*CO_2 (tpy)*
2024								
	Building Construction	0.13	0.43	0.98	0.00	3.73	0.43	470.62
	Waterfront Construction	0.81	2.66	13.89	0.01	0.44	0.42	2,596
	Construction Worker vehicles	0.02	2.33	0.04	0.00	1.94	0.29	167.97
	Total	**0.95**	**5.41**	**14.91**	**0.02**	**6.11**	**1.14**	**3,235**
	De Minimis	50	NA	100	NA	NA	NA	NA
	Exceedance?	No	NA	No	NA	NA	NA	NA
	Comparative Threshold	NA	100	NA	100	100	100	NA
	Exceedance?	NA	No	No	No	No	No	NA
2025	Building Construction	0.26	0.72	1.65	0.00	18.90	1.98	794.68
	Waterfront Construction	0.46	1.62	8.74	0.01	0.25	0.24	1,610
	Construction Worker vehicles	0.02	3.57	0.06	0.00	2.97	0.45	257.10
	Total	**0.75**	**5.91**	**10.44**	**0.01**	**22.12**	**2.66**	**2,662**
	De Minimis	50	NA	100	NA	NA	NA	NA
	Exceedance?	No	NA	No	NA	NA	NA	NA
	Comparative Threshold	NA	100	NA	100	100	100	NA
	Exceedance?	NA	No	No	No	No	No	NA
2026 On	Commuting Staff	0.04	6.15	0.10	0.00	5.13	0.77	443
	De Minimis	50	NA	100	NA	NA	NA	NA
	Exceedance?	No	NA	No	NA	NA	NA	NA

Notes: The Action Alternative includes more construction activity associated with the installation of sheet piles around the entire perimeter of the T-Pier, therefore, the Action Alternative was quantified to provide the most conservative estimate or air quality impacts.
De minimis threshold for VOCs is 50 tons per year in an ozone transport region [40 CFR 93.153(b)(2)].
Tpy = tons per year.

Implementation of either the Proposed Action or the Action Alternative would result in minor increases in operating emissions at NAVSTA Newport, primarily from heating equipment that would run in the new facilities to be constructed, and two natural gas hot water boilers that are rated at 300 million British thermal units (MMBTU) per hour. These new stationary sources would require evaluation for stationary source permitting and would be required to operate under any conditions mandated by the

RIDEM. Additionally, a natural gas-powered emergency generator rated at 400 horsepower would be installed to provide power for portions of the pier and the administration/warehouse building. This emergency generator may be applicable for a general air permit issued by RIDEM if it is solely run for emergency power generation, runs less than 500 hours per year, meets Tier 3 engine standards and all other requirements in RIDEM Air Pollution Control Regulation No. 43 – General Permits for Smaller Scale Electric Generation Facilities. These additions of smaller emission units to NAVSTA Newport's permit portfolio would not result in significant impacts to air quality from facility operations. Stationary emissions, generated by natural gas combustion, would be assessed as part of a construction permit, and the equipment, depending on size, would likely be added to the existing operating permit at NAVSTA Newport.

Vessels would produce emissions while transiting to and from NAVSTA Newport but would be idle while at port where they would be connected to shore power. These vessel emissions are not regulated and would be similar to existing conditions (No Action Alternative), which has two of the vessels arriving and leaving from Pier 2 at NAVSTA Newport. The final National Emission Standards of Hazardous Air Pollutants (NESHAP) regulation for shipbuilding and ship repair facilities is applicable to all existing and new shipbuilding and ship repair facilities that are "major sources" of hazardous air pollutants (HAPs) or are located at plant sites that are major sources. Section 112(a) of the Clean Air Act defines "major source" as a source or group of sources located within a contiguous area and under common control that emits, or has the potential to emit, considering controls, 10 tons per year or more of any individual HAP or 25 tons per year or more of any combination of HAP. NAVSTA Newport is an "area source" of HAPs. "Area sources" are stationary sources that do not qualify as "major" on the basis of their "potential to emit." "Potential to emit" is defined in the Section 112 General Provisions (40 CFR part 63.2) as "the maximum capacity of a stationary source to emit a pollutant under its physical or operational design." Surface coating operations at shipyards are the focus of the NESHAP, and a variety of HAPs are used as solvents in marine coatings. The HAP emitted by the facilities covered by the final rule include xylene, toluene, ethylbenzene, methyl isobutyl ketone, ethylene glycol, and glycol ethers. All of these pollutants can cause reversible or irreversible toxic effects following exposure (USEPA, 1997).

Because NOAA vessels would spend the majority of their time at sea, repair activities at NAVSTA Newport would be intermittent. Given the limited number of repairs anticipated to occur at the NOAA boat repair facility, it is unlikely that it would be considered a major source of HAPs or would change NAVSTA Newport's status as an area source to a major source. Therefore, the facility would not be subject to NESHAP regulations for shipbuilding and repair facilities. However, potentially polluting substances would be managed using BMPs to ensure that HAP emissions resulting from transfer storage and handling of paints and solvents associated with surface coating operations are minimized or eliminated. The handling and transfer of volatile organic HAPs containing materials to and from containers, tanks, vats, vessels, and piping systems would be conducted in a manner that minimizes spills and other factors leading to emissions. In addition, containers of paint thinning solvent or waste that hold any volatile organic HAP materials would be kept closed unless materials are being added to or removed from them. Therefore, operational impacts with regards to HAPs would not be significant.

In conclusion, the emissions of all criteria pollutants are minor, temporary, and dispersed over time and location; therefore, implementation of either the Proposed Action or the Action Alternative would not result in significant impacts to air quality.

4.4.2.1 Greenhouse Gases

Implementation of the Proposed Action or the Action Alternative would contribute directly to emissions of greenhouse gases from the combustion of fossil fuels. Carbon dioxide emissions from construction and operational activities are shown in Table 4-1. While the emissions generated from the construction and operations associated with proposed NOAA vessel relocation at NAVSTA Newport alone would not be enough to cause global warming, when combined with past and future emissions from all other sources, they would contribute incrementally to the global warming that produces the adverse effects of climate change.

4.5 Water Resources

The analysis of water resources looks at the potential impacts on groundwater, surface water, and shorelines. Groundwater analysis focuses on the potential for impacts to the quality, quantity, and accessibility of the water. The analysis of surface water quality considers the potential for impacts that may change the water quality, including both improvements and degradation of current water quality. The analysis of shorelines considers if the Proposed Action would affect shoreline ecological functions.

The study area for water resources is Coddington Cove and the waters of Narragansett Bay adjacent to Coddington Cove as well as the groundwater beneath Pier Landing Site and Building 11 Parking Area.

4.5.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to water resources. The shoreline bulkhead at Pier Landing Site, inclusive of the T-Pier, would continue to deteriorate and would continue to release fill material into Coddington Cove having an adverse impact on surface water and shorelines.

4.5.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area

4.5.2.1 Groundwater

The Proposed Action would have no impact on groundwater. There are no sole source aquifers, drinking water supply watersheds, or groundwater recharge areas underlying any of the proposed upland or in-water construction areas. Groundwater at Pier Landing Site is currently undergoing long-term monitoring for contamination and would continue to be monitored until remediation goals are met. Compliance with regulations and instructions for material storage and disposal and the implementation stormwater controls would minimize the potential for adverse impact to groundwater from petroleum products and other chemicals during construction and operation. Therefore, construction activities and facility operations would not affect groundwater resources.

4.5.2.2 Surface Water

Short-term impacts on surface water quality in Coddington Cove would result from minor sediment resuspension from the anchoring of construction vessels and pile driving activities during pier, floating dock, and bulkhead construction. These impacts would be largely limited to the cove bottom within a few feet of each anchor/pile and along the face of the existing bulkhead where stabilization is proposed (728 linear feet). The installation of piles would disturb bottom sediments and may cause a temporary increase in suspended sediment in the immediate area. Based on available information collected from a project in the Hudson River, pile driving activities are expected to produce TSS concentrations of approximately 5 to 10 mg/L above background levels within approximately 300 feet of the pile being driven. The small resulting sediment plume is expected to settle out of the water column within a few hours (FHWA, 2012). The sediments within Coddington Cove that would be resuspended within the enclosed area between the T-Pier and the breakwater would be retained by the circular currents (SAIC/URI, 1997). Upon completion of construction activities, surface water would return to pre-existing conditions. Sediment resuspension from propeller wash is not anticipated due to the depth of water at the proposed pier location (approximately 26 feet).

The Proposed Action would require the placement of structures and fill in waters of the United States. Long-term impacts to surface water would occur as a result of minor filling from bulkhead construction and pile installation. The construction of the new bulkhead for stabilization of the shoreline would require the filling of approximately 2,400 sf of surface water in front of the existing bulkhead and require the placement of approximately 895 cy of pea gravel fill with geotextile filter fabric to prevent soil from leaking into the water. The placement of fill would extend approximately 3 feet seaward from the existing bulkhead for approximately 728 linear feet.

The construction of the new pier, trestle, and floating dock would directly impact approximately 960 sf of cove bottom and result in the filling of approximately 875 cy of open water with the addition of the pilings. In total, impacts to the water column and sea floor from bulkhead, pier, and floating dock construction would be 1,770 cy and 3,360 sf, respectively. Construction of the new pier, trestle, floating dock, and bulkhead would cover a total of approximately 55,000 sf of surface water. NOAA would apply for permits from the USACE under Section 404 of the CWA and Section 10 Rivers and Harbors Act and would apply for a Water Quality Certification from the State of Rhode Island, if required, for compliance with CWA Section 401 to ensure that impacts to water resources from construction activities are minimized.

Potential short-term impacts to surface water from upland construction activities would be minimized via BMPs for sedimentation and erosion control and compliance with conditions set forth in the RIPDES General Permit for Storm Water Discharge Associated with Construction Action pursuant to Section 402 of the CWA (33 U.S. Code §1342). Long-term impacts would be minimized by the installation and maintenance of 4-foot sump catch basins and landscaped bioretention filter basins with impermeable liners at the Pier Landing Area and Building 11 Parking Area to improve water quality and detain flows.

Construction activities and vessel operations within Coddington Cove would result in an increased potential for accidental releases of petroleum products. These spills could originate from: accidental spills from construction barges, support boats or NOAA vessels, loss of fuel during fuel transfers, or accidents resulting from collisions. Construction would involve work activity aboard vessels and the movement of barges, supporting vessels, and other specialized marine equipment. Construction contractors must comply with all laws and regulations related to handling of fuels and lubricants, including 40 CFR part 110, and related vessel-to-vessel transfers, including 33 CFR Part 155. NAVSTA Newport has an existing Spill Prevention, Containment, and Countermeasure Plan already in place to provide timely containment and clean-up instructions for any potential spill. Therefore, these potential impacts to surface waters from construction activities would not be significant.

Operational impacts would be minimized via compliance with the environmental procedures established by NOAA's Marine Operations Environmental Compliance Office. The Marine Operations Environmental Compliance Office utilizes an Environmental Management System to ensure the fleet and facilities continually reduce their environmental impacts by following the organization's environmental procedures and maritime regulations. The Environmental Management System is a framework for managing environmental risks and ensuring continual improvement. It uses a Plan/Do/Check/Act cycle (NOAA, 2016).

No impacts to the water column are expected due to port operations. No cooling water withdrawals would be made, and no ballast water would be discharged. The water depth at the pier would be sufficient as to not have any impact from propeller wash from the planned vessels.

Based on this analysis, impacts to surface water would not be significant under the Proposed Action.

4.5.2.3 Shorelines

The Proposed Action would permanently alter the shoreline of Coddington Cove by the addition of the pier structure. This addition is consistent with the existing shoreline type and projected long-term use of the project area and would not change shoreline ecological functions. Construction of 728 feet of new bulkhead would be beneficial to the shoreline because it would stabilize the existing deteriorating bulkhead and prevent erosion of shoreline soils. Therefore, impacts to shorelines would not be significant.

Therefore, implementation of the Proposed Action would not result in significant impacts to water resources.

4.5.3 Action Alternative: Relocate Four Vessels and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The implementation of the Action Alternative would have the same impacts on groundwater, surface water (short-term) and shorelines as described under the Proposed Action. None of the anticipated impacts to water resources would be significant.

Long-term impacts to surface water under the Action Alternative would be greater than those anticipated under the Proposed Action as a result of the increased amount of in-water work associated with restoring the existing T-Pier structure. This impact would be partially offset by a reduction in the number of support piles installed in the waters of Coddington Cove. Under the Action Alternative, piles for the proposed trestle would be installed through the existing T-Pier and would have no impacts on surface water. The stabilization of the shoreline and restoration of the T-Pier would result in the filling of approximately 1,500 sf of shoreline along the existing bulkhead and T-Pier perimeter and require the placement of approximately 1,700 cy of fill, assuming the fill would be placed within 1 foot of the existing bulkhead and T-Pier structure. The installation of piles for the new pier structure off the T-Pier head and the floating dock would directly impact approximately 4,000 sf of cove bottom and result in the placement of the approximately 750 cy of fill. In total, bulkhead stabilization and pier construction for the Action Alternative would impact 5,500 sf surface water and 2,450 cy of water column. Construction of the new pier and floating dock would cover a total of approximately 40,000 sf of surface water.

Impacts to surface waters from pier construction and shoreline stabilization would be minimized via compliance with the conditions of the CWA Section 401/404 permit. Potential impacts to surface water from upland construction activities would be minimized via BMPs for sedimentation and erosion control and compliance with conditions set forth in the RIPDES General Permit for Storm Water Discharge Associated with Construction Action pursuant to Section 402 of the CWA (33 U.S. Code §1342).

Operational impacts would be the same as described under the Proposed Action.

Therefore, implementation of the Action Alternative would not result in significant impacts to water resources.

4.6 Cultural Resources

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts to historic properties are those caused by the Proposed Action that are later in time or farther removed in distance but as still reasonably foreseeable (U.S. Court of Appeals for the District of Columbia Circuit 2019).

4.6.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to cultural resources. Therefore, no significant impacts to cultural resources would occur with implementation of the No Action Alternative.

4.6.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area

Under the Proposed Action, construction of a new pier and associated shoreside and support facilities would have the potential to encounter terrestrial and submerged archaeological resources. Although there are no previously recorded terrestrial archaeological sites in the vicinity of the APE, the construction activities would be in areas of sensitivity for submerged archaeological sites. Because there are two piers in the vicinity, the area is likely to be disturbed and the discovery of undisturbed archaeological resources is not anticipated. However, in the event that archaeological resources are discovered, NOAA would notify NAVSTA Newport and follow the procedures of inadvertent discovery in accordance with 36 CFR 800. Therefore, implementation of the Proposed Action would have no effect on archaeological resources.

Visual impacts of the proposed new facilities under the Proposed Action would have the potential to affect the integrity of setting of the historic architectural properties in the APE. Pier Landing Site and Building 11 Parking Area are located within the viewshed of Quarters NB-1 and the Destroyer Piers Historic District. Under the Proposed Action, the new pier and associated shoreside facilities at Pier Landing Site would be approximately 1,400 feet west of Quarters NB-1. The proposed parking area at Building 11 is 230 feet north of Quarters NB-1. Views of the new shoreside facilities and the proposed parking area at Building 11 Parking Area would not likely be visible from Quarters NB-1, as mature trees surround the house, and three rows of warehouses are between it and the shoreside. Therefore, it is anticipated that implementation of the Proposed Action would have no adverse effect on Quarters NB-1, as there would likely be no substantial changes to the visual character or physical features within its current setting.

Visual impacts of the proposed new facilities under the Proposed Action would have the potential to affect the integrity of setting of the NRHP-eligible Destroyer Piers Historic District (see Figure 3-3). The new pier and associated shoreside facilities would be approximately 900 feet south of Pier 1 of the Destroyer Piers Historic District. Views of the new shoreside facilities would likely be visible since they are approximately 870 feet southeast of Pier 1. The proposed parking area at Building 11 Parking Area is approximately 2,180 feet east of the Destroyer Piers Historic District and would be unlikely to be visible. The designs of the new facilities would be consistent with the industrial nature and setting of the existing piers area and would not substantially change the visual character or setting of the two historic properties. Pursuant to 36 CFR section 800.5, NOAA has determined that the Proposed Action would result in a finding of no adverse effect on historic properties. In compliance with Section 106 of the National Historic Preservation Act, NOAA consulted with the SHPO at the Rhode Island Historical Preservation & Heritage Commission on this determination. The SHPO concurred with NOAA's findings in a letter included in **Appendix B**. NOAA also consulted with Balfour Beatty Communities, the owner of Quarters NB-1, as an interested party (**Appendix B**).

The Proposed Action would have no adverse effect on historic properties under the National Historic Preservation Act. The Proposed Action would not have significant impacts on cultural resources.

As part of the evaluation of impacts in accordance with NEPA, NOAA initiated consultation with three federally-recognized Native American Tribes regarding the proposed undertaking. Specifically, NOAA sent letters to the Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and Wampanoag Tribe of Gayhead Aquinnah to determine if the Proposed Action might affect resources of religious or cultural significance. Correspondence with the tribes is included in **Appendix C**. NOAA did not receive responses from the tribes.

4.6.3 Action Alternative: Relocate Four Vessels and Construct New Pier Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The Action Alternative would be the same as under the Proposed Action except the new pier would be constructed at the location of the existing T-Pier in Coddington Cove. The T-Pier and 50 feet of bulkhead on either side of the T-Pier would be repaired, and the new pier constructed to extend from the west side of the T-Pier head.

Potential impacts to archaeological resources would be the same as those described under the Proposed Action.

The Navy has determined the T-Pier is not eligible for listing on the National Register of Historic Places (NRHP). Potential effects on historic architectural properties under the Action Alternative would be the same as those described for the Proposed Action.

4.7 Flora and Fauna

This analysis focuses on flora and fauna that are important to the function of the ecosystem or are protected under federal or state law or statute. The study area for flora and fauna under the Proposed Action and Action Alternative is the waters of Coddington Cove and Narragansett Bay and the construction footprint of Pier Landing Site and Building 11 Parking Area. Noise impacts to fauna are described in Section 4.11, *Noise*.

4.7.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to flora and fauna. Therefore, no significant impacts to flora and fauna would occur with implementation of the No Action Alternative.

4.7.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area

4.7.2.1 Terrestrial Vegetation

Construction at Pier Landing Site would include the development of up to approximately 120,000 sf of facilities (buildings, parking areas, roadways, sidewalks, and paved laydown and storage areas) that would result in the conversion of vegetated and disturbed areas to impervious surfaces. Once construction is completed, areas adjacent to the new facilities that were disturbed by construction activities, up to approximately 60,000 sf, would be revegetated with native plants and landscape-appropriate trees, shrubs, and/or grasses. The proposed project area at Pier Landing Site is a highly disturbed, industrialized waterfront with little vegetation. Therefore, impacts to vegetation would not be significant.

The proposed construction at Building 11 Parking Area would convert approximately 40,000 sf of lawn and remnant pavement into impervious surfaces for the construction of parking areas and sidewalks. Adjacent areas disturbed by construction activities, approximately 20,000 sf, would be revegetated with native and landscape-appropriate trees, shrubs, and/or grasses once construction is completed. The memorial tree impacted by construction would be replaced in a new location and the plaque relocated. With the proposed revegetation and relocation of the memorial tree, the impacts to terrestrial vegetation at Building 11 Parking Area would be a minor.

As a result, long-term impacts to vegetation from the construction of the shoreside and support facilities would not be significant.

4.7.2.2 Marine Vegetation

Marine vegetation, primarily macroalgae and other algae is present in the project area but is relatively sparse. There is no eelgrass in the project area (AECOM, 2018). Impacts from sediment turbidity during pile driving and shading from construction barges could occur but would be temporary. After construction, the new pier, trestle, and floating dock would create approximately 55,000 sf of overwater coverage within the project area. Overwater coverage reduces light penetration and can lead to a reduction in vegetation or compromised benthic vegetation function (Haas, Simenstad, Cordell, Beauchamp, & Miller, 2002). However, the bottom substrate in the project area is largely silty/sandy, without rocks and structures that support an abundance of macroalgae. Therefore, no significant impacts on marine vegetation would result with implementation of the Proposed Action.

4.7.2.3 Terrestrial Wildlife

Upland construction activities associated with the Proposed Action would occur on previously developed lands or disturbed, actively managed areas (i.e., mowed or landscaped), and would result in temporary increases in noise associated with construction equipment (refer to Section 4.10, *Noise*). Construction-related noise may temporarily displace wildlife from suitable habitat in the immediate vicinity of the project area. However, quality wildlife habitat is limited in areas of proposed construction because of the developed and relatively active nature of the sites. Additionally, wildlife species at the installation are adapted to the existing industrial environment. Impacts to wildlife from operations and maintenance of the new facilities would be minor, as they would be similar to existing operations and maintenance activities associated with waterfront facilities at NAVSTA Newport and would not result in a significant adverse effect on any populations of wildlife, including migratory birds. As a result, there would be no significant impacts to wildlife from implementing the construction and operational activities associated with the Proposed Action.

4.7.2.4 Marine Wildlife

Benthic Invertebrates

In-water construction would have long-term impacts on benthic invertebrates through bottom disturbance from pile installation and bulkhead stabilization. Approximately 3,360 sf of benthic habitat would be displaced by piles and fill associated with bulkhead stabilization. Benthic communities occurring within the footprint of the piles/fill areas would be at risk of direct mortality during pile installation/shoreline stabilization or loss of habitat due to sea floor displacement. These disturbances would be localized but long-term. Given the fact that Narragansett Bay has a surface area of 147 square miles, this loss of benthos would impact a small fraction of a percent of available habitat in Narragansett Bay. Therefore, impacts on benthic invertebrates and their habitat would not be significant relative to available habitat in Coddington and Narragansett Bay. Decking of the new pier and trestle under the Proposed Action would shade approximately 55,000 sf of previously exposed cove bottom resulting in long-term, indirect impacts to benthic habitat. This impact would not result in benthic species mortality but could change the composition and diversity of the benthic population. These changes would be localized but long-term. Given the fact that Narragansett Bay has a surface area of 147 square miles, this change to the benthos would impact a small fraction of a percent of Narragansett Bay within the action area and would not be significant. Additionally, the addition of the piles for the pier and trestle would increase the available surface areas for sessile species such as mussels and barnacles to attach and would be a beneficial impact.

Temporary impacts to the benthic substrate would occur from the anchoring of construction vessels. Although the size and number of construction barges is not known, it is probable that the area of impacts would be confined to the immediate proposed pier area and impacts to the benthos from their use during construction would be minor and temporary. The benthic community that would be temporarily adversely impacted during construction activities due to construction vessel anchoring is expected to rapidly recover upon project completion (Brooks, 2006). The sea floor in the project area is a soft-bottom environment, comprised of fine sands with silts and clays; therefore, no impact to hard-bottom habitat is expected.

Fish and Essential Fish Habitat

The pier construction would be located within Coddington Cove, close to shore. Temporary impacts to fish would be expected from noise due to construction activities and can be minimized with the use of BMPs such as the use of soft starts for pile driving activities. Soft starts involve using an impact hammer at reduced energy to allow wildlife to move away to reduce potential exposure to sound levels that could cause further behavioral disturbance or injury (refer to Section 4.10, *Noise*). Fish would likely avoid the area of noise exposure, minimizing impacts to fish but potentially resulting in temporary impacts to recreational fishing near Coddington Cove.

A permanent loss of a small amount of benthic habitat (approximately 3,360 sf) would occur from pile installation. The benthos would provide habitat for bottom dwelling species as well as foraging habitat for fish. This loss of habitat is not significant when compared to the available habitat in Coddington and Narragansett Bay (395 acres and 147 square miles, respectively). Long-term and short-term impacts to water column habitat from filling (1,770 cy) and turbidity associated with the installation of pier piles is described in Section 4.5, *Water Resources*. Losses of water column habitat from the Proposed Action would be minor when considered with the volume of available habitat in Narragansett Bay. Studies of the effects of turbid water on fish suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected. The TSS levels expected for pile driving or removal (5.0 to 10.0 mg/L) are below those shown to have adverse effect on fish (typically up to 1,000.0 mg/L) (NOAA Fisheries, 2021). Therefore, turbidity impacts on fish would not be significant.

NOAA has determined that the Proposed Action may adversely affect EFH. An assessment of EFH is contained in **Appendix D**. NOAA has consulted with NMFS, and NMFS provided EFH conservation recommendations (**Appendix D)**. Conservation measures that would be incorporated into the project to minimize impacts to fish spawning and juvenile development would include: the lowermost part of any floats would be 18 inches or more above the substrate at all times to avoid grounding and scour; appropriate soil erosion, sediment and turbidity controls, and monitoring measures would be used and maintained in effective operating condition during construction; turbidity curtains and monitoring would be implemented between February 1 and May 31 for in-water turbidity producing work; and soft start methods would be utilized for impact pile driving.

The construction of the pier would be within an area devoid of sensitive biological resources such as hard-bottom areas and submerged aquatic vegetation. However, the macroalgae in Coddington Cove is considered to be HAPC for summer flounder. Shading caused by the proposed construction of the Proposed Action may cause any areas of macroalgae under the new, approximately 55,000 sf, shaded area to wither or die. The macroalgae does not cover the entire footprint of the proposed new pier and is found mainly in the sandy, shallow area just north of the T-Pier and not common in the silty area which comprises most of the proposed project area and represents a small amount. Given the fact that Narragansett Bay has a surface area of 147 square miles, this loss of macroalgal habitat would represent a small fraction of available habitat in Narragansett Bay. Therefore, the impact would not be significant.

Shading caused by the proposed floating dock, trestle and pier would also have beneficial impacts that would include the creation of refuge for fish species and the creation of attachment sites for sessile species such as mussels, tunicates, and barnacles.

Coddington Cove is also HAPC for juvenile Atlantic cod, which is defined by NMFS as, “the inshore areas of the Gulf of Maine and southern New England between 0-20 meters (relative to mean high water).” Juvenile cod prefer complex habitats with gravel and cobble bottoms and grow best in eelgrass. They also use sandy areas next to these habitats when predators are not around. Survival is best in the more structured habitats like gravel, cobble, boulders, and ledges – especially those with attached animals or algae that give cod extra shelter. Juvenile cod also use habitats that match their size. Juvenile cod are only a few centimeters when they settle in bottom habitats, and only about 15 centimeters by the end of their first growing season. Without the extra attached animals or algae, large, scattered cobbles or boulders would not likely provide enough complexity for them (NMFS, 2018). Similarly, areas with engineered rip-rap fill do not have enough variation and complexity for young cod. Coddington Cove does not possess the preferred habitat qualities of juvenile Atlantic cod. Therefore, these species are not likely to be present and impacts to Atlantic cod and its HAPC would not be significant.

Marine Mammals

Temporary impacts to marine mammals would occur as a result of construction noise. Noise impacts to marine mammals are fully discussed in detail in the Request for IHA contained in **Appendix E** and summarized in Section 4.11, *Noise*. NOAA is requesting authorization from NMFS, as required by the MMPA, for the potential incidental harassment of small numbers of marine mammals during pile driving and drilling activities, and the documentation is included in **Appendix E**. There would also be short-term construction impacts to marine mammals as a result of the small increase in construction vessel traffic in and out of Coddington Cove. It is assumed that local contractors would be used for construction; therefore, this short-term vessel traffic would be limited to the waters of Narragansett Bay.

Long-term operational impacts to marine mammals would occur as a result of the small increase in vessel traffic between Coddington Cove and the Atlantic Ocean resulting from the relocation of four NOAA research vessels. Within Narragansett Bay, potentially affected marine mammal species would include short-beaked common dolphin, Atlantic white-sided dolphin, harbor porpoise, harbor seal, gray seal, harp seal, and hooded seal. Outside of Narragansett Bay, NARW, fin whales, humpback whales and minke whales could potentially be affected. NARW and fin whales are discussed further in Section 4.7.5.2, *Threatened and Endangered Species*. Narragansett Bay is an extensively used body of water where there is a substantial number of vessel transits. Construction vessels operating during the Proposed Action would be slow moving and would not increase the risk that any vessel in the area would strike an individual or would increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured, detected, or evaluated. The increase in traffic associated with two additional research vessels berthed at NAVSTA Newport is extremely small and dolphin and seal species are highly motile and would be able to avoid most vessels.

Because two NOAA vessels are currently temporarily homeported in Narragansett Bay (NAVSTA Newport), the permanent relocation of four NOAA vessels would only increase vessel traffic in Narragansett Bay by two ships. NOAA vessel missions can last from weeks to s. Therefore, increases in vessel traffic to and from Coddington Cove and associated noise would be minimal. In the event of whale sightings during transiting to and from the homeport, NOAA vessels would adhere to safety zone separations from sighted federally threatened or endangered species. The specific buffer zone is 100 yards for whale species other than NARW (refer to Section 4.7.5.2, *Threatened and Endangered Species* for NARW buffer). Potential impacts to humpback and minke whales would be further minimized by complying with the recommendations in the weekly published USCG Notice to Mariners. The Notice to Mariners would provide information regarding the presence of whales, establish vessel speed restrictions designated to protect whales, identify recommended vessel routes, and establish Dynamic Management Areas where groups of whales have been reported to be present. Therefore, the Proposed Action would have no significant impact on whales.

4.7.2.5 Threatened and Endangered Species

Habitat for the roseate tern is not found within Pier Landing Site or Building 11 Parking Area. Therefore, NOAA has determined that the Proposed Action would have no effect on the roseate tern (refer to **Appendix F**, Biological Assessment).

The NLEB has been observed on NAVSTA Newport in the past, but not in a recent 2018 survey (Tetra Tech, 2019b), and it has never been observed at the proposed project areas. Pier Landing Site is a disturbed and active waterfront and does not likely provide suitable roosting or foraging habitat for NLEB. Building 11 Parking Area contains several ornamental trees and grass but also lacks suitable roosting and foraging habitat for NLEB. NOAA has determined that the Proposed Action would have no effect on the NLEB (refer to **Appendix F**, Biological Assessment). Construction activities would be limited to the upland project area footprint and open water area of Coddington Cove, which is not favorable habitat for NLEB. Noise and lighting from construction activities would largely be limited to the proposed construction areas that are not located near suitable habitat and past known locations of the NLEB. Temporary increases in noise associated with construction activities would be reduced to noise level characteristic of current operations by the time they reach areas where the NLEB may be roosting, such as the tank farms. Construction would result in the permanent removal of a few ornamental trees at Building 11 Parking Area that are unlikely to be used by NLEB, which prefers mature trees in forested areas. Installation personnel would continue to manage habitats according to the NAVSTA Newport Integrated Natural Resources Management Plan, which is designed to protect and benefit threatened and endangered species (NAVFAC Mid-Atlantic, 2021a). The Proposed Action would have no effect on the NLEB.

The monarch butterfly is unlikely to be attracted to low quality habitat in the areas that would be disturbed, such as mown lawns in the Building 11 Parking Area, as higher quality habitat is available nearby. After construction is completed, the disturbed area would be revegetated with native vegetation, providing improved foraging habitat for monarch butterflies. The Proposed Action would have no effect on the monarch butterfly (refer to **Appendix F, Biological Assessment**).

Adult and sub-adult Atlantic sturgeon and adult shortnose sturgeon seasonally occur in Narragansett Bay. Atlantic sturgeon have been recorded in the area, while no recent observations of shortnose sturgeon have been recorded in Narragansett Bay (RIDEM Division of Marine Fisheries, 2022) and are unlikely to be found in the proposed project area due to the limited suitable foraging habitat and the distance from known populations. Any individuals foraging in the proposed project area would be likely to avoid or leave the area during construction activities and move to other foraging areas during disturbances. The vessels added to baseline conditions as a result of the proposed project would not likely adversely affect ESA-listed species because adding vessels to the existing baseline would not increase the risk that any vessel in the area would strike an individual, or would increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured or detected. The baseline risk of a vessel strike within Narraganset Bay is unknown. The increase in traffic associated with the project vessels would be extremely small and would be temporary. As such, any increased risk of a vessel strike caused by the project would be too small to be meaningfully measured or detected. Therefore, NOAA has determined that the Proposed Action may affect, but is not likely to adversely affect, the Atlantic sturgeon and shortnose sturgeon and has consulted with NMFS. NMFS concurred with NOAA’s findings for Atlantic sturgeon and shortnose sturgeon (**Appendix F**).

Loggerhead, leatherback, Kemp’s ridley, and green sea turtles may be found in the coastal waters of New England from spring to early fall but are unlikely to be present in the proposed project area due to the industrial site characteristics and limited suitable habitat and associated prey. They would be likely to avoid the area during construction and move away during any disturbances. The additional risk of a vessel strike would be too small to be meaningfully measured or detected, as discussed above. NOAA has determined that the Proposed Action may affect but is not likely to adversely affect any listed sea turtles. NMFS concurred with NOAA’s findings for sea turtles (**Appendix F**).

The fin whale and NARW are seasonally present in New England waters. However, due to the depths of Narragansett Bay and the nearshore location of the proposed project area, they are unlikely to occur in the project area (NUWC, 2011). The proposed construction activities would have no effect on whales as construction vessels would be slow moving and not likely to transit outside of Narragansett Bay. Therefore, only impacts related to increased NOAA vessel transits were evaluated for whales. In 2008, NOAA NMFS enacted a Right Whale Ship Strike Reduction Rule (50 CFR 224.105) with the goal of reducing NARW mortality due to ship traffic (NOAA, 2008). This rule applies to discrete areas of Atlantic coastal waters during certain times of the year. The Mid-Atlantic Seasonal Management Area depicted in Figure 4-1 encompasses right whale migratory routes and calving grounds and is in effect from November 1 through April 30. During these months, all vessels 65 feet or longer and operating in the designated Seasonal Management Area must reduce speed to no more than 10 nautical miles per hour (73 FR 60173).

Because two NOAA vessels are currently temporarily homeported in Narragansett Bay (NAVSTA Newport), the permanent relocation of four NOAA vessels would only increase vessel traffic in Narragansett Bay by two ships. NOAA vessel missions can last from weeks to months. Therefore, increases in vessel traffic to and from Coddington Cove and associated noise would be minimal. In the event of whale sightings during transiting to and from the homeport, vessels would adhere to safety zone separations from sighted federally threatened or endangered species. The specific buffer zone for the NARW is 500 yards or greater (per 50 CFR 224.103 [62 FR 6729 and 73 FR 60173]) and 100 yards for other whale species.

Additionally, NOAA would comply with speed limits and Notices to Mariners (refer to Section 4.7.2.4, *Marine Mammals* for additional information) aimed to protect the NARW and other whale species. The additional risk of a vessel strike would be too small to be meaningfully measured or detected, as discussed previously. Therefore, the Proposed Action may affect but is not likely to adversely affect the NARW or fin whale.

The Proposed Action would have no effect on threatened and endangered species under the jurisdiction of USFWS and may affect but is unlikely to adversely affect any species under the jurisdiction of NMFS. Therefore, implementation of the Proposed Action would not result in significant impacts to threatened and endangered species.

4.7.3 Action Alternative: Relocate Four Vessels and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

Under the Action Alternative, the trestle would be installed over the existing T-Pier and would not result in new cover over water. Construction of the pier and floating dock would result in shading of approximately 40,000 sf of surface water. A loss of benthic and water column habitat from the installation of pier and floating dock piles and stabilization of the shoreline would total(approximately 5,500 sf and 2,450 cy, respectively).

Impacts to the terrestrial wildlife and vegetation, marine mammals, and threatened and endangered species under the Action Alternative would be the same as described under the Proposed Action. Although fewer piles would be installed in Coddington Cove during pier construction, this reduction would be largely offset by the additional piles that would be installed to stabilize the existing T-Pier (approximately 850, 2-foot-wide sheet piles and 20 pipe or H-shaped piles). Impacts to marine vegetation, benthos, and EFH would be the same to those under the Proposed Action; however, impacts from shading and pier construction would be less under the Action Alternative due to the existing impact of the T-Pier.

4.8 Wetlands

No wetlands, as defined by the USACE or USEPA, occur in the proposed project area. Therefore, implementation of the No Action Alternative, Proposed Action, or Action Alternative would have no impacts on wetlands.

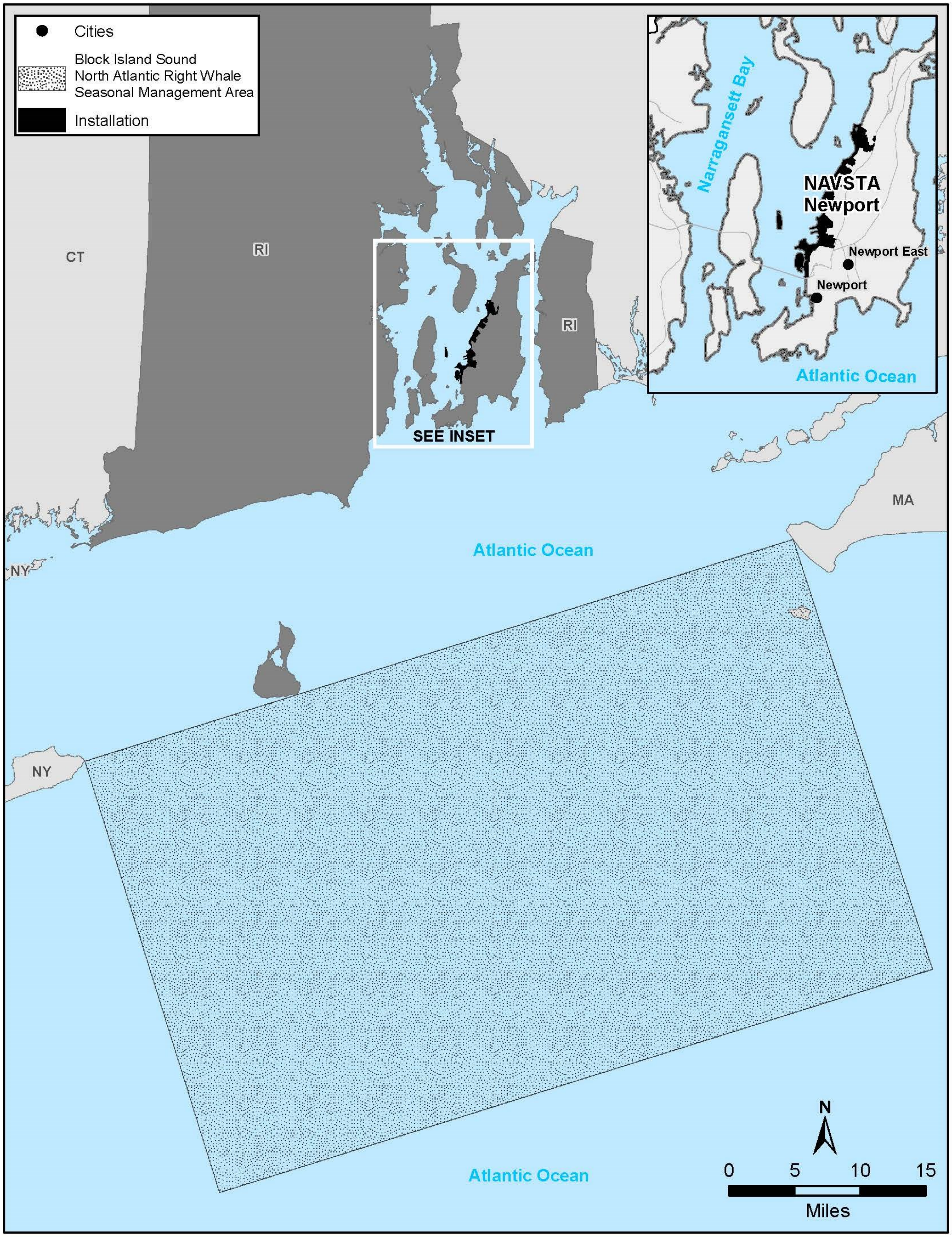

Figure 4-1. North Atlantic Right Whale Seasonal Management Area

4.9 Floodplains

The analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters. The study area for floodplains is Pier Landing Site. Executive Order 11988, Floodplain Management, outlines an eight-step process to first determine if a proposed federal project is in an existing floodplain and, if so, subsequent exploration of alternatives and mitigation.

The eight steps include: 1) determining if the proposed action is located in a 100-year floodplain and/or wetland; 2) notifying the public; 3) identifying and evaluating practicable location alternatives; 4) identifying potential impacts; 5) evaluating measures to reduce impacts; 6) reevaluating alternatives; 7) making the final determination of the best alternative; and 8) implementing the proposed action (NOAA, 2012).

4.9.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no impact on floodplains or flooding.

4.9.1.1 Mitigation Measures

No mitigation measures are recommended for the No Action Alternative.

4.9.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

All of Pier Landing Site is within the 100- or 500-year floodplain. During the development of site location alternatives, efforts were made to avoid construction in the floodplain to the greatest extent possible. Because the shoreside support facilities must be situated near the new pier to support the functions of NOAA vessels, construction in the floodplain cannot be avoided, and there is no practicable alternative to construction in the floodplain.

The construction of the new pier would occur within the 100-year floodplain. Either the Proposed Action or the Action Alternative would construct a new pier and the trestle with the outboard end of the berth at elevation 15.25 feet; the joint between the trestle and pier at elevation 14.0 feet; and the trestle at the bulkhead/approach slab at elevation 12.0 feet (grade level). The pier deck elevations are set considering the HB and EX brow positions relative to the pier. A higher pier deck elevation would negatively impact pier-side vessel operations and, therefore, the new pier could not be elevated above base flood elevation (16 feet at the shoreline). Critical equipment located on the pier deck (i.e., electrical transformers) would be elevated above the pier deck elevation at elevation 19 feet (3 feet above base flood elevation) (NAVFAC MIDLANT, 2022). Therefore, the potential for impacts from flooding to critical equipment on the pier would be minimized.

The administration/warehouse building under either the Proposed Action or the Action Alternative would be sited outside of the 100-year floodplain (base flood elevation 14.0 feet). However, the boat repair building, portions of the parking lot, and exterior storage area would be located within the limits of the 100-year floodplain (Figures 2-5 and 2-9). The nature of the activities at the boat repair building necessitates its location within the floodplain. The boat repair building would be built on-grade (elevation 13.3 feet) due to its unoccupied nature. The parking and exterior storage areas represent low impact uses and impacts to the floodplain would be managed through the proposed stormwater management system for the sites (Section 4.12, *Utilities and Solid Waste*)

The Proposed Action or Action Alternative would require the placement of buildings and structures (i.e., fill) within the 500-year floodplain at Pier Landing Site. The nature of the activities at the administration/warehouse building necessitates its location in proximity to the waterfront and its dedicated waterfront facilities. To reduce potential impacts from flooding, the administration/warehouse building would be designed at base flood elevation of 14 feet plus 3 feet (17 feet total) top of slab elevation and grading would slope away from the building to adjacent parking, exterior storage, or stormwater management areas. The building foundation design would consist of driven steel piles with cast-in-place concrete grade beams and pile caps to achieve proposed design flood elevations and support projected foundation loads.

Up to approximately 120,000 sf of impervious surfaces would be added to the floodplain as a result of the construction of the shoreside facilities, roads, and sidewalks. To reduce potential impacts to the floodplain, stormwater would be managed through the proposed stormwater management system for the site (Section 4.13, *Utilities and Solid Waste*). The stormwater system would include methods to improve water quality and detain flows as close as possible to pre-development levels.

Pier Landing Site was historically developed as part of NAVSTA Newport and later as part of Derecktor Shipyard. This previous development activity irretrievably altered the floodplain, reducing the beneficial aspects of the natural floodplain and its functions. Because Pier Landing Site is part of an unconstrained waterway (Narragansett Bay), neither the Proposed Action nor the Action Alternative would increase flood frequency or severity at the proposed project area or at downgradient or nearby locations.

Therefore, with the incorporation of measures to reduce potential impacts to the floodplain or impacts from potential flooding, implementation of the Proposed Action or Action Alternative would not result in significant impacts to floodplains.

4.9.2.1 Mitigation Measures

No mitigation measures are recommended for the Proposed Action or Action Alternative.

4.10 Coastal Zone Management

The study area for coastal zone management is Coddington Cove, Pier Landing Site, and Building 11 Parking Area.

4.10.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no impacts to the coastal zone or coastal zone management.

4.10.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The proposed project would likely affect a coastal use or resource. A Coastal Consistency Determination has been prepared and NOAA has determined that the Proposed Action or Action Alternative would be undertaken in a manner consistent to the maximum extent practicable with the federally-approved enforceable policies of the RICRMP (**Appendix G**). The proposed project would allow for the continuation of the existing water-dependent uses at NAVSTA Newport and would not promote coastal development in the area or interfere with harbor management in Narragansett Bay. The proposed project would comply with the highest priority use of Type 6 waters and adjacent lands, as identified in the RICRMP, by providing for the berthing, loading, and unloading, and servicing of commercial vessels through the construction of port facilities. The Proposed Action or Action Alternative would not permanently impact coastal habitats as no coastal buffer zones are present at Pier Landing Site. Additionally, Pier Landing Site does not abut a critical habitat area, as defined by the Rhode Island National Heritage Council or the RICRMC nor is it located within the boundaries of a Special Area Management Plan. The Proposed Action or Action Alternative would improve the condition of the manmade shorelines at Pier Landing Site. Because NAVSTA Newport is a secured facility, public access to the coastal zone is not permitted and would not be affected. The Coastal Consistency Determination was submitted to RICRMC. RICRMC concurred with NOAA's finding (**Appendix G**).

4.11 Noise

Analysis of potential noise impacts includes estimating likely noise levels from the Proposed Action or Action Alternative and determining potential effects to sensitive receptors. The study area for the Proposed Action or Action Alternative includes the temporary extent of airborne and underwater noise from construction activities, including pile driving, in Coddington Cove and at Pier Landing Site and Building 11 Parking Area and the intermittent long-term extent of vessel generated noise in the waters of Narragansett Bay and Rhode Island Sound.

4.11.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to baseline noise levels. Therefore, no significant impacts due to the noise environment would occur with implementation of the No Action Alternative.

4.11.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The Proposed Action or Action Alternative would generate temporary, periodic construction-related noise, including noise from equipment operating at the project site and vessels traveling to and from the site during construction. Noise would vary during construction with the highest noise levels occurring during impact pile driving. Long-term operational noise impacts are anticipated to be minimal due to the relatively low level of activity generated by NOAA operations.

4.11.2.1 Airborne Noise

For airborne noise, the assumption is made that sound propagates freely in all directions from the source, resulting in spherical spreading loss, which equates to a 6 dB decrease in sound pressure level (SPL) per doubling of distance. For instance, at a distance of 200 feet from a noise source, the noise levels would be 12 dB lower than the 50-foot reference distance. Assuming a maximum sound source level of 112 dB referenced to a pressure of 20 microPascals at 15 meters (50 feet) (dB re 20 μPa) for impact driving of 30-inch steel pipe piles, the predicted maximum noise levels at noise-sensitive receptors 1,500 feet away (i.e., youth center and Navy housing) would be approximately 82.5 dB re 20 μPa. Although the range of noise levels at sensitive receptors is anticipated to be above the existing ambient noise levels, which are assumed to be approximately 60 dB, the noise effects from construction activities would be intermittent, short-term, and would occur only during daytime hours. After construction, noise levels would return to those characteristic of the current noise environment. Therefore, airborne noise impacts would not be significant.

Noise levels for construction at Building 11 Parking Area would not require pile driving and are expected to be lower than those described for Pier Landing Site. Noise impacts to sensitive receptors from construction at Building 11 Parking Area are anticipated to be above the existing ambient noise levels, which are assumed to be approximately 60 dB or less. Noise effects from construction activities at Building 11 Parking Area would be intermittent, short-term, and would occur only during daytime hours. After construction, noise levels would return to those characteristic of the current noise environment. Therefore, airborne noise impacts at Building 11 Parking Area would not be significant.

Pile driving can generate airborne noise that could potentially result in harassment to marine mammals (pinnipeds) that are hauled out or at the water's surface. As a result, the Navy analyzed the potential for pinnipeds hauled out or swimming at the surface to be exposed to airborne SPLs that could result in Level B (behavior) harassment (**Appendix E**). For airborne sounds, there are no thresholds for Level A harassment to any marine mammal and no Level B thresholds for cetaceans. Distances calculated to Level B airborne sound exposure thresholds for seals are included in Table 4-2 and are depicted in Figure 4-2. The maximum distance to the airborne behavioral disturbance threshold for harbor seals (90 dB RMS) is 189 meters during impact pile driving of 36-inch steel pipe piles and 27 meters during vibratory pile driving of 36-inch steel pipe piles. The maximum distance to the airborne behavioral disturbance threshold for gray, harp, and hooded seals (100 dB RMS) is 59.7 meters during impact pile driving of 36-inch steel pipe piles and 8.4 meters during vibratory pile driving of 36-inch steel pipe piles. Potential impacts to marine mammals from airborne noise would be mitigated by the use of Protected Species Observers and shutdown procedures designed to protect marine mammals. A request for IHA was submitted to NMFS and is included in **Appendix E**. Therefore, the impacts to marine mammals would not be significant.

Table 4-2. Calculated and Measured Distances to Pinniped (Seal) Behavioral Airborne Noise Thresholds

Activity	***Harbor Seal Threshold = 90 dB RMS***	***Gray Seal, Harp Seal, and Hooded Seal Threshold = 100 dB RMS***
Vibratory installation/removal sheet piles and 12- to 30-inch pipe piles	12 m	3.8 m
Impact install of 16-to 30-inch pipe piles	150 m	47.4 m
Vibratory install of 36-inch steel pipe	27 m	8.4 m
Impact install of 36-inch pipe piles	189 m	59.7 m
Rotary drilling	1 m	0.4 m
DTH Mono-Hammer	21 m	6.7 m

Notes: DTH = down-the-hole, m = meters, RMS = root mean square.

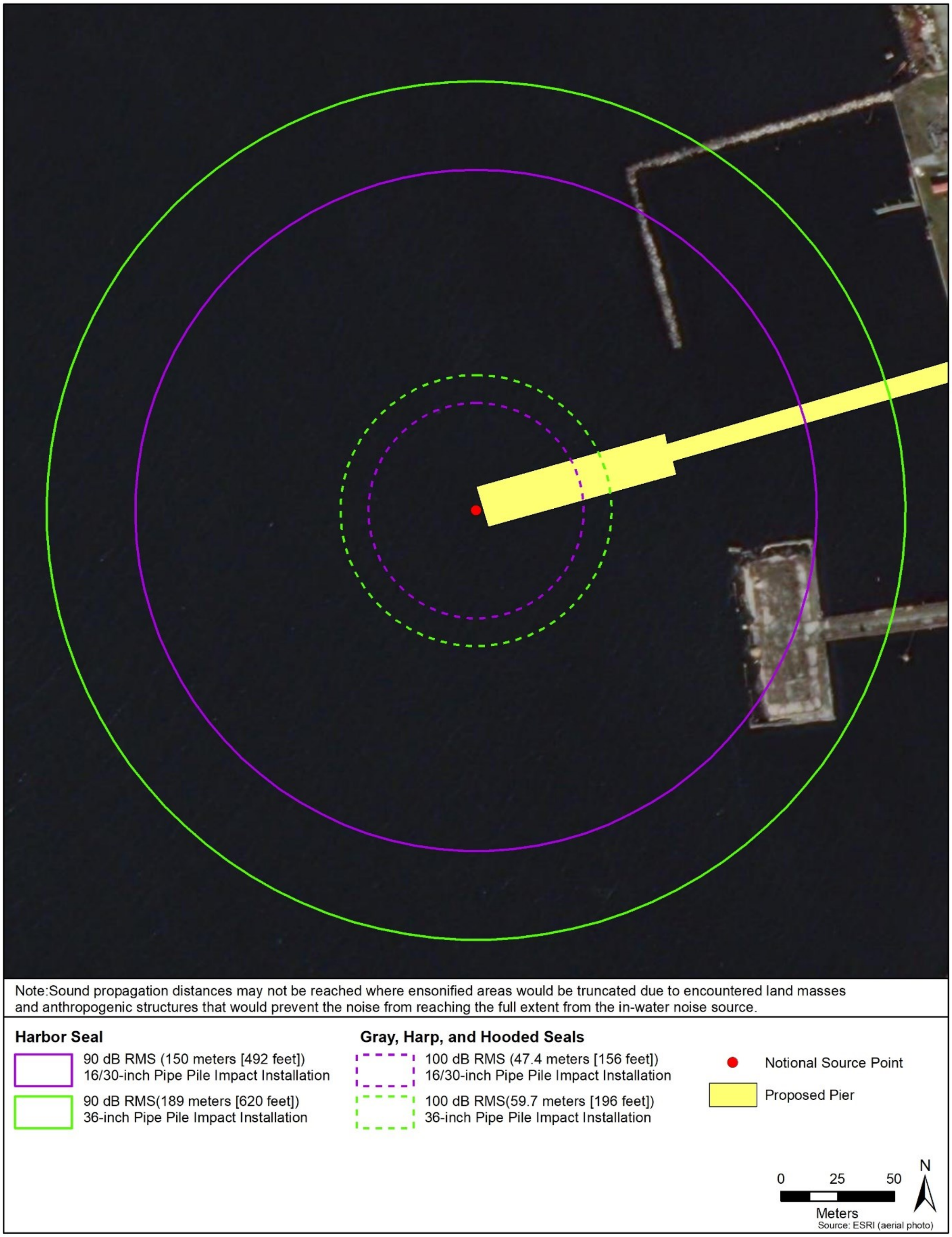

Figure 4-2. Predicted Maximum Level B Harassment Zones for Airborne Noise

4.11.2.2 Underwater Noise

Marine Mammals

Marine mammals that may be present within the project area and subject to underwater noise impacts during pile installation and removal activities include harbor porpoise, short-beaked common dolphin, Atlantic white-sided dolphin, harbor seal, gray seal, hooded seal, and harp seal. Fin whale and NARW are known to occur in the waters off Rhode Island. These whales are seasonally present in New England waters; however, due to the depths of Narragansett Bay and the limited area of sound propagation within Narragansett Bay, these species are not likely to occur in the proposed project area and are not analyzed further with regards to underwater noise (NUWC, 2011). Detailed discussions of these species can be found in **Appendix E** (IHA) and **Appendix F** (ESA).

Acoustic transmission loss modeling for cumulative sound exposure that may result in Level A harassment to marine mammals was conducted using NMFS marine mammal acoustic technical guidance (*Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing—Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts, April 2018*) (NMFS, 2018).

This guidance provides acoustic thresholds for the onset of permanent threshold shift (PTS), which would be considered Level A harassment under the MMPA. PTS from pile driving activities was calculated for marine mammals in the project area using the Optional User Spreadsheet (herein referred to as NMFS spreadsheet) provided on the NMFS website (NMFS, 2020) and is included in **Appendix E**.

Distances to Level B Behavioral disturbance thresholds were calculated using the following practical spreading loss model:

$$TL = 15\,log10\left(\frac{R1}{R2}\right)$$

Level B harassment is considered to occur when marine mammals are exposed to impulsive underwater sounds > 160 dB RMS re 1 µPa from impact pile driving and to non-impulsive underwater sounds > 120 dB RMS re 1 µPa (NMFS, 2005). Behavioral harassment may or may not result in a stress response. The application of the 120 dB RMS threshold is considered precautionary (NMFS, 2009) as it can sometimes be problematic because this threshold level can be either at or below the ambient noise level of certain locations.

As depicted in Figure 4-3 and Figure 4-4, the maximum distance to Level A injury (PTS Onset) would occur during the impact pile driving of 30-inch steel pipe piles and would be approximately 3,500 meters for harbor porpoise, 105 meters for Atlantic white-sided and short-beaked common dolphins, and 1,572 meters for seals. The maximum distance to behavioral disturbance threshold (120 dB RMS) would occur during vibratory driving of 30-inch steel pipe piles and would be approximately 13,594 meters for all marine mammals. This distance is greatly reduced due to the presence of intersecting land masses.

In order to reduce the potential for injury or behavioral disturbance, monitoring would be implemented, and shutdown procedures would be put into effect if a marine mammal were to approach the prescribed shut down zone for the activity being performed (refer to **Appendix E** for additional details). Impacts are expected to be insignificant, and no injury is anticipated because monitors would ensure the affected area is clear of mammals before pile driving begins. Additionally, soft starts would be employed during impact pile driving to allow marine mammals to leave the project area prior to the start of pile driving. A soft start involves the operation of the pile driver at reduced power to generate noise at an unharmful level to encourage wildlife to move away from the area.

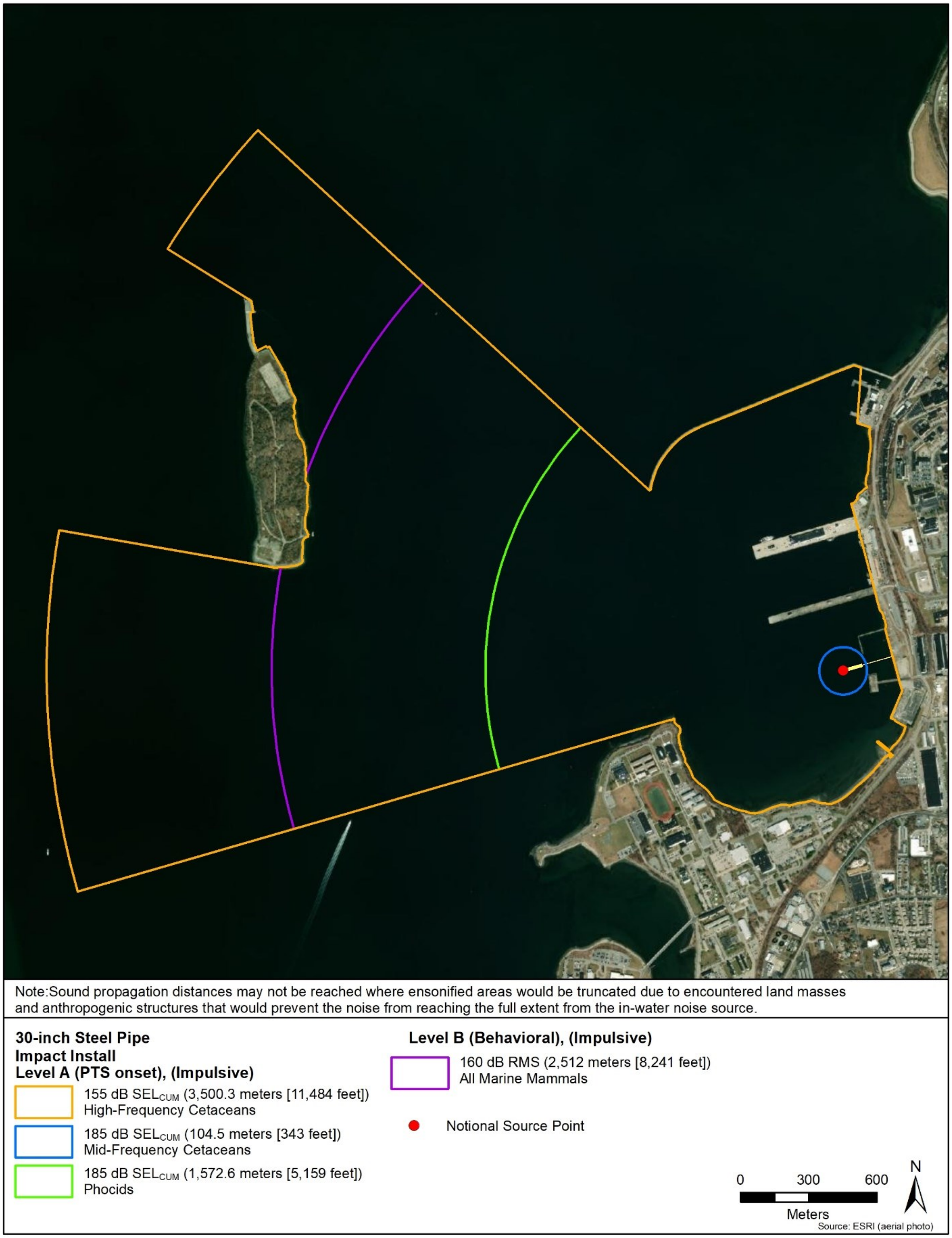

Figure 4-3. Predicted Maximum Harassment Zones for Marine Mammals During Impact Pile Driving – 30-inch Steel Pipe Pile

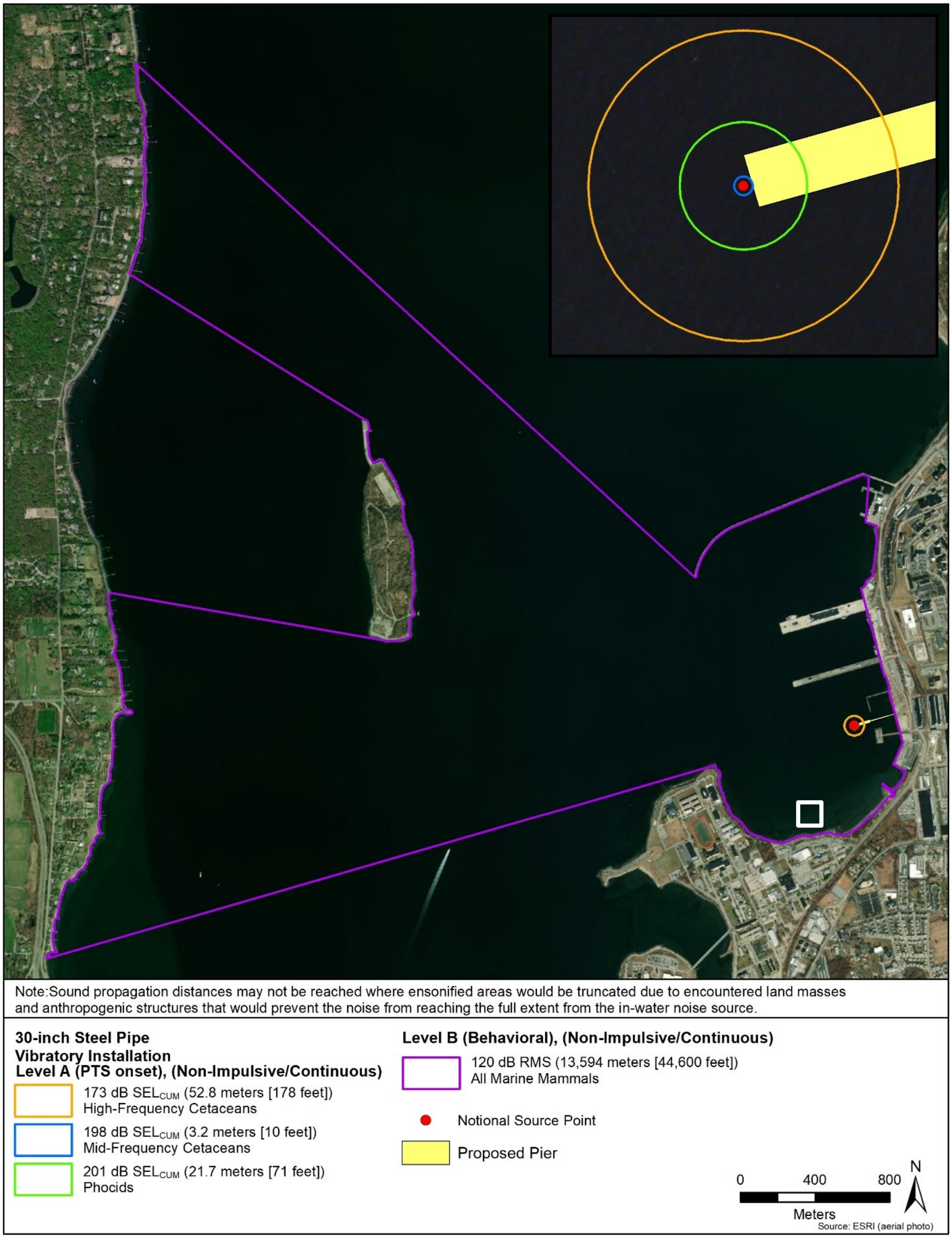

Figure 4-4. Predicted Maximum Harassment Zones for Marine Mammals During Vibratory Pile Driving – 30-inch Steel Pipe Pile

NOAA requested authorization from NMFS for the potential taking by incidental harassment of small numbers of marine mammals during pile driving and drilling activities associated with the Proposed Action. The IHA request and draft NMFS-issued IHA are included in **Appendix E**. The takes requested for both individual activities and those that may occur concurrently, are summarized in Table 4-3, and are expected to have no more than a minor effect on individual animals and no effect on the populations of these species. As a conservative measure to prevent against unauthorized takes, the takes requested for Atlantic white-sided dolphin and short-beaked common dolphin have been increased to the mean group size (16 and 28, respectively). Any effects experienced by individual marine mammals are expected to be limited to short-term disturbance of normal behavior or temporary displacement of animals near the source of the noise.

Table 4-3. Total Underwater Exposure Estimates by Species

Species	*Individual Activities*		*Concurrent Activities*		*Total Take Estimates*
	Level A (PTS onset)	*Level B (Behavior)*	*Level A (PTS onset)*	*Level B (Behavior)*	
Atlantic white-sided dolphin	0	6	0	3	16[1]
Short-beaked common dolphin	0	26	0	13	39
Harbor porpoise	2	27	0	13	42
Harbor seal	55	1,478	1	589	2,123
Gray seal	11	312	0	125	448
Harp seal	4	117	0	47	168
Hooded seal[2]	0	5	0	5	10
Total	**72**	**1,971**	**1**	**795**	**2,846[1]**

Notes: [1] Requested take has been increased to mean group size. Mean group size was not used for those take estimates that exceeded the mean group size or for concurrent activities.
[2] To guard against unauthorized take, NOAA is requesting 1 Level B (behavioral) take of hooded seal per month of construction when this species may occur (January through May).

Fish

Sound exposure guidelines developed by Popper et al (2014) were used to determine underwater noise impacts on fish (refer to **Appendix D,** EFH Assessment and **Appendix F**, ESA documents). The Transmission Loss formula below was used for determining distance to thresholds as calculated in Table 4-4.

$$Transmission\ Loss\ =\ 15 * Log10[radius].$$

As summarized in Table 4-4 and Figure 4-5, the maximum distances to the 210/207 dB cumulative sound exposure level (SEL_{cum}) onset of mortality threshold for fishes with swim bladders is calculated to be 154 feet (47 meters), or less. The 203 dB SEL_{cum} injury threshold is calculated to 282 feet (86 meters) or less. This guideline is the lowest level where injury is found (Popper, et al., 2014) and results in an area where fish are anticipated to potentially be exposed to injury. In all cases, because the SEL_{cum} formula takes into account all impact pile strikes within a 24-hour period, the size of the injury zones is presented as the maximum extent over the course of a pile driving day. The injury zone would be smaller during the early portion of the construction day and would gradually increase out to the maximum extent calculated in Table 4-4 after all strikes have been completed. The formula also assumes fish are remaining within the range to effect during the entirety of active impact pile driving. In other words, an individual fish would have to be constantly within the calculated range during all impact pile driving in order to accumulate energy from every impact strike.

Table 4-4. Maximum Range to Fish Sound Thresholds from Impact (Impulsive) Pile Driving

Section	***Pile Size and Count***	***Fishes Without a Swim Bladder***					***Fishes with a Swim Bladder not Involved in Hearing***					***Fishes with a Swim Bladder Involved in Hearing***				
		Onset of Mortality		***Recoverable Injury***		***TTS***	***Onset of Mortality***		***Recoverable Injury***		***TTS***	***Onset of Mortality***		***Recoverable Injury***		***TTS***
		>219 SEL_{cum}	***>213 SPL_{peak}***	***>216 SEL_{cum}***	***>213 SPL_{peak}***	***>186 SEL_{cum}***	***210 SEL_{cum}***	***>207 SPL_{peak}***	***203 SEL_{cum}***	***>207 SPL_{peak}***	***186 SEL_{cum}***	***207 SEL_{cum}***	***>207 SPL_{peak}***	***203 SEL_{cum}***	***>207 SPL_{peak}***	***186 SEL_{cum}***
Bulkhead	18-inch steel pipe	16 ft (5 m)	16 ft (5 m)	30 ft (9 m)	16 ft (5 m)	1,775 ft (541 m)	72 ft (22 m)	39 ft (12 m)	207 ft (63 m)	39 ft (12 m)	1,775 ft (541 m)	112 ft (34 m)	39 ft (12 m)	207 ft (63 m)	39 ft (12 m)	1,775 ft (541 m)
Trestle, Pier, Gangway	18-inch steel pipe	10 ft (3 m)	16 ft (5 m)	13 ft (4 m)	16 ft (5 m)	1,470 ft (448 m)	36 ft (11 m)	39 ft (12 m)	108 ft (33 m)	39 ft (12 m)	1,470 ft (448 m)	59 ft (18 m)	39 ft (12 m)	108 ft (33 m)	39 ft (12 m)	1,470 ft (448 m)
	30-inch steel pipe	23 ft (7 m)	23 ft (7 m)	39 ft (12 m)	23 ft (7 m)	**3,825 ft (1,166 m)**	**95 ft (29 m)**	59 ft (18 m)	**282 ft (86 m)**	59 ft (18 m)	**3,825 ft (1,166 m)**	**154 ft (47 m)**	59 ft (18 m)	**282 ft (86 m)**	59 ft (18 m)	**3,825 ft (1,166 m)**
Small Boat Floating Dock	36-inch steel casing	13 ft (4 m)	16 ft (5 m)	20 ft (6 m)	16 ft (5 m)	2,070 ft (631 m)	62 ft (16 m)	46 ft (14 m)	151 ft (46 m)	46 ft (14 m)	2,070 ft (631 m)	82 ft (25 m)	46 ft (14 m)	151 ft (46 m)	46 ft (14 m)	2,070 ft (631 m)

Notes: ft = feet; m = meters; SEL_{cum} = Cumulative sound exposure level (decibel referenced to 1 microPascal squared seconds [dB re 1 μPa^2-s]); SPL_{peak} = Peak sound pressure level (decibel referenced to 1 microPascal [dB re 1 µPa]); ">" indicates that the given effect would occur above the reported threshold; TTS = Temporary Threshold Shift. Distances are based on maximum number of pile strikes per day for any given pile type installed (see Table 2); Due to the lack of studies on fish supporting injury or behavioral disturbance from vibratory pile driving methods, the range of effects on fish focuses on impact pile driving; bold indicates maximum distances.

Source: (Popper, et al., 2014)

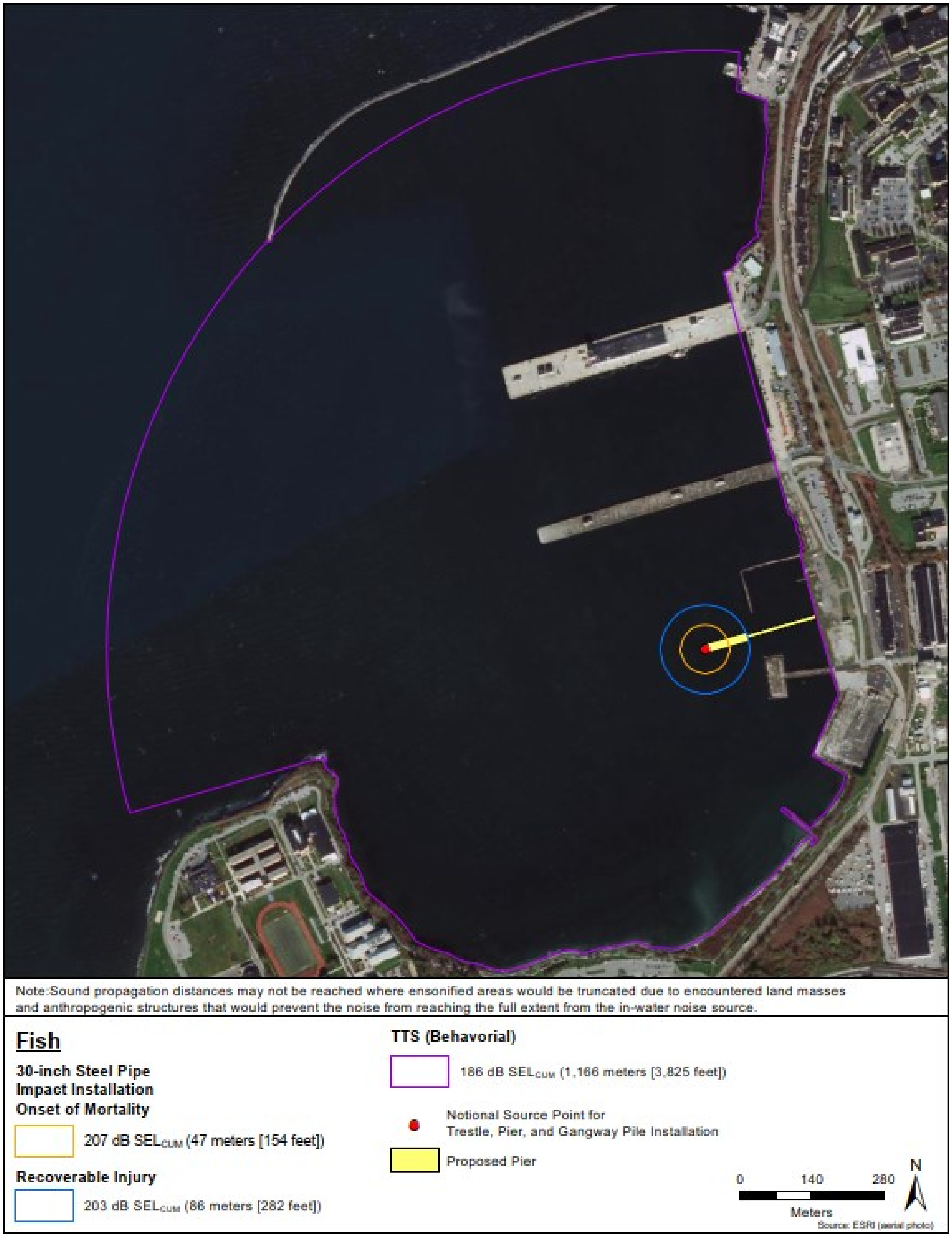

Figure 4-5. Maximum Predicted Distances to Fish Noise Thresholds During Impact Pile Driving – 30-inch Steel Pipe Installation

Fish exposed to pile driving sounds of 186 dB SEL_{cum} or higher could experience Temporary Threshold Shift (TTS) out to a distance of 3,825 feet (1,166 meters). Non-injury behavioral responses of fishes range from strong avoidance by virtually all individuals to tolerance and habituation (Anderson, 1990) (Fiest, 1992). If a sturgeon were to swim into the project area it is reasonable to assume that, upon detecting underwater noise levels of 186 dB RMS (TTS threshold), it would modify its behavior and move away from the affected area. Because the bulk of noise generating activities would be conducted during daytime hours, sturgeon would be free to move through the bay during evening hours. Therefore, if any movements away from the study area do occur, they would not preclude any sturgeon from completing essential behaviors such as resting, foraging, or migrating. The fitness of any individuals would not be affected and no increase in energy expenditure is anticipated that would have detectable effects on the physiology of individuals or any future effect on growth, reproduction, or general health.

Sea Turtles

Unweighted peak pressure thresholds for TTS and PTS were developed for sea turtles based on auditory sensitivity in marine mammals (Navy, 2017b). Popper et al. (2014) recommended applying sound exposure level (SEL)-based impact thresholds developed for fishes without a swim bladder to sea turtles, which was adjusted based on an 11 dB difference found between the SEL-based non-impulsive TTS threshold and the SEL-based impulsive TTS thresholds for marine mammals. Sea turtles are expected to avoid exposure to underwater RMS SPL of 175 dB re 1 µPa or greater (Navy, 2017b). This threshold is considered the behavioral threshold. The adjusted weighted SELs and behavioral threshold for sea turtles from impulsive sounds are shown in Table 4-5.

Table 4-5. Maximum Range to Sea Turtle Sound Thresholds from Impact (Impulsive) Pile Driving

Structure	*Pile Size and Type*	*Total Production Days*	*PTS Weighted (SEL_{cum}) Threshold 204 dB re µPa²-s*	*TTS Weighted (SEL_{cum}) Threshold 189 dB re µPa²-s*	*Behavioral Unweighted (rms) Threshold 175 dB re 1 µPa*
Bulkhead construction	18-inch steel pipe	15	23 ft (7.0 m)	**229 ft (70 m)**	207 ft (63 m)
Trestle, Pier, Gangway	18-inch steel pipe	18	2.3 ft (0.7 m)	22 ft (6.7 m)	207 ft (63 m)
	30-inch steel pipe	1	5.9 ft (1.8 m)	57 ft (18 m)	823 ft (251 m)
	30-inch steel pipe	30	9.2 ft (2.8 m)	91 ft (28 m)	823 ft (251 m)
Small Boat Floating Dock	36-inch Steel Casing w/Rock Socket Guide Pile	2	3.0 ft (0.9 m)	31 ft (9.4 m)	**1,119 ft (341 m)**

Notes: Modeled distances to peak thresholds for PTS and TTS are less than 0.1 meters and are not included in the table; dB re 1 µPa = dB referenced to a pressure of 1 microPascal (measures underwater SPL); dB re µPa²-s = microPascal squared per second; ft = feet; PTS = Permanent Threshold Shift; m = meter; rms = root mean square; SEL_{cum} = cumulative SEL over 24 hours; bold indicates maximum distances.

As shown in Table 4-5 and Figure 4-6, the maximum distance to the PTS and TTS disturbance thresholds for sea turtles is 229 feet (70 meters) during impact pile driving of 18-inch pipe piles. The maximum distance to behavior thresholds is 1,119 feet (341 meters), which would occur during the installation of 36-inch steel casing (Figure 4-6).

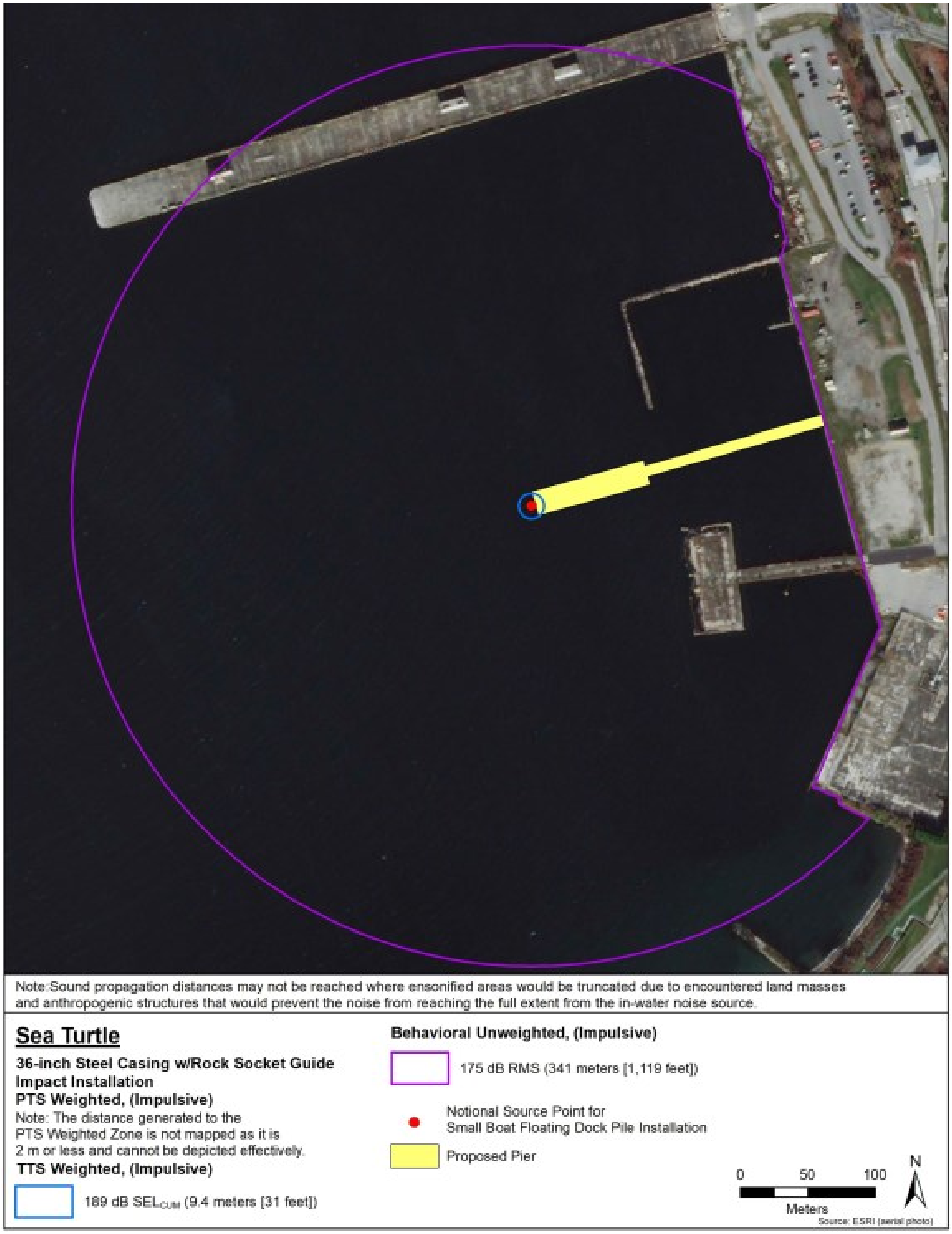

Figure 4-6. Calculated Maximum Distances to MMPA Thresholds for Sea Turtles for Underwater Sound During Impact Pile Driving of 36-inch Steel Casing

Because vibratory pile driving has a relatively low source level, it is highly unlikely, based on best available science, for sea turtles to experience PTS or TTS, even if exposed to a full day of vibratory pile driving. The maximum range of sea turtle noise effects from vibratory pile driving/extraction and rotary drilling is 33 feet (10 meters). Refer to **Appendix H**, Noise Analysis, for details.

Noise from the Proposed Action or the Action Alternative has the potential to have adverse impacts on sensitive receptors and wildlife. Noise would be temporary and limited to daytime hours when construction activities would normally occur and would not result in unacceptable increases in noise at sensitive receptor sites. Underwater noise would be limited to Coddington Cove and a small portion of Narragansett Bay. Underwater noise could have adverse impacts on fish and sea turtles and would result in Level A and Level B takes of marine mammal if present in the project area during in-water construction activities. Monitoring of the construction noise zones would mitigate potential adverse impacts. Other impact minimization measures, such as the use of soft starts for impact pile driving, would further reduce the potential for adverse impacts to marine mammals, fish and sea turtles. The Proposed Action or the Action Alternative would not result in significant impacts to the underwater noise environment.

Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to the noise environment.

4.12 Transportation

Impacts to ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic. The study area encompasses NAVSTA Newport and the transportation network that provides access to Pier Landing Site at Coddington Cove and Building 11 Parking Area, as described in Section 3.12.

4.12.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to transportation. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

4.12.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The Proposed Action or Action Alternative would require short-term transportation of equipment and materials via trucks and barges, and construction workers via personal vehicles, to and from the project sites to complete the construction of the new pier and support facilities. A short-term increase in truck and privately owned vehicle traffic in the vicinity of NAVSTA Newport would occur during construction because construction waste would be transported to approved regional recycling facilities or landfills; construction equipment, concrete, steel piles, steel sheet piles, and other construction materials would be transported to the site; and construction workers would commute to and from the site. Approximately 141 construction jobs would be directly generated annually by the proposed project. Assuming that workers would commute individually, commuter traffic would increase temporarily by approximately 282 trips per day over the course of the 2-year construction period. Impacts would be greatest during commuting hours: Monday through Friday, 7 AM to 9 AM and 3 PM to 5 PM. Once construction is completed, these impacts would cease to occur.

Construction traffic would not be expected to have a significant impact on overall traffic congestion at NAVSTA Newport during the 2-year construction period. According to the most recent traffic count data for the main entrance gate for NAVSTA Newport at Admiral Kalbfus Road, the average daily traffic count was 14,100 vehicles (RIDOT, 2001). Therefore, temporary construction traffic for the Proposed Action or the Action Alternative would represent only a small percentage increase (approximately 2 percent) of total daily trips in and out of the installation and would not be significant.

Minor, long-term increases in traffic would occur as a result of NOAA personnel commuting to the proposed project areas. Assuming the proposed new facilities would employ approximately 180 people and, if commuting separately, would increase commuter traffic by approximately 360 trips per day. Commuter trips would be greatest during peak hours: Monday through Friday, 7 AM to 9 AM and 3 PM to 5 PM. These trips would increase daily traffic on the access road by approximately 2.5 percent and would not be significant.

Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to transportation.

4.13 Utilities and Solid Waste

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands and storage capacity and evaluates potential impacts to public works infrastructure associated with implementation of the alternatives. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

The study area for utilities and solid waste is NAVSTA Newport. The Proposed Action or Action Alternative would increase demand on utilities but would not require upgrades of the utility infrastructure in the surrounding community.

4.13.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to the existing infrastructure of NAVSTA Newport. Therefore, no significant impacts to infrastructure would occur with implementation of the No Action Alternative

4.13.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area

Construction activities at Pier Landing Site and at Building 11 Parking Area under the Proposed Action would affect underground utility infrastructure. Engineer drawings of Pier Landing Site and Building 11 Parking Area indicate the potential need for demolition of existing utility connections. Disconnection of these utilities would occur at the most practicable location possible to minimize any disruption that would occur to the utility and any work activities in the immediate area. Methods of disconnection would include cutting and capping or plugging pipes, installing blind flanges and concrete buttresses, closing valves, filling abandoned structures with compacted stone, etc. Removal of existing pavements would be necessary in most areas of excavation (Navy, 2017c).

4.13.2.1 Potable Water

The proposed building, pier, and boat wash down area at Pier Landing Site require separate potable water supply services. To supply potable water to the proposed facilities, a new 8-inch potable water pipe would be looped through the proposed site. The loop would connect to the existing 12-inch potable water pipe within the access road to the T-Pier (Anderson Avenue Extension) at two points. There is an existing meter vault located upstream of the two proposed connection locations that would be improved for use (NAVFAC MIDLANT, 2022).

The proposed 8-inch potable water supply loop would include shut off valves at all service connections and branches. Two, 6-inch pipes would supply water to either side of the pier; a 2-inch service line would extend to a yard hydrant located between the boat washdown area and the boat repair building; and an 8-inch fire protection service and a 2-1/2-inch domestic water service would extend to the administration/warehouse building (NAVFAC MIDLANT, 2022).

In December 2020, a water flow test was conducted to determine the capacity of the water supply infrastructure serving Pier Landing Site. Hydrants in the area displayed a static pressure of 95 psi and a residual pressure of 78 psi with the hydrant flowing at 1,275 gallons per minute (NAVFAC MIDLANT, 2022). According to NAVSTA Newport Public works personnel, the relatively low drop in pressure at such a high flow rate indicates that the existing water supply at NAVSTA Newport is sufficient to support the new NOAA facilities (Simmons, 2021).

The increased average water demand is less than 100,000 gallons per day and would have no significant impacts on potable water for the City of Newport. The excess capacity of the City's two potable water treatment plants is approximately 10 MGD. Therefore, impacts to potable water would not be significant.

4.13.2.2 Wastewater

The building and pier would require connection to the existing sanitary sewer lines. Two lift stations would be required to convey the flows from the pier, boat wash down area, and administration/warehouse building to the existing gravity sanitary sewer system by pumping to an existing manhole at the intersection of Burma Road and Anderson Ave. Lift Station 1 would be located near the pier foot and Lift Station 2 would be located near the administration/warehouse building (NAVFAC MIDLANT, 2022).

Lift Station 1 would receive flows from two, 4-inch sanitary force mains extending from the sides of the pier that provide sewage pump out for docked vessels and a gravity line from the boat washdown area. The maximum flow from the pier would be approximately 300 gallons per minute for 10 minutes per vessel. Flow from the boat washdown area is estimated to be 2,400 gallons per day, after passing through an oil/grit separator. Discharge from the oil/grit separator would be conveyed by gravity to Lift Station 1. A 4-inch force main would convey flow from Lift Station 1 to Lift Station 2 at a rate of 380 gallons per minute (NAVFAC MIDLANT, 2022).

Lift Station 2 would receive flows from the 4-inch force main from Lift Station 1 and from the administration/warehouse building via a 4-inch gravity line. The design flow from Lift Station 1 is 380 gallons per minute and the design flow from the administration/warehouse building is 150 gallons per minute. A 6-inch force main would convey the 580 gallons per minute flow from Lift Station 2 into the existing sanitary sewer gravity manhole at the intersection of Burma Road and Anderson Ave. From the manhole, wastewater would be conveyed to the municipal WWTP (NAVFAC MIDLANT, 2022).

Currently, NAVSTA Newport uses only approximately 10-20 percent of their existing wastewater system capacity (Simmons, 2021). The additional wastewater from the new NOAA facilities is estimated at less than 100,000 gallons per day and is not anticipated to result in a substantial increase in wastewater flows that would result in overflows of the existing wastewater system at NAVSTA Newport (80 percent available capacity) or the Newport WWTP, which has an excess capacity of over 2 MGD. NAVSTA

Newport has sufficient capacity in its existing discharge allotment to accommodate the new NOAA facilities. Therefore, impacts to wastewater would not be significant.

4.13.2.3 Stormwater

Due to restrictions prohibiting stormwater infiltration at Pier Landing Site, stormwater management would consist of traditional catch basin and storm sewer collection networks, and two bioretention filter basins, discharging to existing storm sewers directly to Coddington Cove via new stormwater outfalls. Without infiltration restrictions, multiple LID techniques would typically be utilized to mitigate the adverse impacts related to stormwater runoff and water quality degradation. To offset the lost opportunities traditional LID techniques and stormwater infiltration offer, alternate methods would be utilized to the greatest extent possible, to improve water quality and detain flows as close as possible to pre-development levels. These methods include installing 4-foot sump catch basins and landscaped bioretention filter basins with impermeable liners (NAVFAC MIDLANT, 2022).

Stormwater runoff from the exterior storage and laydown area located north of the administration/warehouse building would be captured and directed to one of two new stormwater outfalls by a system of catch basins, drainage manholes, and piping. The 45-space parking lot located north of the exterior laydown area would direct runoff via sheet flow to an adjacent bioretention filter basin. This basin would capture runoff and filter stormwater through 2 feet of planting soil medium to improve water quality. The basin would include an impermeable liner to prevent infiltration of stormwater into the surrounding subsoils. Accumulated sediments within the bioretention filter basin would be periodically removed to maintain water quality effectiveness.

Similar to the 45-space parking area, a bioretention filter basin would be utilized along the western edge of the 30-space parking lot to collect runoff and improve water quality. The basin would be drained through an 8-inch perforated underdrain and a high-level basin overflow. Discharge from the bioretention area would connect to a storm sewer network servicing the balance of the Pier Landing Site and would discharge to Coddington Cove through a new outfall installed within the bulkhead (NAVFAC MIDLANT, 2022). Accumulated sediments within the bioretention filter basins would need to be periodically removed to maintain water quality effectiveness.

At Building 11 Parking Area, a bioretention area would be constructed along the western perimeter of the parking lot to manage stormwater runoff and maintain pre-development hydrology. The LID technique would require an outlet control basin to further manage stormwater runoff. The bioretention area outlet control basin would discharge to the adjacent existing storm drainage structure/network within the Building 11 parking lot (NAVFAC MIDLANT, 2022).

With the incorporation of the bioretention filter basins and LID elements, operations of the Proposed Action would not have a significant impact on stormwater discharge.

Temporary erosion and sediment controls would be provided during construction along the limits of surface disturbance, entrances to stormwater drainage inlets, and construction entrances, as applicable. Temporary sediment tanks would be provided for all temporary construction dewatering discharges (Navy, 2017c). All measures would be in accordance with the State of Rhode Island standard procedures for erosion and sediment control, where appropriate. Therefore, impacts from construction stormwater would not be significant.

All stormwater discharges would be monitored for compliance with applicable state and federal permits and stormwater impacts would not be significant.

4.13.2.4 Energy

In order to accommodate the power requirements for the new pier and buildings at Pier Landing Site, the existing primary distribution power service would be tapped in an existing electrical manhole (MH #4123E) and extended to a new pad mounted switch located on the northeast side of the administration/warehouse building. The new switch would serve the administration/warehouse building, CONEX boxes (storage containers), hazardous materials building, outdoor storage, and the boat repair building. Additionally, two redundant feeders would exit this switch and serve another switch located near the bulkhead of the new Pier. This switch would provide four individual medium voltage services to their respective berth substations (NAVFAC MIDLANT, 2022).

The administration/warehouse building and boat repair building at Pier Landing Site require natural gas heating. The closest natural gas connection point is in the middle of a parking lot, which is to the north of the site, at the corner of Burma and Access Roads. It is anticipated the gas connection for Pier Landing Area service would be made outside of this parking lot, within the access road. Further coordination would be required with the gas company, National Grid, to connect to the existing gas line (NAVFAC MIDLANT, 2022).

At Building 11 Parking Area, power for the corresponding light poles would be provided. This may require a new medium voltage service, or if feasible, connection to an existing building to connect the relatively low lighting load (NAVFAC MIDLANT, 2022).

The increases in electrical demand resulting from the Proposed Action would not be significant. The installation electrical distribution currently operates at less than 25 percent capacity (Bettencourt, 2017). The additional NOAA facilities would not create energy demands that would exceed the existing capacity of the system. Therefore, impacts would not be significant.

4.13.2.5 Communications

The connection point for the site telecommunications systems for Pier Landing Site would be at Buildings 76 and 1318. Fiber optic cable and telephone cable would be provided from a new duct bank that would be provided in an existing manhole east of the site on Anderson Rd. This system connects to Building 76. Underground telecommunications would extend to the project site in a system of manholes and duct banks to the main telecommunications entrance facility at the administration building. A second manhole, just north of the site near Pier 2, would be utilized to route equivalent and redundant services to the building. The redundant feed would connect back to Building 1318 via a system of existing manholes and duct banks. Fiber optic cable would also be provided to the CONEX boxes and the boat repair building (NAVFAC MIDLANT, 2022).

A system of 4-inch conduits would be provided to the shoreside manhole at the head of the pier from the buildings telecommunications entrance facility. This manhole would serve the communications requirements of the pier. Communications would be provided to each ship location on the pier via a system of conduits embedded in the pier deck. Each of the four ships would be provided with a communications box providing fiber optic cable from the main building. CATV would be provided out to each ship to provide television service. This outlet would be collocated with the fiber communications box. No copper telephone service is planned to be provided (NAVFAC MIDLANT, 2022).

Telecommunications provisions have been incorporated into the facility designs, and cable and internet service would be provided by AT&T (NAVFAC MIDLANT, 2022).

4.13.2.6 Solid Waste

Construction activities and operations at Pier Landing Site and at Building 11 Parking Area would result in solid waste that would need to be collected at each project site for disposal. The construction contractor would be responsible for collecting, managing, and disposing of solid waste generated from construction activities and would comply with NAVSTA Newport requirements for solid waste management, which conform to applicable federal, state, and local regulations intended to protect the environment through management of solid waste. The requirements address work practices that would be implemented to ensure that the amount of solid waste generated is minimized, solid waste is recycled to the extent practicable, and solid waste that cannot be salvaged or recycled is disposed of in an environmentally responsible manner at permitted and approved landfills.

Assuming a rate of solid waste generation of 6 pounds per 1,000 square foot per day for the administration building and warehouse (CalRecycle, 2006), the estimated rate of solid waste generated would be 132 pounds per day for the administration building and 67 pounds per day for the warehouse (199 pounds/day total). Solid waste would continue to be managed under the existing protocols, and recycling would be implemented to the maximum extent practicable to minimize solid waste generation and disposal. Solid waste generation under the Proposed Action is not expected to exceed the capacities of regional recycling and landfill facilities; therefore, implementation of the Proposed Action would have negligible short-term and long-term impacts on solid waste management at NAVSTA Newport. Therefore, impacts to solid waste would not be significant.

Therefore, implementation the Proposed Action would not result in significant impacts to utilities and solid waste.

4.13.3 Action Alternative: Relocate Four Vessels and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

The implementation of the Action Alternative would have the same impacts on potable water, wastewater, solid waste, energy, and communications as described under the Proposed Action. None of the anticipated impacts to these systems would be significant.

Impacts to stormwater would be slightly less under the Action Alternative than the Proposed Action. Under the Action Alternative, the proposed trestle would be constructed over the existing T-Pier and would not increase impervious surfaces and subsequent stormwater discharge to Coddington Cove. All stormwater discharges would be monitored for compliance with NAVSTA Newport's existing RIPDES permit and would not be significant.

Therefore, implementation the Action Alternative would not result in significant impacts to utilities and solid waste.

4.14 Visual Resources

The evaluation of visual resources in the context of environmental analysis typically addresses the contrast between visible landscape elements. Collectively, these elements comprise the aesthetic environment, or landscape character. The landscape character is compared to the Proposed Action's visual qualities to determine the compatibility or contrast resulting from the buildout and demolition activities associated with the Proposed Action. The study area is Pier Landing Site, Building 11 Parking Area, and adjacent areas including Coddington Cove.

4.14.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change to visual resources. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

4.14.2 Proposed Action: Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

4.14.2.1 Potential Impacts

In-water construction areas and the presence of construction equipment would result in short-term impacts on visual resources in the study area. Minor long-term impacts would be anticipated, as the improvements associated with the in-water projects would largely be visible only from Narragansett Bay and the nearshore areas of Coddington Cove.

Potential impacts on scenic resources at and near NAVSTA Newport would be largely minimal due to its industrial character and current operations as a functioning Naval Station. The appearance of the Naval Station has changed over time due to the construction, modification, and demolition of various buildings and structures. The design of new structures at Coddington Cove and on Coddington Point would be consistent with the surrounding development to minimize impacts to visual resources.

The proposed pier construction under either action alternative would cause limited changes in the appearance of the shoreline in Coddington Cove. Similar to landside development, the addition of a new pier or augmentation of the existing T-Pier in Coddington Cove would be consistent with the current industrial uses of the cove and with adjacent land uses. Therefore, implementation of the Proposed Action or the Action Alternative would not result in significant impacts to visual resources.

4.15 Public Health and Safety

The safety and environmental health analysis contained in the respective sections addresses issues related to the health and well-being of civilians living on or in the vicinity of NAVSTA Newport. Specifically, this section provides information on hazards associated with environmental health and operational safety. Additionally, this section addresses the environmental health and safety risks to children. The study area for public health and safety is Pier Landing Site, Building 11 Parking Area, and adjacent areas.

4.15.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and the bulkheads along Pier Landing Site and the existing T-Pier would continue to deteriorate and potentially present a public safety hazard from impaired water quality in Coddington Cove and Narragansett Bay as a result of soil releases from Pier Landing Site into the Coddington Cove. These impacts would be adverse and would require the Navy to contain and prevent the release under the CWA and the RICRMP. As a result, the impacts would not be significant.

4.15.2 Proposed Action: Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

4.15.2.1 Potential Impacts

Implementation of the Proposed Action or Action Alternative would have long-term beneficial impacts to public health and safety. Repair of the bulkhead along Coddington Cove would eliminate subsidence hazards at Pier Landing Site and prevent further releases of fill material into Coddington Cove, improving water quality of the Cove and adjacent areas of Narragansett Bay. Likewise, the repairs to the T-Pier under the Action Alternative would prevent addition release of material into Coddington Cove having long-term beneficial impacts to public health and safety.

NOAA and NAVSTA Newport would continue to operate in accordance with their respective missions. All landside construction areas would be located within the secure boundary of NAVSTA Newport and would not be publicly accessible. The proposed new pier would be located within the restricted area of Coddington Cove (33 CFR 334.81) and also would not be accessible to the public.

NOAA has determined that there are no environmental health and safety risks associated with the Proposed Action that would disproportionately affect children. The proposed project would occur within the secured boundary of NAVSTA Newport and would not be located near places where children frequent or congregate.

Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts to public health and safety.

4.16 Hazardous Materials and Wastes

The hazardous materials and wastes analysis contained in the respective sections addresses issues related to the use and management of hazardous materials and wastes as well as the presence and management of specific clean-up sites at NAVSTA Newport.

The study area for defining potential impacts on the environment from hazardous materials and wastes encountered during or generated by the Proposed Action or Action Alternative is the immediate project areas at Coddington Cove (Pier Landing Site and adjacent waters) and Building 11 Parking Area. Construction activities for the proposed project may involve the use of hazardous materials, generation of hazardous waste, handling of materials with special hazards, or work in areas of known contamination.

4.16.1 No Action Alternative

Under the No Action Alternative, the proposed project would not occur and there would be no change associated with hazardous materials and wastes. Routine activities at NAVSTA Newport would continue to involve the use of hazardous materials; the generation of hazardous waste; the proper handling of special hazards (ACM, LBP, and PCBs); and the investigation and remediation of contaminated sites. Therefore, no significant impacts would occur with implementation of the No Action Alternative.

4.16.2 Proposed Action: Relocate Four Vessels and Construct New Pier and Support Facilities at a New Location between the Existing T-Pier and Breakwater and Building 11 Parking Area and Action Alternative: Relocate Four Vessels at NAVSTA Newport and Construct New Pier and Support Facilities at Existing T-Pier Site and Building 11 Parking Area

4.16.2.1 Hazardous Materials

Construction activities under both the Proposed Action and the Action Alternative would cause a short-term increase in the use of hazardous materials that would end when the construction is finished. Most of the hazardous materials expected to be used are common to construction (e.g., diesel fuel, gasoline, and propane; hydraulic fluids, oils, and lubricants; welding gases; paints and solvents; adhesives; and batteries). The increased volume and use of hazardous materials during the construction period would present a potential for increased accidental spills and releases of hazardous materials, resulting in potential impacts to human health and the environment. The hazardous materials would be handled, stored, and disposed according to applicable Navy/NOAA regulations, standard operating procedures, and federal and state regulations. Compliance with applicable regulations and procedures would ensure that only the hazardous materials essential to performing the work are used and would minimize the potential for accidental releases. Therefore, construction impacts with regards to hazardous materials would not be significant.

Under the Proposed Action or Action Alternative, operation of the facilities would have the potential for increased use of hazardous materials as there would be two additional vessels berthed at NAVSTA Newport. The functions and activities conducted at the new facilities would be the same as current activities conducted at NAVSTA Newport. No new hazardous materials would be used to service NOAA research vessels at the new facilities. Hazardous materials would continue to be managed in compliance with applicable federal and state regulations and NAVSTA Newport's CHRIMP.

Compliance with federal and state regulations and Navy procedures for working with and managing hazardous materials would minimize the use of hazardous materials, as well as reduce the potential for accidental releases.

Operation of the new facilities at Pier Landing Site would involve the use of hazardous materials such as fire extinguishers, batteries, pesticides, herbicides, paints, solvents, and fluorescent light fixtures. Most hazardous materials (such as paints, solvents, pesticides, and herbicides) would be used up and thus not require storage. Pesticides and herbicides would be used as part of facility management to control nuisance species and would be applied and managed in accordance with applicable regulations and manufacturer instructions. Some hazardous materials would be stored in small quantities where they are being used. These include fire extinguishers that would be anywhere there are flammable materials or spark sources and lightbulbs that may be stored throughout the facility where occupied buildings are located. For those hazardous materials that are not used up, the materials would be properly managed and stored in accordance federal and state regulations and the NAVSTA Newport CHRIMP (40 CFR 264.175 and 29 CFR 1910.106). Therefore, impacts with regards to hazardous materials would not be significant.

4.16.2.2 Hazardous Waste

Construction activities would result in a short-term increase in the generation of hazardous waste that would end when construction is finished. Hazardous waste generated from construction activities includes would likely include pesticides, herbicides, solvents, adhesives, lubricants, corrosive liquids, batteries, and aerosols. Hazardous wastes generated by construction activities would be handled and disposed per applicable federal, state and Navy/NOAA regulations, and standard operating procedures. Construction contractors would be required to manage their own hazardous wastes and comply with all applicable requirements concerning handling, storage, and disposal of construction-related hazardous waste. Therefore, construction impacts with regards to hazardous waste would not be significant.

The average volume of hazardous waste currently generated annually in support of HB operations and maintenance at NAVSTA Newport is approximately 1 ton. Operation and maintenance of two additional vessels would result in an increase in hazardous waste generation NAVSTA Newport. The generation of hazardous wastes would correspond to the number or vessels being serviced and would fluctuate over time. The maximum volume of hazardous waste expected to be generated annually if all four vessels were being serviced at the same time would be approximately 4 tons. It is not anticipated that the Proposed Action or Action Alternative would introduce any new waste streams; exceed existing hazardous waste management capacities at NAVSTA Newport or alter NAVSTA Newport's Resource Conservation and Recovery Act generator status. Hazardous waste would be managed (stored, transported, and disposed) according to applicable regulations, Navy/NOAA regulations, and standard operating procedures that would minimize the potential for accidental spills and releases that could expose people and the environment to hazardous waste. Therefore, operational impacts under the Proposed Action or Action Alternatives with regards to hazardous waste would not be significant.

4.16.2.3 Special Hazards (Asbestos-Containing Materials, Lead-Based Paint, Polychlorinated Biphenyls)

No special hazards are known to be present on Pier Landing Site or Building 11 Parking Area. If suspected ACM are encountered, properly trained and licensed contractors would be used to ensure that all U.S. military, NAVSTA Newport, federal, and state hazardous waste testing, handling, and disposal procedures and requirements are followed for their collection and disposal. Adherence to the applicable regulations and in coordination with the NAVSTA Newport Environmental Department would ensure that the removal and management of ACM is conducted by properly trained personnel and that the material is disposed of properly to protect human health and the environment. ACM, LBP, and PCB containing materials would not be used to construct the proposed new facilities. Therefore, impacts with regards to special hazards would not be significant.

4.16.2.4 Defense Environmental Restoration Program

Pier Landing Site is a known ERP site. Consideration and careful attention during project design phases would be given prior to construction to comply with constraints associated with LUC areas. Where proposed construction projects cannot be designed to avoid these areas, various BMPs for erosion and sedimentation control and engineered and operational controls would be included in project construction plans to protect human health and the environment. Engineering controls would include dust suppression; maintenance of cover in accordance with LUCs; and soil and groundwater testing, recovery, and treatment according to state and federal regulations. Operational controls would include implementing dedicated travel lanes to minimize soil disturbance, controlling equipment speeds to minimize dust generation, etc. Upon completion of construction, LUCs would be restored and even improved by the addition of impervious surfaces. Therefore, impacts to ERP sites would not be significant.

Compliance with federal and state regulations and Navy/NOAA procedures for working with contaminated or hazardous materials and wastes would result in negligible impacts. Therefore, implementation of the Proposed Action or Action Alternative would not result in significant impacts from the handling or presence of hazardous materials and wastes.

4.17 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the Proposed Action or Action Alternative may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

4.17.1 Past, Present, and Reasonably Foreseeable Actions

Past, present, and reasonably foreseeable future projects at and near the proposed project locations are listed in Table 4-6. A project was included in the cumulative impacts analysis, if it was determined that a relationship exists such that the affected resource areas of the Proposed Action or Action Alternative might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance at the time the EA was initiated, these actions considered but excluded from further cumulative effects analysis are not catalogued here as the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are listed in Table 4-6 and briefly described in the following subsections.

Table 4-6. Past, Present, and Resonably Foreseeable Future Actions

Proposed Action/Action Alternative	***2024-2026***
Past Actions	**Timeframe**
CERCLA Dredging of Former Derecktor Shipyard Coddington Cove	Completed 2017
Reasonably Foreseeable Future Actions	**Timeframe**
Naval Station Newport Bulkhead Repairs	May 2022-May 2027
Naval Station Newport Stormwater Upgrades	2028-2030
Gould Island B35 Demolition and Sediment Clean-Up	2023-2024
Pier 2 Repairs – International Sea Symposium	2023-2026
Pier 2 Berth 23 Repairs	2023-2024
Stillwater Basin Upgrades Project Pier Replacement	2023
Gould Island Demolition of Structure 203	Unknown
U.S. Coast Guard Pier	2025-2028

4.17.1.1 CERCLA Dredging of Former Derecktor Shipyard Coddington Cove

This project was conducted in accordance with the Navy's approved clean-up plan for marine sediment at ERP Site 19. The clean-up activities for the site consisted of dredging of contaminated sediment at target locations to depths of 1 to 2 feet and performing confirmation sampling to ensure clean-up goals were achieved. Remedial dredging of contaminated sediment was performed in areas to the south of the T-Pier and to the north and south of Piers 1 and 2. The project is complete, therefore, cumulative impacts when considered with the Proposed Action would be limited to Pier Landing Site and hazardous materials and wastes (ERP sites).

4.17.1.2 Naval Station Newport Bulkhead Repairs

This project proposes to replace or repair several sections of deteriorating, unstable, hazardous, and eroding bulkhead and revetment (approximately 2,730 total linear feet) along the Coddington Cove waterfront of NAVSTA Newport. As part of the replacement/repairs, existing stormwater outfalls in the repair areas would also be replaced in-kind, improved, or removed if no longer in use. Stormwater outfall improvements would reduce flooding and improve conveyance, as well as minimize shoreline erosion and associated sedimentation of adjacent receiving waters. In order to properly install the new bulkheads and revetments, limited dredging would occur along the shoreline. Dredged material would be tested and disposed of at an off-site, upland, permitted facility. The proposed location of the replacement/repairs would encompass six discrete locations that span the area from north of Pier 2 southward to an area slightly south of the Supply Depot Pier (T-Pier). Project implementation would occur over several years (2022-2027) and would overlap with the Proposed Action or Action Alternative. The projects would have cumulative impacts on land use, geological resources, air quality, water resources, cultural resources, fauna, floodplains, coastal zone management, noise, transportation, utilities (stormwater), and hazardous materials and wastes (ERP sites).

4.17.1.3 Naval Station Newport Stormwater Upgrades

The existing storm sewer systems along the NAVSTA Newport waterfront have severely degraded from under-capacity piping and aging infrastructure. This impacts the ability of the installation to minimize shoreline erosion and maintain potential berthing space. The Navy has performed a stormwater system analysis and is planning to provide system improvements in the area extending from Outfall-A located to the north of the breakwater and the Narragansett Bay Test Facility and boat basin at Gate 28 southward to Outfall 7-137 located just south of the small stone groin located south of the T-Pier and liquified natural gas facility. The proposed repairs would not begin until after the completion of the Proposed Action. Therefore, cumulative impacts would be limited to utilities (stormwater).

4.17.1.4 Gould Island B35 Demolition and Sediment Clean-Up

Building 35 is located at the end of the earth-filled firing pier located at the northern end of Gould Island in Narragansett Bay. The firing pier and B35 are not part of ERP Site 17 – Former Building 32 Gould Island. Building 35 is currently the only operational facility at Gould Island and is an active test facility operated by NUWC and occupied part time by Navy staff (NAVFAC 2015). The area around B35 is a constructed shoreline that is a combination of filled land and manmade structures. These include the firing pier, two deteriorated rigging platforms (timber docks), a partial breakwater feature made of wood piles, and constructed shoreline (filled land behind bulkhead walls). The proposed project would demolish B35 and remove an undetermined volume of contaminated sediment.

4.17.1.5 Pier 2 Pile Repairs - International Seapower Symposium

The International Seapower Symposium is a biannual event held at NAVSTA Newport and it attended by chiefs of the navies and coast guards from nations around the globe to discuss and promote international maritime security cooperation. As part of this action, select load-bearing piles beneath Pier 2 were and will continue to be repaired using fiberglass reinforcement filled with grout. Additional repairs to Pier 2 include repairs to the timber fender system and the replacement of water (approximately 400 linear feet) and electrical utilities. As this is a biannual occurrence, cumulative impacts to air quality, water resources, fauna, floodplains, coastal zone management, noise, transportation, and utilities is anticipated.

4.17.1.6 Pier 2 Berth 23 Repairs

The project includes removal of broken fender piles and installation of steel nested fender piles at Berth 23. Construction is planned for 2023 to 2024.

4.17.1.7 NUWC Stillwater Basin Upgrades Project Pier Replacement

The purpose of the NUWC Stillwater Basin Upgrades Project is to perform infrastructure improvements in support of the Large Displacement Unmanned Underwater Vehicle and the Extra Large Unmanned Underwater Vehicle Programs for NUWC. The improvements include demolition of the deteriorated outer portion of Pier 171 and repair and partial replacement of Pier 171 (including, but not limited to, deck planking, stringers, cross-bracing, pile camps, batter, and fender piles) to support a new gross vehicle limit of 20,000 pounds. The Pier 171 repairs include partial demolition and extraction of timber piles. New construction includes installation of new support and fender piles, deck replacement, replacement of two timber pile mooring dolphins, and deck hardware replacement. Construction is planned for 2023.

4.17.1.8 Gould Island Demolition of Structure 203

Structure 203 is a partial breakwater feature made of wood piles, located at the northern end of Gould Island in Narragansett Bay. The proposed project would demolish Structure 203 in its entirety. It is unknown when this project will receive funding. It is unknown as to whether this project has or will receive funding. Therefore, it has been eliminated from further consideration.

4.17.1.9 U.S. Coast Guard Pier

USCG plans to relocate up to four Offshore Patrol Cutters to Newport with first ship arriving summer 2028. Project would demolish Pier 1 and construct a new pier approximately 800 linear feet long and 115 linear feet wide. The project would also construct on-shore facilities, including an administration building to support vessels. Planned construction is 2025 to 2028.

4.17.2 Cumulative Impact Analysis

The projects described above were identified as having the potential to have cumulative impacts on the following resources when considered with the Proposed Action or Action Alternative: land use, geological resources, air quality, water resources, cultural resources, flora and fauna, floodplains, coastal zone management, noise, transportation, utilities, and hazardous materials and wastes (ERP sites). Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available, and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA, where possible.

4.17.2.1 Land Use

The Proposed Action or Action Alternative, when considered with past, present, and reasonably foreseeable future actions, would have no significant impacts with regards to land use as all projects at NAVSTA Newport or within the surrounding community would be conducted in accordance with the installation Master Plan or existing zoning regulations, respectively. Therefore, there would be no cumulative adverse impact to this resource when considered with other past, present, and reasonably foreseeable future actions.

4.17.2.2 Geological Resources

Implementation of the Proposed Action or Action Alternative along with past, present, and reasonably foreseeable future projects identified in Table 4-6 would not result in additive adverse cumulative impacts to topography, or geology, bathymetry, or sediments. Implementation of the Proposed Action along with past, present, and reasonably foreseeable future projects would disturb, remove, and redistribute soil within the project area resulting in minor cumulative changes in topography and impermeable surfaces that would be mitigated through the use of environmental controls (i.e., sediment, stormwater, erosion). Additive beneficial impacts would occur to site soils as a result of the stabilization of the shoreline and elimination of erosional forces.

4.17.2.3 Air Quality

The past project identified in Table 4-6 had no long-term impacts to air quality. Therefore, there would not be cumulative impacts to air quality when considered with the Proposed Action or Action Alternative.

The present and reasonably foreseeable future projects identified in Table 4-6 have the potential to contribute to air emissions during construction and, in the case of the International Seapower Symposium action, short-term operations. The majority of the cumulative impacts would be short-term construction impacts from projects occurring during the same time period as the Proposed Action (Table 4-6). Either alternative would result in emissions that are well below *de minimis* for criteria pollutants (Section 4.4). As a result, when considered cumulatively, the past, present and reasonably foreseeable future projects are not anticipated to have emissions that would exceed *de minimis* for criteria pollutants.

Therefore, implementation of the Proposed Action or Action Alternative combined with past, present, and reasonably foreseeable future actions, would not result in significant cumulative air quality impacts.

4.17.2.4 Water Resources

Cumulative impacts to water resources would not be significant. Implementation of the Proposed Action or Action Alternative along with past, present, and reasonably foreseeable future projects would disturb sediments and would result in temporary increases in turbidity in Coddington Cove. The Proposed Action is likely to overlap with most of the future projects, and there are potential additive water quality impacts. Additive impacts would include short-term increases in turbidity during construction and a minor long-term loss of open water from filling and pile installation. These losses, when compared to the amount of available open water in Coddington Cove, are extremely small and would not be significant. Resuspended sediments in Coddington Cove would tend to be retained by the circular current, whereas sediments outside of the cove are anticipated to dissipate rapidly in Narragansett Bay. Repairs would eliminate sedimentation problems associated with shoreline erosion along the failing bulkheads. All work would be coordinated with regulatory agencies and conducted in accordance with permit requirements designed to protect water resources during construction. As a result, cumulative impacts to water resources would not be significant.

4.17.2.5 Cultural Resources

The Proposed Action or Action Alternative would have no impact on archaeological resources and traditional cultural properties. Therefore, there would be no cumulative impacts with regards to these resources.

The Proposed Action or Action Alternative would have a cumulative impact on the Destroyer Pier Historic District. The Proposed Action or Action Alternative would have no adverse effect on historic properties. Demolition of the marginal wharf north of Pier 2 for the Bulkhead repair project would adversely affect the historic district’s setting and visual character. Adverse effects of the Bulkhead repair project would be mitigated through the SHPO consultation process and a Memorandum of Agreement to ensure that impacts are not significant. Therefore, cumulative impacts would not be significant.

4.17.2.6 Flora and Fauna

The Proposed Action or Action Alternative has the potential to have additive impacts to marine flora, fauna and EFH when considered with past, present, and reasonably foreseeable future projects in Coddington Cove. The Proposed Action is likely to overlap with most future projects, and there is potential for additive impacts to marine flora and fauna. Additive impacts would include short-term increases in turbidity and noise during construction and a minor long-term loss of open water and benthic habitat from filling and pile installation. Resuspended sediments in Coddington Cove would tend to be retained by the circular current, whereas sediments outside of the cove are anticipated to dissipate rapidly in Narragansett Bay. The TSS levels expected for pile driving (5 to 10 mg/L) are below those shown to have adverse effect on fish (typically up to 1,000 mg/L) and benthic communities (390 mg/L) (FHWA, 2012). Therefore, cumulative pile driving activities are not anticipated to adversely impact marine flora and fauna. Minor habitat losses would be partially offset by the creation of attachment sites for marine organisms from the installation of piles. Additionally, these losses, when compared to the amount of available habitat in Coddington Cove is extremely small. All in-water work would be coordinated with regulatory agencies and conducted in accordance with permit requirements. As a result, cumulative impacts to flora and fauna resources would not be significant.

Cumulative impacts with regards to noise impacts on biological resources is discussed in Section 4.17.2.9.

4.17.2.7 Floodplains

The projects listed in Table 4-6 would all occur within the designated floodplain. All of the proposed activities would support existing water-dependent uses and could not be conducted outside of the floodplain. All development in the floodplain would be engineered to account for storm surge, improve stormwater management, and have no net increase in stormwater flows. Therefore, cumulative impacts would not be significant.

4.17.2.8 Coastal Zone Management

The projects listed in Table 4-6 would all occur within the designated coastal zone. The proposed projects would be consistent with the policies of the Rhode Island Coastal Zone Management Program to the maximum extent practicable and therefore, would have no adverse cumulative impacts to the coastal zone.

4.17.2.9 Noise

The Proposed Action or Action Alternative has the potential to have additive airborne and underwater noise impacts when considered with reasonably foreseeable future projects in Coddington Cove. Any projects occurring during the same or sequential timeframe as the Proposed Action or Action Alternative and close enough to affect the same human receptors as the Proposed Action or Action Alternative would result in cumulative noise impacts from pile removal/installation, machinery and construction vehicles, and vessels traveling to/from the site.

Construction contractors would be required to implement noise control measures as described by NAVSTA procedures, including working during daylight hours, to the extent practicable. Additional airborne noise attenuation would likely occur due to ground and atmospheric absorption and shielding by NAVSTA buildings. While there would be cumulative impacts on the noise environment, the cumulative impacts would be short-term and negligible. There would be no long-term cumulative noise impacts because none of the projects listed in Table 4-6 would have long-term noise impacts.

Project construction and operations add cumulatively to underwater sound, which may affect aquatic organisms, fish, and mammals. Cumulative construction noise would be intermittent and short-term and would return to existing levels at the completion of construction activities. Construction activities would occur during normal daytime working hours. The proposed project area is part of an active industrial waterfront with elevated ambient noise levels. As a result, aquatic organisms in the vicinity of the proposed project area would be acclimated to the elevated noise environment. Under elevated noise conditions, many species that are highly motile could temporarily relocate to less noisy areas of the Narragansett Bay. Monitoring and shutdown procedures would minimize cumulative impacts to protected species from noise. Therefore, cumulative impacts would not be significant.

4.17.2.10 Transportation

Projects occurring concurrently would have cumulative impacts to traffic at NAVSTA Newport during construction. These impacts would be temporary in nature. None of the projects in Table 4-6 would have any substantial long-term increases in traffic generation. Therefore, implementation of the Proposed Action or Action Alternative combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative impacts to transportation.

4.17.2.11 Utilities and Solid Waste

Cumulative infrastructure impacts from past, present, and future actions within the study area would be less than significant because there would generally be a beneficial cumulative impact as the projects would improve existing utilities by improving stormwater systems at Coddington Cove. The Proposed Action and the US Coast Guard Pier and relocation of four ships to NAVSTA Newport would have long-term utility demands and would generate solid waste beyond construction. NAVSTA Newport facility planning would ensure that appropriate amendments would be obtained to installation permits, which would cover any increase in utility demand and waste. Therefore, implementation of the Proposed Action or Action Alternative combined with the past, present, and reasonably foreseeable future projects, would not result in significant cumulative impacts to infrastructure or solid waste within the study area.

4.17.2.12 Hazardous Materials and Wastes

The combined impact of any of the Proposed Action or Action Alternative and the actions identified in Table 4-6 would not result in additive adverse cumulative impacts to hazardous materials and wastes. Construction and demolition derived wastes associated with the Proposed Action or Action Alternative and the projects listed in Table 4-6 would either be consumed during construction, recycled, or managed and disposed of in accordance with applicable regulations. Cumulatively, it is not anticipated that there would be an adverse impact to the region's ability to supply the increased demand for petroleum products or hazardous materials or to absorb disposal of wastes during the construction period. Hazardous materials would continue to be managed using NAVSTA Newport's CHRIMP. Because NAVSTA Newport has historically supported operations and maintenance of Navy vessels, there would be no change or introduction of new hazardous materials or toxic substances beyond those already present. Additionally, the use of hazardous chemicals at the proposed NOAA facilities are not anticipated to meet or exceed the threshold requirements for Tier 2 reporting under the Emergency Planning and community Right-to-Know Act (e.g., 500 pounds or the Threshold Planning Quantity, whichever is lower, for extremely hazardous substances and 10,000 pounds for chemicals requiring Safety Data Sheets). ERP sites (Pier Landing Site) would continue to be managed and monitored in accordance with existing LUCs. Removal of contaminated soils and sediments from ERP areas would have a beneficial impact.

Therefore, implementation of the Proposed Action or Action Alternative combined with past, present, and reasonably foreseeable future actions, would not result in significant cumulative impacts to hazardous materials and wastes.

5 Community Involvement

Regulations from the CEQ direct agencies to involve the public in preparing and implementing their NEPA procedures. NOAA prepared this EA to inform the public of the Proposed Action and Action Alternative and to allow opportunity for public review and comment. In conformance with Executive Order 11988, the public notice informs the public and interested stakeholders of a proposed federal action to be located within a floodplain.

The Draft EA 30-day review period began June 26, 2022 with a public notice published in the *Providence Journal* indicating the availability of the Draft EA and how to request a copy. A copy of the publication is provided in **Appendix J**. The Draft EA was also made available on the NOAA website at: https://www.noaa.gov/administration/draft-environmental-assessment. No public comments were received.

NOAA published a Notice of Availability in the *Providence Journal*, within 10 working days of the completion of the NEPA process, to inform the public that the Final EA has been released. The notice includes: the reasons why the proposed project must be located in the floodplain; a list of the alternatives considered; and all measures taken to reduce potential adverse impacts to the floodplain and to restore and preserve natural and beneficial values.

As part of the NEPA process, NOAA coordinated or consulted with the USFWS, NMFS, and the RICRMC regarding the Proposed Action. All correspondence is included in the appendices of this Final EA. A Coastal Consistency Determination was prepared and submitted to the RICRMC. NOAA's determination concluded that the proposed project would be undertaken in a manner consistent to the maximum extent practicable with the federally-approved enforceable policies of the RICRMP. RICRMC concurred with this finding (**Appendix G**).

NOAA also consulted with the Rhode Island SHPO (**Appendix B**) and initiated consultation with the following federally-recognized, Native American Tribes(s) regarding this Proposed Action (**Appendix C**):

- Narragansett Indian Tribe,
- Wampanoag Tribe of Gayhead Aquinnah,
- Mashpee Wampanoag Tribe.

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6 Summary of Impacts

This EA has determined that the Proposed Action or Action Alternative would not result in any significant impacts. Impacts to specific resources analyzed in this EA are summarized in Table 6-1. Implementing the Proposed Action or Action Alternative would result in the following unavoidable environmental impacts:

- Temporary and minor increases in emissions of criteria air pollutants during construction and from worker and commuter vehicles. A small increase in direct and indirect emissions from energy use and equipment operations following implementation.
- Short-term, minor impacts on surface water, and marine sediments resulting from disturbance and water quality impacts (turbidity) during construction.
- Minor long-term impacts to the 500-year floodplain from the construction of facilities.
- Long-term loss of up to approximately 3,360 sf of benthic habitat in Coddington Cove.
- Long-term loss of up to approximately 1,770 cy of marine aquatic habitat in Coddington Cove.
- Temporary increases in underwater noise levels.
- Temporary, moderate increases in ambient airborne noise levels during construction.
- Minor short-term increases in construction vehicle and vessel traffic to and from Coddington Cove and Coddington Point. Minor long-term increase in vessel and personal vehicle traffic during operations.

6.1 Irreversible or Irretrievable Commitments of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and natural or cultural resources. Human labor is also considered an irretrievable resource. Implementation of the Proposed Action or Action Alternative would involve human labor; the consumption of fuel, oil, and lubricants for construction vehicles and equipment; and loss of natural resources including benthic habitat (the cumulative area of the proposed pier and floating dock piles and fill for shoreline/T-Pier stabilization); loss of marine habitat, and immobile and/or less mobile marine organisms in areas affected by pier construction and shoreline/T-Pier stabilization. Implementation of the Proposed Action or Action Alternative would not result in significant irreversible or irretrievable commitment of resources.

6.2 Relationship between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. In the short-term, construction of the new pier, shoreside and support facilities would result in temporary impacts on air quality, surface water quality, soils, and estuarine biological resources. The Proposed Action or Action Alternative also would result in short-term impacts on human communities near the project area resulting from construction noise and traffic. Construction of the new pier, shoreside and support facilities would not significantly impact the long-term natural resource productivity of the project areas, Coddington Cove or Narragansett Bay. The Proposed Action or Action Alternative would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment.

Table 6-1. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area*	*Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area*
Land Use	No impacts	**No significant impacts.** Change in existing land use consistent with facility and local land use plans	Same as the Proposed Action.
Geological Resources	Potential adverse impact from erosion of shoreline sediments	**No significant impacts.** Minor impact to topography of 500-year floodplain from excavation, grading, and filling. Temporary disturbance impacts to marine sediment from construction and anchoring of construction vessels. Minor impacts to marine sediments from fill.	Same as the Proposed Action, but larger impacts to marine sediment from fill.
Hydrological Processes		**No significant impacts.**	Same as the Proposed Action.
Air Quality	No impact	**No significant impacts.** Air emissions below applicable *de minimis* criteria.	Same as the Proposed Action.
Water Resources	Potential adverse impacts from erosion of shoreline sediments	**No significant impacts.** No impacts to groundwater. Short-term sediment resuspension impacts on surface water quality, minimization through BMPs and compliance with conditions of permits. Loss of approximately 1,770 cy water column marine habitat from filling and pile installation.	Same as the Proposed Action, but loss of 2,450 cy water column marine habitat.
Cultural Resources	No impact	**No significant impacts.** No adverse effect on historic properties. NOAA has consulted with the SHPO and Native American Tribes (Appendices B and C).	Same as the Proposed Action.

Table 6-1. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area*	*Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area*
Flora and Fauna	No impacts	**No significant impacts.** Temporary noise impacts on terrestrial and marine wildlife. Temporary sediment resuspension impacts on marine species. Minor long-term habitat loss for marine species from filling, pile installation, and new pier (3,360 sf benthos, 1,770 cy open water, and 55,000 sf shading over water). Takes of MMPA species are likely during pile driving. MMPA request for IHA submitted to NMFS for incidental take of marine mammals. NMFS-issued IHA is included in Appendix E. May affect but is not likely to adversely affect EFH and ESA listed species. NOAA consulted with NMFS, and NMFS concurred with the findings (Appendices D and F). No effect on species under the jurisdiction of the U.S. Fish and Wildlife Service.	Same as the Proposed Action, but larger habitat losses from filling 5,500 sf benthos, 2,450 cy open water column habitat, and 40,000 sf shading over water. Takes of MMPA species likely during pile driving. May affect but is not likely to adversely affect EFH and ESA listed species.
Wetlands	No impacts	**No significant impacts.** No wetlands present.	Same as the Proposed Action.
Floodplains	No impacts	**No significant impacts.** Placement of facilities in 100- and 500-year floodplain required to support water-dependent uses.	Same as the Proposed Action.
Coastal Zone Management		**No significant impacts.** Consistent with the enforceable policies of the RI Coastal Resources Management Program (Appendix G).	Same as the Proposed Action.

Table 6-1. Summary of Potential Impacts to Resource Areas

Resource Area	*No Action Alternative*	*Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area*	*Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area*
Noise	No impacts	**No significant impacts.** Temporary, intermittent, typical airborne construction noise. Temporary underwater noise.	Same as the Proposed Action, but shorter duration of underwater noise.
Transportation	No impacts	**No significant impacts.** Temporary impacts from construction vehicle traffic. Minor long-term increases in traffic from operations.	Same as the Proposed Action.
Utilities and Solid Waste	No impacts	**No significant impacts.** Removal and extension of water, wastewater, stormwater, and electrical would not result in adverse impacts. NAVSTA Newport has sufficient capacity to support all required utilities. Minor increase in utility demand and solid waste during construction and operations.	Same as the Proposed Action.
Visual Resources	No impacts	**No significant impacts.** Proposed construction would be consistent with the current and adjacent land uses.	Same as the Proposed Action.
Public Health and Safety	Potential adverse impacts	**No significant impacts.** Beneficial impact on long-term water quality.	Same as the Proposed Action.
Hazardous Materials and Wastes	No impacts	**No significant impacts.** Temporary increase in hazardous materials and wastes during construction. Minor long-term increases in hazardous materials and wastes during operations. Potential for encountering soil contamination in excavated soils during	Same as the Proposed Action.

Table 6-1. Summary of Potential Impacts to Resource Areas

Resource Area	***No Action Alternative***	***Proposed Action: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area***	***Action Alternative: Relocate Four Ships and Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site and Building 11 Parking Area***
		construction, and potential need for coordination with federal and state regulators regarding any reporting requirements related to ERP sites. Any excess soils generated at Pier Landing Site would be tested for contaminants of concern and reused or disposed of according to RIDEM and USEPA criteria.	

Notes: BMP = Best Management Practice; cy = cubic yard; EFH = Essential Fish Habitat; ERP = Environmental Restoration Program; ESA = Endangered Species Act; IHA = Incidental Harassment Authorization; MMPA = Marine Mammal Protection Act; NAVSTA = Naval Station; NMFS = National Marine Fisheries Service; NOAA = National Oceanic and Atmospheric Administration; RI = Rhode Island; RIDEM = Rhode Island Department of Environmental Management; sf = square foot/feet; SHPO = State Historic Preservation Office(r); USEPA = United States Environmental Protection Agency.

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7 Suggested Mitigation Measures

A list of impact avoidance and minimization measures associated with the Proposed Action and Action Alternative are provided in Table 7-1.

Table 7-1. Impact Avoidance And Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*
Proposed Action Construct New Pier and Associated Shoreside and Support Facilities at a New Location between the Existing T-Pier and Pier 1 and Building 11 Parking Area	
Compliance with CWA, CZMA, and Section 10 permit requirements for construction work. Compliance with the environmental procedures established by NOAA's Marine Operations Environmental Compliance Office.	Reduce impacts on surface water quality during construction.
If unanticipated archaeological resources are discovered, NOAA would notify NAVSTA Newport and follow the procedures of inadvertent discovery in accordance with 36 CFR 800. Unanticipated discoveries clauses and the outcome of any of the Section 106 consultations will be included in the real estate agreement between NOAA and the Navy.	Protect archaeological and architectural historic properties.
Measures addressing NMFS EFH conservation recommendations: floats ≥18 inches above the substrate at all times to avoid grounding and scour; appropriate soil erosion, sedimentation, and turbidity controls; and soft start procedures for impact pile driving.	Reduce risk of impacts on EFH during in-water construction.
Mitigation measures under the NMFS-issued IHA: monitoring, shutdown, and soft start procedures for impact pile driving.	Reduce risk of impacts on marine mammals as a result of pile driving during in-water construction.
Maintenance of engineered controls at ERP Site 19.	Reduce risk of impacts on human health and the environment during construction.
No petroleum products, lime, chemicals, or other toxic or harmful materials would be allowed to enter surface waters.	Protect surface water quality.
Wash water resulting from wash down of equipment or work areas would be contained for proper disposal and would not be discharged unless authorized.	Protect surface water quality.
Solid waste would continue to be managed under the existing protocols, and recycling would be implemented to the maximum extent practicable to minimize solid waste generation and disposal.	Protect human and environmental health.
Hazardous materials and wastes managed in accordance with the Hazardous Waste Management Plan, state/federal regulations, and in coordination with the NAVSTA Newport Environmental Department.	Protect human and environmental health.

Table 7-1. Impact Avoidance And Minimization Measures

Measure	*Anticipated Benefit / Evaluating Effectiveness*
Recycling and/or processing programs for solid waste and disposal at appropriate landfill facilities.	Protect human and environmental health.
Action Alternative Construct New Pier and Associated Shoreside and Support Facilities at Existing T-Pier Site	
Minimization measures would be the same as the Proposed Action.	

8 Conclusion

This EA provides an analysis of potential environmental impacts associated with the proposed relocation of four NOAA research vessels at NAVSTA Newport in Newport, Rhode Island, and the establishment of shoreside and support facilities at two discrete locations at Coddington Cove. The environmental resource areas analyzed in this EA include land use, geological resources, hydrological processes, air quality, water resources, cultural resources, flora and fauna, wetlands, floodplains, coastal zone management, noise, transportation, utilities and solid waste, visual resources, and hazardous materials and wastes. The results of the analysis provided within this document conclude that the Proposed Action would have no significant impact on the environment, and the preparation of an environmental impact statement is not required.

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9 List of Preparers

This EA was prepared for NOAA by the Navy and contractor preparers.

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Appendix A Laws and Regulations

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Applicable Laws and Regulations

The National Oceanic and Atmospheric Administration (NOAA) has prepared this EA based upon the following federal and state laws, statutes, regulations, and policies pertinent to the implementation of the Proposed Action.

1.1 National Environmental Policy Act (42 United States Code [U.S.C.] sections 4321–4370h)

The National Environmental Policy Act (NEPA) establishes "a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality". NEPA was one of the first laws ever written that establishes the broad national framework for protecting our environment. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

1.2 Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508)

The Council on Environmental Quality (CEQ) is responsible for developing procedures for Federal agency implementation of NEPA. These procedures were initially promulgated in 1971 as guidelines and were then issued as regulations in 1978. In July 2020, CEQ comprehensively updated its NEPA regulations to modernize provisions, streamline infrastructure project development, and promote better decision making by the Federal government.

1.3 Clean Air Act (42 U.S.C. section 7401 et seq.)

Under the Clean Air Act (CAA), the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) (40 Code of Federal Regulations [CFR] part 50) for these pollutants. NAAQS are classified as primary or secondary. Primary standards protect against adverse health effects; secondary standards protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Some pollutants have long-term and short-term standards. Short-term standards are designed to protect against acute, or short-term, health effects, while long-term standards were established to protect against chronic health effects.

The CAA also requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as State Implementation Plans, are developed by state and local air quality management agencies and submitted to USEPA for approval.

1.4 Clean Water Act (33 U.S.C. section 1251 et seq.)

The Clean Water Act (CWA) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint sources (i.e., stormwater) of water pollution.

The Rhode Island NPDES stormwater program requires construction site operators engaged in clearing, grading, and excavating activities that disturb one acre or more to obtain coverage under an NPDES Construction General Permit for stormwater discharges. Construction or demolition that necessitates an individual permit also requires preparation of a Notice of Intent to discharge stormwater and a Stormwater Pollution Prevention Plan that is implemented during construction. As part of the 2010 Final Rule for the CWA, titled Effluent Limitations Guidelines and Standards for the Construction and Development Point Source Category, activities covered by this permit must implement non-numeric erosion and sediment controls and pollution prevention measures.

Wetlands are currently regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA as a subset of all "Waters of the United States." Waters of the U.S. are defined as (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow perennially or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries under Section 404 of the CWA, as amended, and are regulated by USEPA and the USACE. The CWA requires that Rhode Island establish a Section 303(d) list to identify impaired waters and establish total maximum daily loads (TMDLs) for the sources causing the impairment.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into wetlands and other Waters of the United States. Any discharge of dredge or fill into Waters of the United States requires a permit from the USACE.

1.5 Rivers and Harbors Act (33 U.S.C. section 407)

Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for any in-water construction. USACE and some states require a permit for any in-water construction. Permits are required for construction of piers, wharfs, bulkheads, pilings, marinas, docks, ramps, floats, moorings, and like structures; construction of wires and cables over the water, and pipes, cables, or tunnels under the water; dredging and excavation; any obstruction or alteration of navigable waters; depositing fill and dredged material; filling of wetlands adjacent or contiguous to Waters of the United States; construction of riprap, revetments, groins, breakwaters, and levees; and transportation of dredged material for dumping into ocean waters.

1.6 Energy Independence and Security Act

Section 438 of the Energy Independence and Security Act establishes stormwater design requirements for development and redevelopment projects. Under these requirements, federal facility projects larger than 5,000 square feet must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow."

1.7 Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)

Through the Coastal Zone Management Act (CZMA) of 1972, Congress established national policy to preserve, protect, develop, restore, or enhance resources in the coastal zone. The CZMA encourages coastal states to properly manage use of their coasts and coastal resources, prepare and implement coastal management programs, and provide for public and governmental participation in decisions affecting the coastal zone. To this end, CZMA imparts an obligation upon federal agencies whose actions or activities affect any land or water use or natural resource of the coastal zone to be carried out in a manner consistent to the maximum extent practicable with the enforceable policies of federally approved state coastal management programs. However, federal lands, which are “lands the use of which is by law subject solely to the discretion of the Federal Government, its officers, or agents,” are statutorily excluded from the state’s “coastal uses or resources.” If, however, the proposed federal activity affects coastal uses or resources beyond the boundaries of the federal property (i.e., has spillover effects), the CZMA Section 307 federal consistency requirement applies. As a federal agency, NOAA is required to determine whether its proposed activities would affect the coastal zone. This takes the form of a consistency determination, a negative determination, or a determination that no further action is necessary.

The Rhode Island Coastal Resources Management Council is the lead agency for coastal management in Rhode Island and is responsible for enforcing the State’s federally approved coastal management plan. Pursuant to the CZMA, Rhode Island has adopted a federally-approved Coastal Management Plan, the Rhode Island Coastal Resources Management Plan (RICRMP). Section 307(c) of the CZMA requires that any federal activity that directly or indirectly affects any land or water use or natural resource of the coastal zone be consistent with the RICRMP to the maximum extent practicable.

1.8 National Historic Preservation Act (54 U.S.C. section 306108 et seq.)

Federal agencies’ responsibility for protecting historic properties is defined primarily by sections 106 and 110 of the National Historic Preservation Act (NHPA). Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties. Section 110 of the NHPA requires federal agencies to establish—in conjunction with the Secretary of the Interior—historic preservation programs for the identification, evaluation, and protection of historic properties. Cultural resources also may be covered by state, local, and territorial laws.

1.9 Endangered Species Act (16 U.S.C. section 1531 et seq.)

The purpose of the Endangered Species Act (ESA) is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with the U.S. Fish and Wildlife Service (USFWS) or National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of designated critical habitat. Critical habitat cannot be designated on any areas owned, controlled, or designated for use by the Department of Defense (DoD) where an Integrated Natural Resources Management Plan has been developed that, as determined by the Department of Interior or Department of Commerce Secretary, provides a benefit to the species subject to critical habitat designation.

1.10 Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. section 1801 et seq.)

The Magnuson-Stevens Fishery Conservation and Management Act provides for the conservation and management of the fisheries. Under the Act, essential fish habitat (EFH) consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity.

1.11 Marine Mammal Protection Act (MMPA) (16 U.S.C. section 1361 et seq.)

All marine mammals are protected under the provisions of the MMPA. The MMPA prohibits any person or vessel from "taking" marine mammals in the U.S. or the high seas without authorization. The MMPA defines "take" to mean "to harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill any marine mammal."

1.12 Migratory Bird Treaty Act (16 U.S.C. sections 703–712)

Birds, both migratory and most native-resident bird species, are protected under the Migratory Bird Treaty Act (MBTA), and their conservation by federal agencies is mandated by EO 13186 (Migratory Bird Conservation). Under the MBTA, it is unlawful by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. The final rule authorizing the DoD to take migratory birds in such cases includes a requirement that the Armed Forces must confer with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the Proposed Action if the action will have a significant negative effect on the sustainability of a population of a migratory bird species.

1.13 Bald and Golden Eagle Protection Act (16 U.S.C. section 668–668d)

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act. This act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

1.14 Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. section 9601 et seq.)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) set up the original "Superfund" funding for cleanups of hazardous waste sites. Sites eligible for cleanup using Superfund are listed by USEPA on the National Priorities List.

1.15 Emergency Planning and Community Right-to-Know Act (42 U.S.C. sections 11001–11050)

The Emergency Planning and Community Right-to-Know Act of 1986 was created to help communities plan for chemical emergencies. It also requires industry to report on the storage, use and releases of hazardous substances to federal, state, and local governments. EPCRA requires state and local governments, and Indian tribes to use this information to prepare for and protect their communities from potential risks.

1.16 Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. section 136 et seq.)

The Federal Insecticide, Fungicide, and Rodenticide Act provides for federal regulation of pesticide distribution, sale, and use. All pesticides distributed or sold in the United States must be registered (licensed) by EPA.

1.17 Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.)

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments, as: "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR part 273. Four types of waste are currently covered under the universal wastes regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

1.18 Toxic Substances Control Act (15 U.S.C. sections 2601–2629)

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos containing materials, polychlorinated biphenyls, and lead-based paint. USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act.

1.19 Executive Order 11988, Floodplain Management

Executive Order (EO) 11988, *Floodplain Management*, requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative. Flood potential of a site is usually determined by the 100-year floodplain, which is defined as the area that has a one percent chance of inundation by a flood event in a given year.

1.20 EO 11990, Protection of Wetlands

EO 11990, Protection of Wetlands, requires that federal agencies adopt a policy to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and modification of wetlands and to avoid the direct and indirect support of new construction in wetlands whenever there is a practicable alternative.

1.21 EO 12088, Federal Compliance with Pollution Control Standards

EO 12088 designates the head of each executive agency as responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

1.22 EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations

The purpose of EO 12898 is to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. EO 12898 directs federal agencies to: identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law; develop a strategy for implementing environmental justice; and promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation. In addition, the EO established an Interagency Working Group on environmental justice.

1.23 EO 13045, Protection of Children from Environmental Health Risks and Safety Risks

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to “make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.”

1.24 EO 13175, Consultation and Coordination with Indian Tribal Governments

EO 13175 reaffirms the Federal government's commitment to tribal sovereignty, self-determination, and self-government. Its purpose is to ensure that all executive departments and agencies consult with Indian tribes and respect tribal sovereignty as they develop policy on issues that impact Indian communities.

1.25 NOAA Administrative Order Series 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act

NOAA Administrative Order (NAO) 216-6A establishes NOAA’s policy and procedures for compliance with NEPA; the CEQ regulations; EO 12114, Environmental Effects Abroad of Major Federal Actions; EO 11988 and 13690, Floodplain Management; and EO 11990 Protection of Wetlands.

1.26 Rhode Island Pollutant Discharge Elimination System (Rhode Island General Law Chapter 46-12,42-17.1 & 42-35)

It is the purpose of these regulations to restore, preserve, and enhance the quality of the surface waters and to protect the waters from discharges of pollutants so that the waters shall be available for all beneficial uses and thus protect the public health, welfare and the environment.

1.27 Rhode Island Water Quality Regulations (Rhode Island General Law Chapter 42-35 pursuant to Chapters 46-12 and 42-17.1 and Public Laws Chapters 09-198 and 09-199)

The purpose of these regulations is to establish water quality standards for the Rhode Island's surface waters. These standards are intended to restore, preserve and enhance the physical, chemical and biological integrity of the waters of the state, to maintain existing water uses and to serve the purposes of the CWA and Rhode Island General Laws Chapter 46-12. The standards provide for the protection of the surface waters from pollutants so that the waters shall, where attainable, be fishable and swimmable, be available for all designated uses, taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and also taking into consideration their use and value for navigation, and thus assure protection of the public health, safety, welfare, a healthy economy and the environment.

1.28 Rhode Island Natural Heritage (Rhode Island General Law 20-37-2)

These Rhode Island statutes set out the legislative policy and definitions related to state endangered species law, including the definition of "animal" and what constitutes an "endangered species." By statute, commerce is strictly prohibited, as it is illegal to "buy, sell, offer for sale, store, transport, import, export, or otherwise traffic in any animal or plant or any part of any animal or plant whether living, dead, processed, manufactured, preserved, or raw if the animal or plant has been declared to be an endangered species by either the United States secretaries of the interior or commerce or the director of the Rhode Island Department of Environmental Management." Violation of the Act results in fines from $500-5,000 or up to one year imprisonment, or both.

Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

The table below identifies the principal federal and state laws and regulations that are applicable to the Proposed Action and describes briefly how compliance with these laws and regulations would be accomplished.

Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	*Status of Compliance*
National Environmental Policy Act (NEPA); Council on Environmental Quality (CEQ) NEPA implementing regulations; Navy procedures for Implementing NEPA	This Environmental Assessment (EA) has been prepared in accordance with NEPA and CEQ regulations implementing NEPA. Public participation and review are being conducted in compliance with NEPA.
Clean Air Act (CAA)	The air quality analysis in the Environmental Assessment (EA) concludes that proposed emissions would not create a major regional source of air pollutants or affect the current attainment status and would comply with all applicable state and regional air agency rules and regulations.
Clean Water Act (CWA)	The EA considers impacts on water quality. NOAA and the Navy are applying for both CWA Section 404 and 401 permits.
Rivers and Harbors Act	The EA addresses proposed structures in Coddington Cove. NOAA and the Navy are applying for a permit under Section 10 of the Rivers and Harbors Act.
Energy Independence and Security Act	The EA addresses stormwater in the proposed project areas and incorporates adequate stormwater controls into the site design to detain flows as close as possible to pre-development levels.
Coastal Zone Management Act (CZMA)	The Federal Consistency Determination for the Proposed Action considers impacts to land uses, water uses, and natural resources of the coastal zone.
National Historic Preservation Act (NHPA)	This EA considers impacts on cultural resources. The Navy is consulting with the Rhode Island State Historic Preservation Officer and other interested parties pursuant to Section 106 of the NHPA.
Endangered Species Act (ESA)	This EA considers impacts on species listed as threatened or endangered pursuant to this act. The Navy is consulting with NMFS pursuant to Section 7 of the ESA. There would be no effect to species under the purview of USFWS.
Magnuson-Stevens Fishery Conservation and Management Reauthorization Act	The EA considers impacts on fish and essential fish habitat. Pursuant to this act, NOAA and the Navy are consulting with NMFS regarding potential adverse impacts on essential fish habitat.
Marine Mammal Protection Act (MMPA)	The EA considers impacts to protected marine mammal species pursuant to this act. NOAA and the Navy are applying for an Incidental Harassment Authorization for the proposed in-water work.
Migratory Bird Treaty Act (MBTA)	The EA considers potential impacts on birds protected under this act.
Bald and Golden Eagle Protection	The EA considers potential impacts on eagles protected under this act.

Principal Federal and State Laws Applicable to the Proposed Action

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
Comprehensive Environmental Response and Liability Act (CERCLA)	The EA considers potential impacts on sites currently being managed under this act.
Emergency Planning and Community Right-to-Know Act (EPCRA)	The EA considers potential impacts on the surrounding community under this act.
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	The EA considers potential impacts on chemicals managed under this act.
Resource Conservation and Recovery Act (RCRA)	The EA considers potential impacts on hazardous wastes managed under this act.
Toxic Substances Control Act (TSCA)	The EA considers potential impacts toxic substances managed under this act.
Executive Order (EO) 11988, Floodplain Management	The EA considers potential impacts on floodplains and floodplain management.
EO 11990 Protection of Wetlands	The EA considers potential impacts on wetlands. There are no wetlands affected by the Proposed Action.
EO 12088, Federal Compliance with Pollution Control Standards	The EA considers necessary actions to ensure pollution control responsibilities are met.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations or low-income populations.
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	The EA considers the potential for disproportionate effects on children.
EO 13175, Consultation and Coordination with Indian Tribal Governments	The EA considers potential impacts on traditional cultural properties. NOAA consulted federally recognized tribes pursuant to this EO.
NOAA Administrative Order 216-6A	This EA has been prepared in accordance with NOAA NEPA procedures.
Rhode Island Pollutant Discharge Elimination System (Rhode Island General Law Chapter 46-12,42-17.1 & 42-35)	The EA considers impacts to surface waters as well as compliance requirements for stormwater management and sedimentation and erosion controls.
Rhode Island Water Quality Regulations (Rhode Island General Law Chapter 42-35 pursuant to Chapters 46-12 and 42-17.1 and Public Laws Chapters 09-198 and 09-199)	The EA considers impacts to surface waters and compliance requirements.
Rhode Island Natural Heritage (Rhode Island General Law 20-37-2)	The EA considers impacts to state rare and endangered species.

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Appendix B State Historic Preservation Officer Correspondence

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/073

Mr. Jeffery Emidy
Deputy State Historic Preservation Officer
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1209

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Mr. Emidy:

This letter is consulting with the Rhode Island State Historic Preservation Office (SHPO) in accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA), and the implementing regulations set forth at 36 Code of Federal Regulations (CFR) Part 800. National Oceanic and Atmospheric Administration (NOAA) is proposing an undertaking that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 2.

Proposed Undertaking:

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are berthed at separate facilities in Rhode Island. The HB is currently located at Pier 2 at NSNPT. Pier 2 does not meet NOAA requirements for this vessel because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX is currently located at commercial waterfront facilities at the Port of Davisville in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicts with adjacent commercial activities and long-term uncertainties exist due to probable time limitations on lease agreements. The remaining two vessels have yet to be determined but will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, North Carolina, or Mississippi.

The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 and 4 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

The APE includes two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District. The following are brief descriptions of the historic properties within the APE:

Quarters NB-1

Constructed in the mid-eighteenth century, Quarters NB-1 (Taylor-Chase-Smythe House) is a wood frame, two-story, clapboard house with a stone foundation and gable roof. It was listed on the National Register of Historic Places (NRHP) in 1989 for its association with the Chase family and for demonstrating, through a series of alterations to the dwelling, the history of this nineteenth-century rural family and its economic fortunes (Friedlander, Amy, and Bowie, John R., 1986). Ownership of the building was transferred from the Department of the Navy to the Northeast Housing LLC (now referred to as Balfour Beatty Communities, LLC); however, the Navy owns the land.

Destroyer Piers Historic District

The Destroyer Piers Historic District was determined in the 2020 report *Naval Station (NAVSTA) Newport Architectural Survey Update (1946-1968)* as eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. It also meets Criteria Consideration G, for properties that are less than 50 years old but that have achieved exceptional significance. The district has a non-contiguous boundary and encompasses the extant facilities where the Atlantic Cruiser-Destroyer Force was berthed and those resources that facilitated berthing activities. The historic district includes 10 resources, nine of which are contributing to the district and one that is non-contributing. The contributing resources including the two piers: Pier 1 and 2, the rock breakwater (S63), Pier 2 bulkhead (S33), and associated utility facilities that supported the operation of the piers (Building 394, 395, 396, 70U, and 71U). The period of significance of the historic district extends from 1955, the year that Pier 1 was constructed, to 1973, when the fleet's homeport was effectively moved from Newport, Rhode Island, to Norfolk, Virginia (Department of the Navy 2020).

Archaeological Resources

There are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance will occur.

Based on a review of available historic maps, aerials and nautical charts, the area of Coddington Cove has experienced decades of fill alternations and dredging. In the 1950s, land around the cove was built out by approximately 500 feet to support the T pier and its infrastructure. This infilling process continued through the 1960s and by the early 1970s the shoreline had reached its current configuration including two new piers. This suggest that the current shoreline configuration is approximately 500 feet further out into the cove than it would have been prior to the 1950s. Therefore, any potential terrestrial archaeological sites that once abutted the shoreline are located approximately 500 feet east of the current location. This places all of the Pier Landing Site within either this fill area or water with no potential impacts to terrestrial archaeological resources.

The fill alterations and dredging within Coddington Cove and areas adjacent to the existing shoreline and piers, have greatly impacted the historic and prehistoric landscape. As stated earlier the pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Below the water column (25 feet below datum), soils are comprised of loose silty sand with no structure. These sediments overlay the glacial gravel till (down to 36 feet below datum) that predate human occupation of the region. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact now submerged landform. Therefore there is no potential to impact archaeological resources associated with an intact submerged landform.

Building 11 Site currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

Traditional Cultural Properties
NOAA will be consulting with the three federally recognized Native American tribes, the Mashpee Wampanoag Tribe, Narragansett Indian Tribe and the Wampanoag Tribe of Gayhead Aquinnah to identify if there are any traditional cultural properties or any cultural or religious properties significant to the tribes located within the APE.

<u>Determination of Effect:</u>

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. Pier Landing and Building 11 sites are located within the view shed of Quarters NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties (Enclosure 5).

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

Pursuant to 36 CFR §800.5, NOAA has determined that the proposed Undertaking will result in a finding of no adverse effect on historic properties. We request your concurrence with our finding. In addition, NOAA is consulting with three federally recognized Native American Tribes, Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and Wampanoag Tribe of Gayhead Aquinnah, and the Northeast Housing LLC/Balfour Beatty Communities LLC (property owner of Quarters NB-1) regarding the proposed Undertaking and its potential effect on historic properties (Enclosure 6). We will forward any comments received from these parties.

Please contact me at mark.george@noaa.gov or (805) 982-3110 if you have any questions or require further information.

Sincerely,

GEORGE.MARK.S.1365873786 Digitally signed by GEORGE.MARK.S.1365873786 Date: 2022.06.15 09:57:23 -06'00'

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description
(4) Excerpt of Select Drawings (65%) and Renderings
(5) Photographs from the historic properties to the site showing existing views/settings
(6) Section 106 Correspondence

DEPARTMENT OF THE NAVY
NAVAL STATION NEWPORT
690 PEARY STREET
NEWPORT, RHODE ISLAND 02841-1522

IN REPLY REFER TO:

5090
Ser PRR4/166
03 Jun 22

Mr. Jeffery Emidy
Deputy State Historic Preservation Officer
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1209

SUBJECT: Relocation of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport (NSNPT), Newport, Rhode Island

Dear Mr. Emidy:

The Department of the Navy (Navy) has reviewed the cultural resources analysis contained in the National Oceanic and Atmospheric Administration (NOAA) letter to your office associated with the proposed relocation of NOAA Research Vessels at Naval Station Newport (NSNPT). The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b).

After the completion of the Section 106 consultation process by NOAA with your office, federally-recognized Native American tribes and Balfour Beatty Communities, LLC, on the proposed construction activities the Navy will issue NOAA a real estate agreement. The agreement will grant the rights to use the premises for ingress and egress to the property for a period of approximately 60 years. The Navy is coordinating with NOAA, which has the lead for the Section 106 consultations, and intends to utilize this same consultation to fulfil our requirements pursuant to the National Historic Preservation Act, as amended. If concurrence is received on the finding of no adverse effect on the proposed NOAA construction activities and the consultation is completed, the Navy will determine the proposed real estate agreement will be a no adverse effect in accordance with 36 CFR §800.5.

Please contact Becky Barlow at becky.e.barlow@navy.mil or (401) 841-7672 if you have any questions or require further information.

Sincerely,

J. R. McIVER
Captain, U.S. Navy
Commanding Officer

**For purposes of Section 106, the APE consists of the Coddington Cove area of NS Newport to include the water and the project areas that appear in yellow for Pier Landing Site and Building 11 Site.*

1. *Real Estate Agreement.*

A real estate use agreement will be executed between the Navy and NOAA to grant NOAA the rights to use the property and rights of ingress and egress to the property.

2. *Pier and Floating Small Boat Pier.*

A new four berth pier will be constructed that will be approximately 995 feet south of Pier 1 between the existing T-pier and the rock breakwater (Facility S44)(Enclosure 2) in Coddington Cove for the berthing of the HB and EX and two additional, unnamed, ships. Approximately 728-feet of pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a combination steel pipe-sheet pile wall with concrete facing and concrete cap constructed outboard of the existing bulkheads. The existing bulkheads (SF50 and portion of bulkhead with no facility number) will remain in place.

The new pre-cast and cast-in-place concrete pier will be approximately 62 feet wide and 587 feet long and will be accessed by a 28-foot wide by 524-foot long access trestle. The access trestle will span over two existing bulkheads: SF50 and portion of bulkhead with no facility number. A 20-foot wide and 66-foot long floating small boat pier will be constructed just north of the trestle (See Enclosure 4 for site plan, elevation, and sections).

The new pier and trestle will be pile-supported structures and will be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that will be connected to shore utilities. Fueling activities will be conducted using a tanker truck. Structural support piles for the new pier will consist of 120 steel pipe piles measuring 30 inches in diameter and 85 feet long. The piles will be driven into the cove bottom from the mudline to a depth of approximately -50 feet mean lower low water. Fender piles will be installed and will consist of 160, 16-inch diameter by 65-foot long steel pipe piles. Structural support piles for the trestle will consist of 38 steel pipe piles measuring 24 inches in diameter and 85 feet long. The piles will be driven to bedrock or a depth of 50 feet below mudline. Trestle and pier piles will be installed using a template. Once the pier or trestle piles are installed in the template, the template will be removed and relocated to the next section of pier / trestle construction. The use of the template will require the driving and removal of the H-piles approximately 50 times (100 piles). It is estimated that the installation of the support piles will occur within one calendar year with fender piles being installed in another year after the superstructure is largely complete.

The floating small boat pier will be constructed northwest of the main pier and trestle structures. The floating system will consist of a single heavy duty 19.7-foot by 65.6-foot concrete float and two, 80-foot long gangway segments. Access to the floating pier will be provided directly from land with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway will be supported by four, 24-inch diameter steel pipe piles. The small boat dock will be equipped with electrical shore power, lighting, communications, and potable water, but will not have fueling or sewage pump out capabilities.

A ten-foot high security fence will be placed at the entrance of the new pier with both vehicle and pedestrian access gates.

Dredging is not required to support the construction of the new pier.

3. *Shoreside and Support Facilities:*

The shoreside area (Pier Landing Site) will be developed with a new administration and warehouse building (approximately 22,182 square foot facility); a 43,560 SF exterior storage area; a 336 square foot, pre-fabricated hazardous material container; a 1,636 square foot boat repair building, and associated parking near the building, the exterior storage area, and at the Building 11 Site (Enclosure 4). A eight (8) foot high fence will be placed around the entirety of the Pier Landing Site and a ten (10) foot high security fence at the vehicle and pedestrian access gates to the site.

The administration and warehouse building will consist of a Concrete Masonry Unit construction with a prefinished metal panel veneer and painted concrete stem/foundation wall. The roof will be a high slope prefinished standing seam metal roof. A rooftop mechanical unit will be located on the low slope roof of the utilities section to the rear of the building and shielded by a louvered screen wall system. Canopies will be provided at the main entrances. The exterior color will be compatible with the industrial setting of Coddington Cove and the Destroyer

Piers Historic District. A paved loading dock area will be located on the north elevation of the warehouse portion of the building. The loading dock will consist of an elevated dock area for delivery truck loading/unloading and a concrete ramp. See Enclosure 4 for proposed elevations of the administration and warehouse building and renderings.

A 30-space parking lot will be located adjacent to the building and a separate, 45-space parking lot will be located north of the exterior storage area. The parking lots will contain pole mounted site lighting (Enclosure 4).

The 43,560 SF exterior storage area will be located on the northern side of the warehouse portion of the building but separated from the administration and warehouse building by the pier accessway, which connects the new pier to the existing Pier Access Road parallel to Burma Road. The exterior storage area will consist of a large paved area.

The exterior storage area will contain the following additional structures and auxiliary areas: four small boat tie-down locations on a concrete slabs, eight Conex boxes, a prefabricated hazardous materials container, a 300 SF boat wash down area, and an approximately 31 foot by 51 foot boat repair building. The boat repair building will be a 1,636 SF, single-bay, single-story pre-engineered metal building with a concrete slab/foundation. The north and south elevations will consist of a large roll-up door and a single pedestrian door. No fenestration on the east and west elevations. The roof system is a low slope prefinished standing seam metal roof (See Enclosure 4 for proposed elevations). The exterior wall system will be prefinished metal panel veneer. Exterior colors to be compatible with the associated Administration / Warehouse Building.

The new construction within the Pier Landing Site will include demolition of existing abandoned utilities and the foundation and wood piles of the former Building 42 and the removal of an existing transformer. An eight foot fence will be placed around the entirety of the Pier Landing Site to delineate the NOAA facility.

Building 11 Site area is located approximately one quarter mile east of Pier Landing Site between the parking lot serving Building 11 and the installation perimeter along Chases Lane. Building 11 Site will consist of a new parking lot of 50 spaces and pole mounted site lighting. The parking lot will be accessed by an existing road. A six-foot high chain link fence will be installed around the parking area and an automated vehicle and pedestrian gate will be installed at the entrance of the parking lot. Installation of electrical conduit will be necessary to support the parking lot lighting and automated gate. The ground disturbance associated with the installation of electrical lines will be confined to the construction limits of Building 11 Site and existing utility right-of-ways. For stormwater management, an underground detention system is proposed beneath the parking lot and the installation of an outlet control basin. The area is currently an open lawn space with remnants of either tennis or a basketball courts within the space proposed for the parking improvements (Enclosure 5). To support the construction of the new parking lot, the lawn, existing tennis/basketball courts, and non-historic memorial plaque and tree will be demolished/removed.

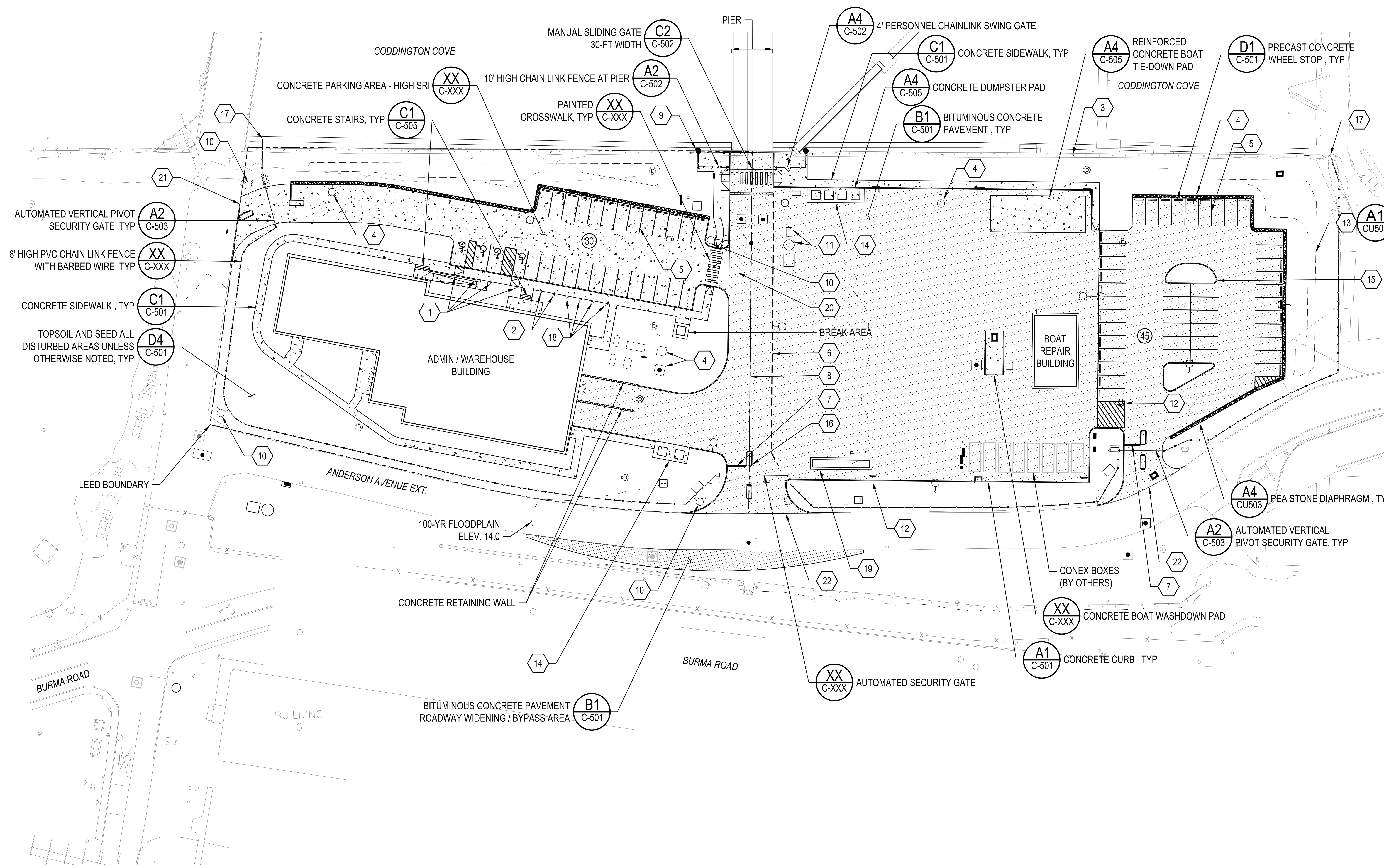
4. *Utility Connections*

Within the proposed site boundaries of the Pier Landing, new utility lines will be required to connect to existing utility systems such as natural gas, potable water, sanitary sewer, stormwater, electrical, communications and network. Ground disturbance associated with the utilities will be confined to the proposed construction limits at the Pier Landing and existing utility right-of-ways. Utility work will consist of: installing natural gas heating for the administration and warehouse building and the boat repair building; installing new potable water lines for the administration and warehouse building and boat wash down area; installing new sanitary sewer lines for the administration and warehouse building and the boat wash down area; construction of new lift stations near the administration and warehouse building; installation of traditional catch basins and storm sewer collection networks for stormwater management; installation of new fire hydrants along the perimeter of the administration and warehouse building; and installation of electrical lines.

Associated utilities for the new pier will consist of a new potable water line to connect to the new potable water line servicing the buildings at the base of the pier; a new sanitary sewer line and construction of a new lift station near the pier; installation of a fire hydrant adjacent to the pier; and installation of electrical lines. The utilities will be connected at the shore near the trestle and will be located on the pier through a concrete conduit installed on either side of the pier.

5. *Construction Support*

The construction contractor will utilize existing transportation routes and roads to and from the pier area, Pier Landing Site and Building 11 Site. At this time, laydown and storage areas are not identified. However, the proposed location of laydown and storage areas will utilize existing paved surfaces and/or areas that are not considered archaeologically sensitive or contain archaeological resources/sites.



A1 PIER LANDING - OVERALL SITE PLAN

SCALE: 1" = 40'

Relocation of NOAA Research Vessels at Naval Station Newport,
Newport County, Rhode Island
Enclosure 4: Select Drawings and Renderings

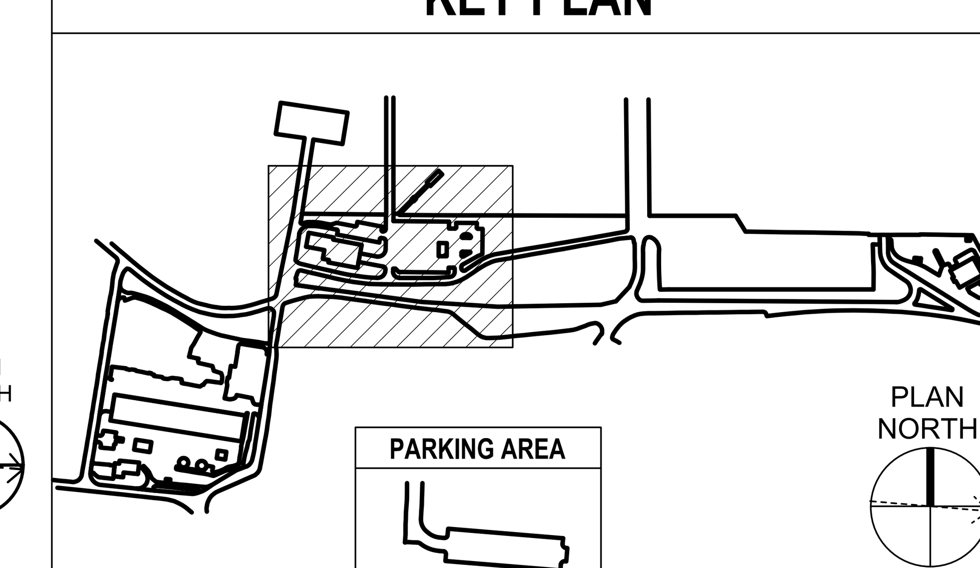
SHEET NOTES

1. SEE DRAWING C-001 FOR LEGEND, ABBREVIATIONS & GENERAL NOTES.
2. SEE DRAWING L-101 FOR LANDSCAPING LAYOUT AND SURFACE TREATMENTS NOT DETAILED ON THIS PLAN.

SHEET KEYNOTES

1. PROVIDE "ACCESSIBLE PARKING" SIGNS AT ALL ACCESSIBLE PARKING LOCATIONS.
2. PROVIDE "ELECTRIC VEHICLE PARKING/CHARGING STATION" SIGN.
3. PROVIDE "AUTHORIZED ACCESS ONLY" SIGNS ALONG BUILKHEAD, EQUALLY SPACED 75'-100' MAXIMUM, TYP.
4. SEE PLAN ELECTRICAL PLANS FOR ELECTRICAL EQUIPMENT AND LIGHTING LAYOUT AND DETAILS, TYP.
5. PROVIDE 4" WIDE WHITE PAVEMENT MARKINGS FOR ALL PARKING LOT STRIPING, TYP.
6. PROVIDE 8" WIDE WHITE DOTTED LINE (2 FT. LINE AND 4 FT. SPACE) FOR DRIVE AISLE AND STOCKPILE/LAYDOWN AREA SEPARATION.
7. PROVIDE 12" WIDE WHITE STOP BAR.
8. PROVIDE 4" WIDE YELLOW CENTERLINE MARKING.
9. PROVIDE GALVANIZED STEEL RAZOR WIRE COILED FOR ENTIRE HEIGHT OF CHAINLINK FENCE. ATTACH RAZOR WIRE TO END POST WITH GALVANIZED POST TIES (TYP, BOTH SIDES OF PIER).
10. FIRE HYDRANT. SEE PLAN CU104, TYP.
11. SSWR STRUCTURE. SEE PLAN CU105, TYP.
12. DRAINAGE STRUCTURE. SEE PLAN CU102, TYP.
13. STORMWATER BIORETENTION FILTER BASIN. SEE PLAN CU-101 FOR GRADING, TYP.
14. CONCRETE DUMPSTER PAD AND ENCLOSURE, SEE PLAN A-461 FOR DETAILS. DUMPSTER BY OTHERS.
15. LANDSCAPED ISLAND WITH CONCRETE CURBING, TYP.
16. CONCRETE ISLAND WITH CONCRETE CURBING FOR AUTOMATED SECURITY GATE READER, TYP.
17. LIMIT OF 8' HEIGHT CHAIN LINK FENCE AT BULKHEAD.
18. PROVIDE "RESERVED PARKING - LOW EMITTING & FUEL EFFICIENT VEHICLES ONLY" SIGN.
19. HAZARDOUS MATERIAL BUILDING. SEE ARCHITECTURAL PLANS.
20. WATER STRUCTURE, SEE PLAN CU104.
21. LIMIT OF CONCRETE PARKING AREA. SAWCUT AND MATCH EXISTING ROADWAY FLUSH.
22. LIMIT OF BITUMINOUS CONCRETE DRIVEWAY. SAWCUT MATCH EXISTING ROADWAY FLUSH.

KEY PLAN



SYM	DESCRIPTION	DATE	APPR
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

PRELIMINARY NOT FOR CONSTRUCTION

MN+ EMCD Joint Venture

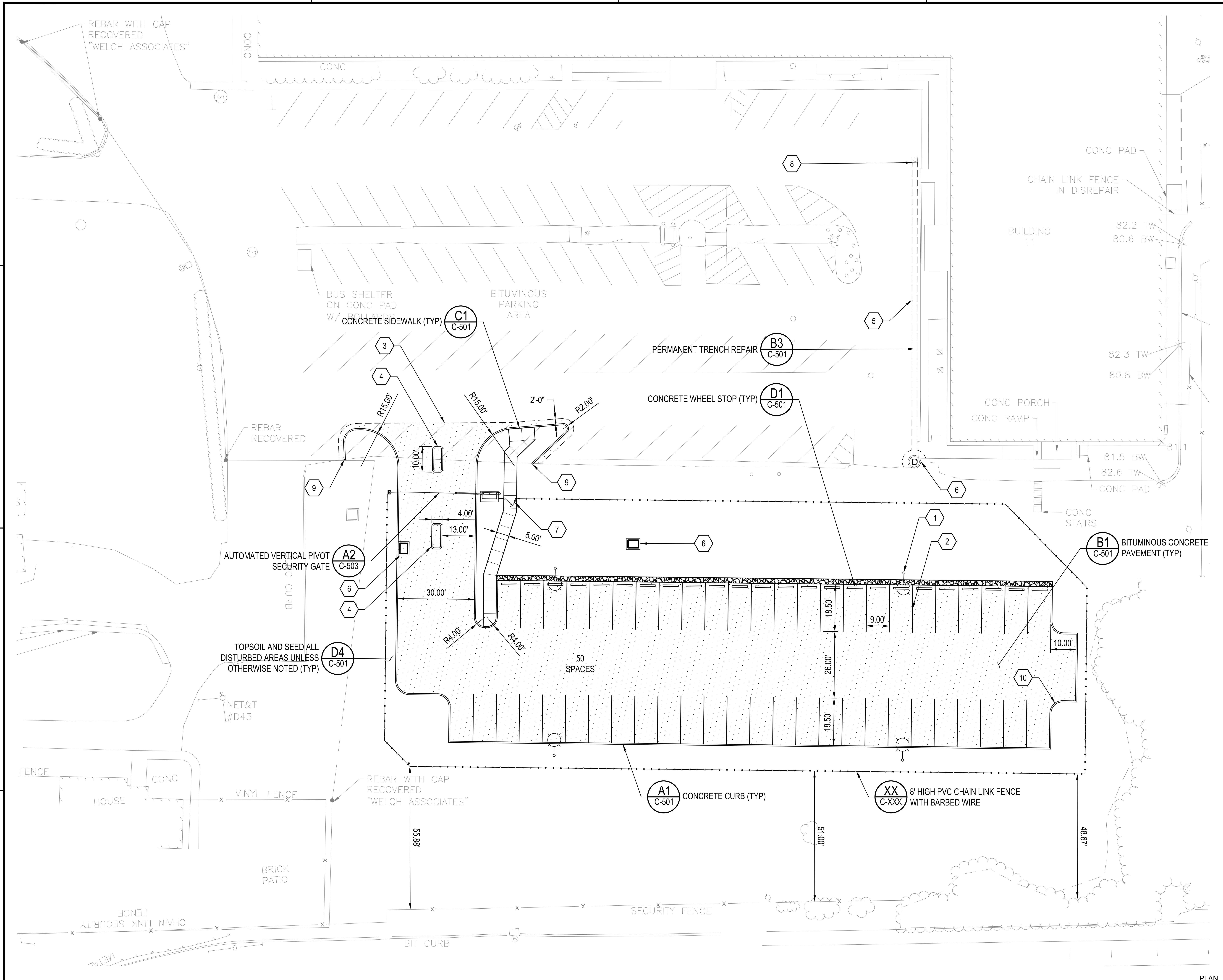
DES KPG DRW KPG CHK PJK

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
PIER LANDING - OVERALL SITE PLAN

EPROJECT NO.: 1562331

NAVFAC DRAWING NO. -

C-101



A1 **BUILDING 11 PARKING AREA - SITE PLAN**

SCALE: 1" = 20'

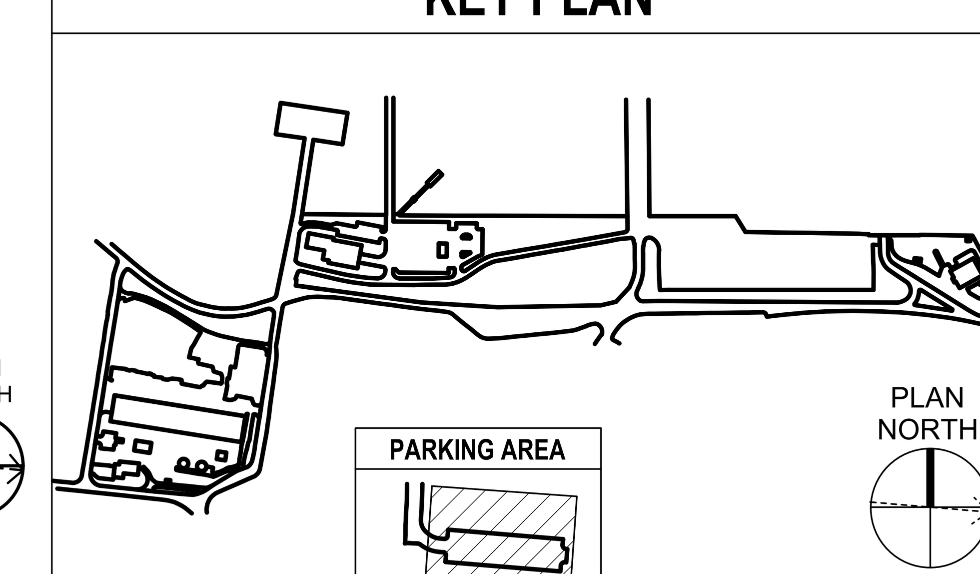
SHEET NOTES

1. SEE DRAWING C-001 FOR LEGEND, ABBREVIATIONS & GENERAL NOTES.
2. SEE DRAWING L-102 FOR LANDSCAPING LAYOUT AND SURFACE TREATMENTS NOT DETAILED ON THIS PLAN.

SHEET KEYNOTES

1. SEE PLAN ELECTRICAL PLANS FOR ELECTRICAL EQUIPMENT LAYOUT AND DETAILS, TYP.
2. PROVIDE 4" WIDE WHITE PAVEMENT MARKINGS FOR ALL PARKING LOT STRIPING, TYP.
3. LIMIT OF BITUMINOUS CONCRETE DRIVEWAY. SAWCUT AND MATCH EXISTING PAVEMENT FLUSH.
4. CONCRETE ISLAND WITH CONCRETE CURBING FOR AUTOMATED SECURITY GATE READER.
5. SAWCUT FOR UTILITY INSTALLATION.
6. DRAINAGE STRUCTURE. SEE PLAN CU103, TYP.
7. PROVIDE 4' PERSONNEL CHAIN LINK SWING GATE.
8. DRAINAGE CONNECTION. SEE PLAN CU103.
9. LIMIT OF CONCRETE CURB AT EDGE OF EXISTING PAVEMENT.
10. CURB OR EDGE OF PAVEMENT RADII SHALL BE 5', UNLESS OTHERWISE NOTED, TYP.

KEY PLAN



SYM	DESCRIPTION	DATE	APPR
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+EMCD Joint Venture

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES KPG DRW KPG CHK PJK

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND - MID-ATLANTIC
MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
BUILDING 11 PARKING AREA - SITE PLAN

SCALE:

EPROJECT NO.: 1562331

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. -

SHEET - OF

C-104

DRAWFORM REVISION: 25 AUG 2020

ELEVATION MATERIAL LEGEND

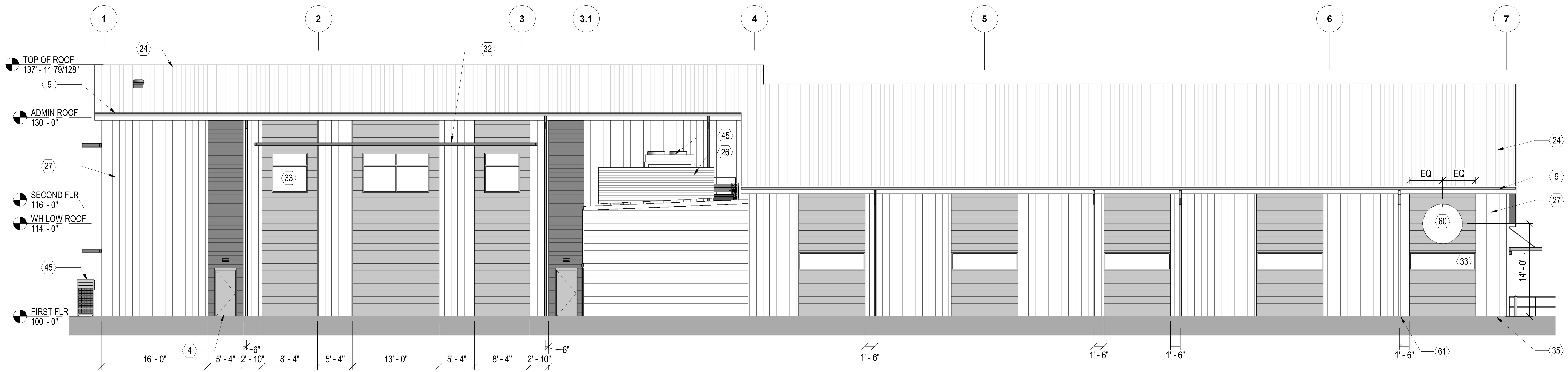
CREAM PREFINISHED ALUM METAL PANEL IAP WATERFRONT DISTRICT BODY 1, FEDERAL STANDARD 37778	
BROWN PREFINISHED ALUM METAL PANEL IAP WATERFRONT DISTRICT BODY 3, FEDERAL STANDARD 26360	
BLUE PREFINISHED ALUM METAL PANEL IAP WATERFRONT DISTRICT ACCENT, FEDERAL STANDARD 35109	

SHEET KEYNOTES

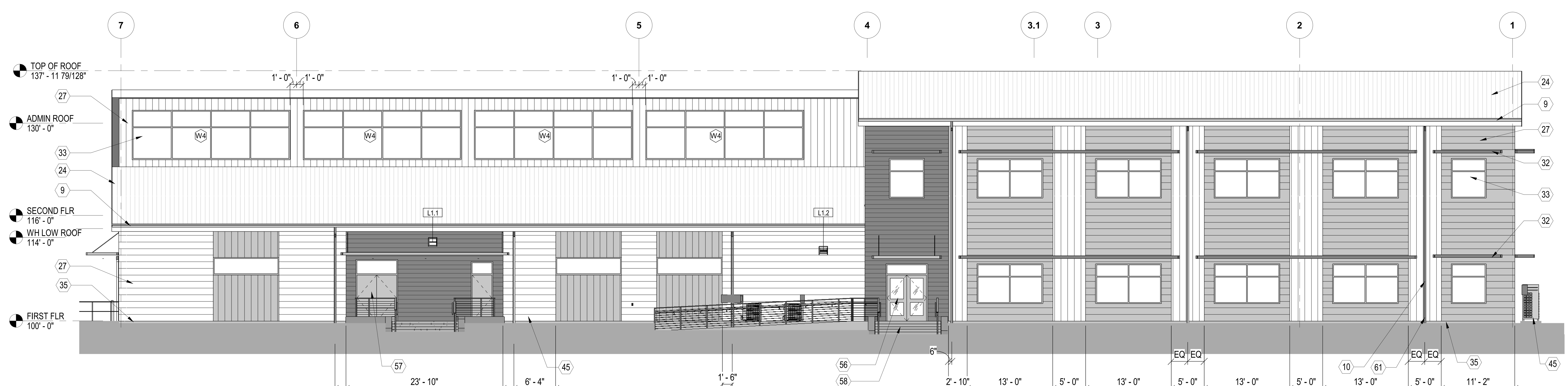
4	INSULATED METAL PERSONNEL DOOR
9	PREFINISHED METAL GUTTER, SIZED PER DRAINAGE CALC ON A-144
10	PREFINISHED METAL DOWNSPOUT, SIZED PER DRAINAGE CALC ON A-170, ROOF DRAINAGE TO EXTEND BELOW GRADE TO STORMWATER SYSTEM, RE: CIVIL DRAWINGS
24	PREFINISHED HYDROSTATIC STANDING SEAM METAL ROOF
26	PREFINISHED ALUM LOUVERED SCREEN WALL, RE STRUCT FOR FRAMING. COLOR TO MATCH 'BODY 1' PER ELEVATION MATERIAL LEGEND.
27	PREFINISHED ALUM METAL PANEL W/ REVEALS ON THERMALLY BROKEN FURRING. FURRING MUST BE DESIGNED AND ENGINEERED BY MTL PANEL SUPPLIER TO MEET LOAD CRITERIA AND PANEL ORIENTATION.
32	PREFINISHED ALUM LOUVERED SUNSHADE

SHEET KEYNOTES

33	PREFINISHED ALUM THERMALLY BROKEN WINDOW WITH LOW-E INSULATED LAMINATED GLAZING, UNLESS OTHERWISE NOTED
35	CONCRETE FOUNDATION WALL, RE: STRUCT DRAWINGS, PAINT EXPOSED FACE, COLOR TO MATCH 'BODY 3' PER ELEVATION MATERIAL LEGEND
45	MECH EQUIPMENT, RE: MECH DRAWINGS
56	GLAZED ALUM STOREFRONT DOOR WITH OVERHEAD TRANSOM
57	INSULATED METAL PERSONNEL DOOR WITH OVERHEAD TRANSOM
58	CONCRETE PLATFORM AND ENTRANCE WITH MTL GUARDRAIL / HANDRAILS
60	EXTERIOR SIGNAGE, REFER TO B2/A-756
61	CAST IRON DOWNSPOUT BOOT, TYP AT ALL DOWNSPOUTS



B1 BLDG ELEVATION - SOUTH
1/8" = 1'-0"



A1 BLDG ELEVATION - NORTH
1/8" = 1'-0"

SYM	DESCRIPTION	DATE	APPR
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+EMcD Joint Venture

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JMD | DRW SF | CHK EV

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC
NAVAL STATION NORFOLK - NORFOLK, VA
MIDLANT DCBL

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

ADMIN / WAREHOUSE - SOUTH AND NORTH ELEVATIONS

SCALE: AS NOTED

EPROJECT NO.: 1562331

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.

SHEET OF

A-241

DRAWFORM REVISION: 25 AUGUST 2020

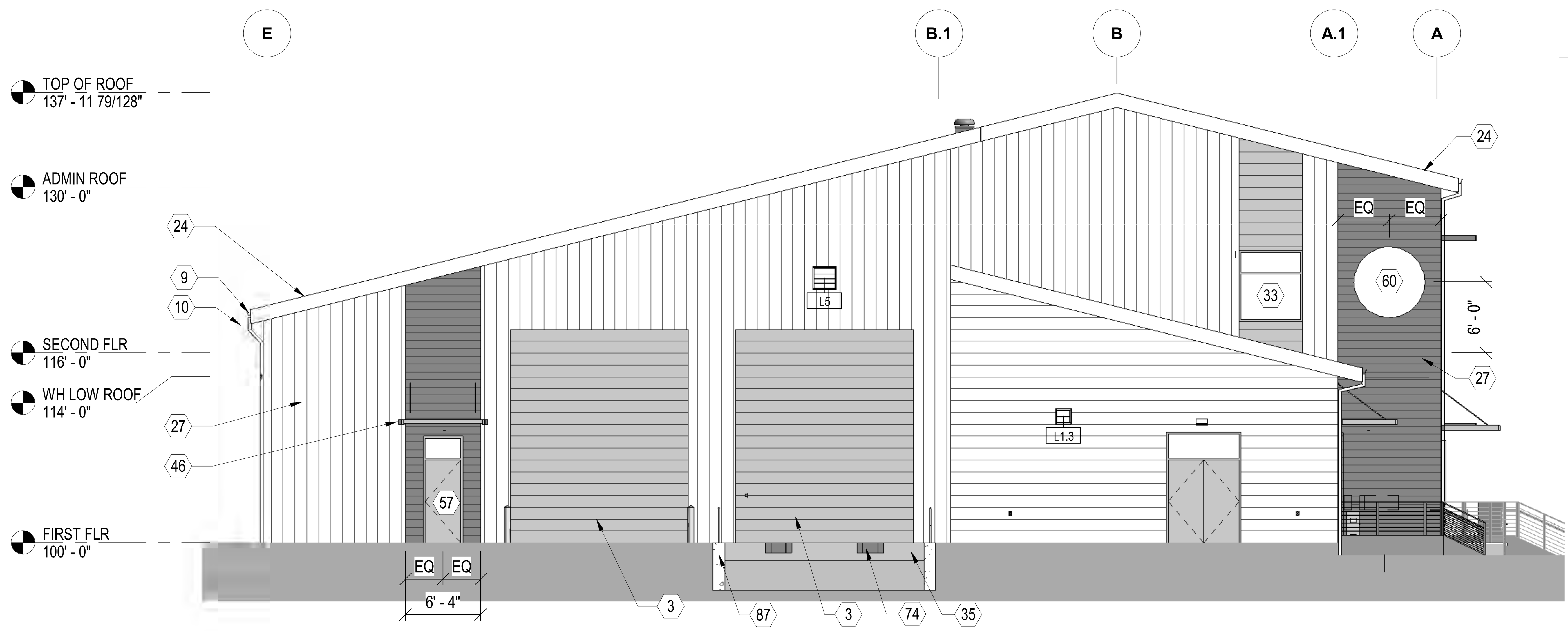
1	2	3	4	5

ELEVATION MATERIAL LEGEND

(swatch)	CREAM PREFINISHED ALUM METAL PANEL IAP WATERFRONT DISTRICT BODY 1, FEDERAL STANDARD 37778
(swatch)	BROWN PREFINISHED ALUM METAL PANEL IAP WATERFRONT DISTRICT BODY 3, FEDERAL STANDARD 26360
(swatch)	BLUE PREFINISHED ALUM METAL PANEL IAP WATERFRONT DISTRICT ACCENT, FEDERAL STANDARD 35109

SHEET KEYNOTES

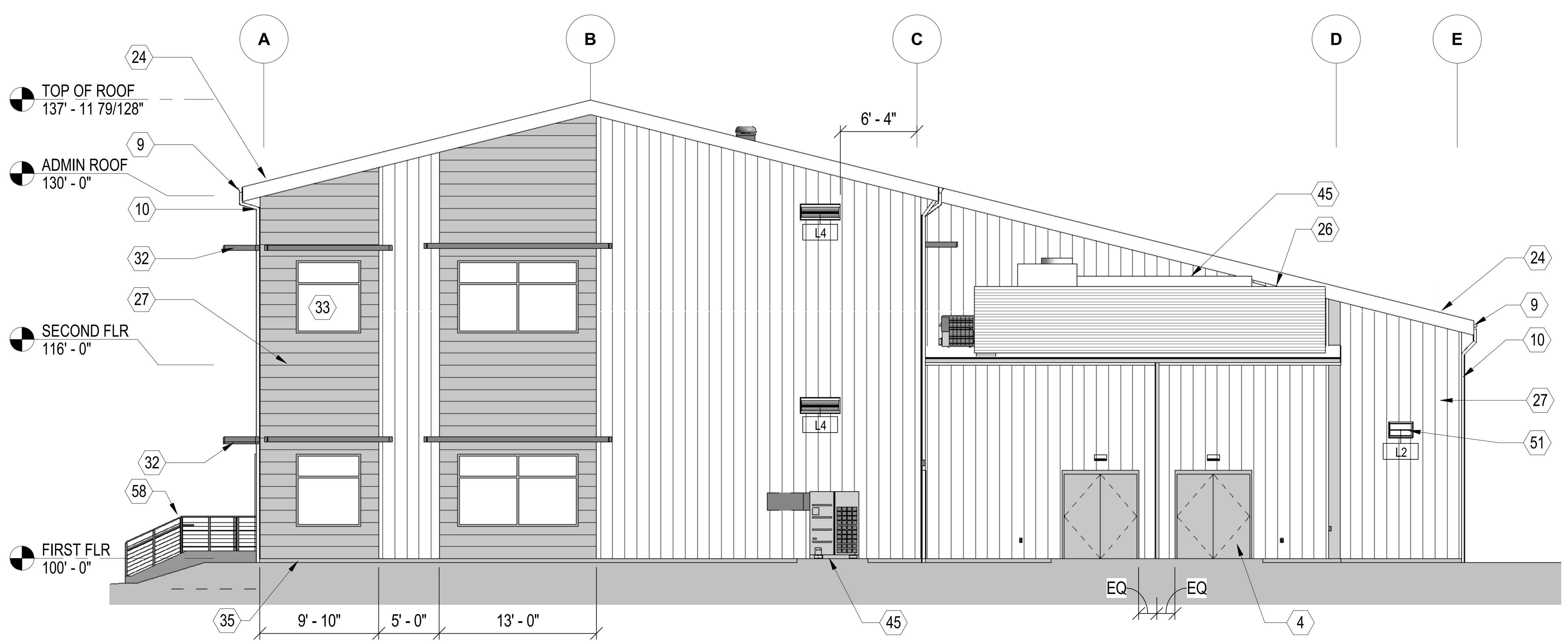
3	PREFINISHED INSULATED OVERHEAD COILING METAL DOOR
4	INSULATED METAL PERSONNEL DOOR
9	PREFINISHED METAL GUTTER, SIZED PER DRAINAGE CALC ON A-144
10	PREFINISHED METAL DOWNSPOUT, SIZED PER DRAINAGE CALC ON A-170, ROOF DRAINAGE TO EXTEND BELOW GRADE TO STORMWATER SYSTEM, RE: CIVIL DRAWINGS
24	PREFINISHED HYDROSTATIC STANDING SEAM METAL ROOF
26	PREFINISHED ALUM LOUVERED SCREEN WALL, RE STRUCT FOR FRAMING. COLOR TO MATCH 'BODY 1' PER ELEVATION MATERIAL LEGEND.
27	PREFINISHED ALUM METAL PANEL W/ REVEALS ON THERMALLY BROKEN FURRING. FURRING MUST BE DESIGNED AND ENGINEERED BY MTL PANEL SUPPLIER TO MEET LOAD CRITERIA AND PANEL ORIENTATION.
32	PREFINISHED ALUM LOUVERED SUNSHADE
33	PREFINISHED ALUM THERMALLY BROKEN WINDOW WITH LOW-E INSULATED LAMINATED GLAZING, UNLESS OTHERWISE NOTED
35	CONCRETE FOUNDATION WALL, RE: STRUCT DRAWINGS, PAINT EXPOSED FACE, COLOR TO MATCH 'BODY 3' PER ELEVATION MATERIAL LEGEND
45	MECH EQUIPMENT, RE: MECH DRAWINGS
46	SELF DRAINING PREFABRICATED PREFINISHED ALUM CANOPY; UON CENTER ON DOOR BELOW, 5'-0" DEEP AND MOUNTED AT 10'-0" ABOVE FIRST FLOOR
51	PREFINISHED MECHANICAL LOUVER
57	INSULATED METAL PERSONNEL DOOR WITH OVERHEAD TRANSOM
58	CONCRETE PLATFORM AND ENTRANCE WITH MTL GUARDRAIL / HANDRAILS
60	EXTERIOR SIGNAGE, REFER TO B2/A-756
74	RUBBER DOCK BUMPER
87	40' LONG RETAINING WALL, RE: STRUCT DWGS



C1 BLDG ELEVATION - EAST

1/8" = 1'-0"

0' 4' 8' 16'



A1 BLDG ELEVATION - WEST

1/8" = 1'-0"

0' 4' 8' 16'

EXTERIOR MATERIAL LEGEND

SHEET KEY NOTE	DESCRIPTION	MANUFACTURER	MODEL/COLOR
4	STEEL DOORS AND FRAME	---	
3	PREFINISHED METAL COILING DOORS		
27	PREFINISHED METAL PANEL VENEER		
	EAVE / RAKE TRIM		
24	PREFINISHED STANDING SEAM METAL ROOF	GARLANDS	
9	PREFINISHED ALUMINUM GUTTER	GARLANDS	
10	PREFINISHED ALUMINUM DOWNSPOUT		
33	PREFINISHED ALUMINUM WINDOW	KAWNEER	ALUMINUM MILL FINISH
56	PREFINISHED ALUMINUM STOREFRONT		
32	PREFINISHED ALUMINUM SUNSHADE		
26	PREFINISHED ALUMINUM MECHANICAL SCREEN WALL		
51	PREFINISHED ALUMINUM MECHANICAL LOUVERS		

SYM	DESCRIPTION	DATE	APPR
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+ EMcD Joint Venture

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JMD DRW SF CHK EV

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC
MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
ADMIN / WAREHOUSE - EAST AND WEST ELEVATIONS

SCALE: AS NOTED

EPROJECT NO.: 1562331

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.

SHEET OF

A-242

SHEET KEYNOTES

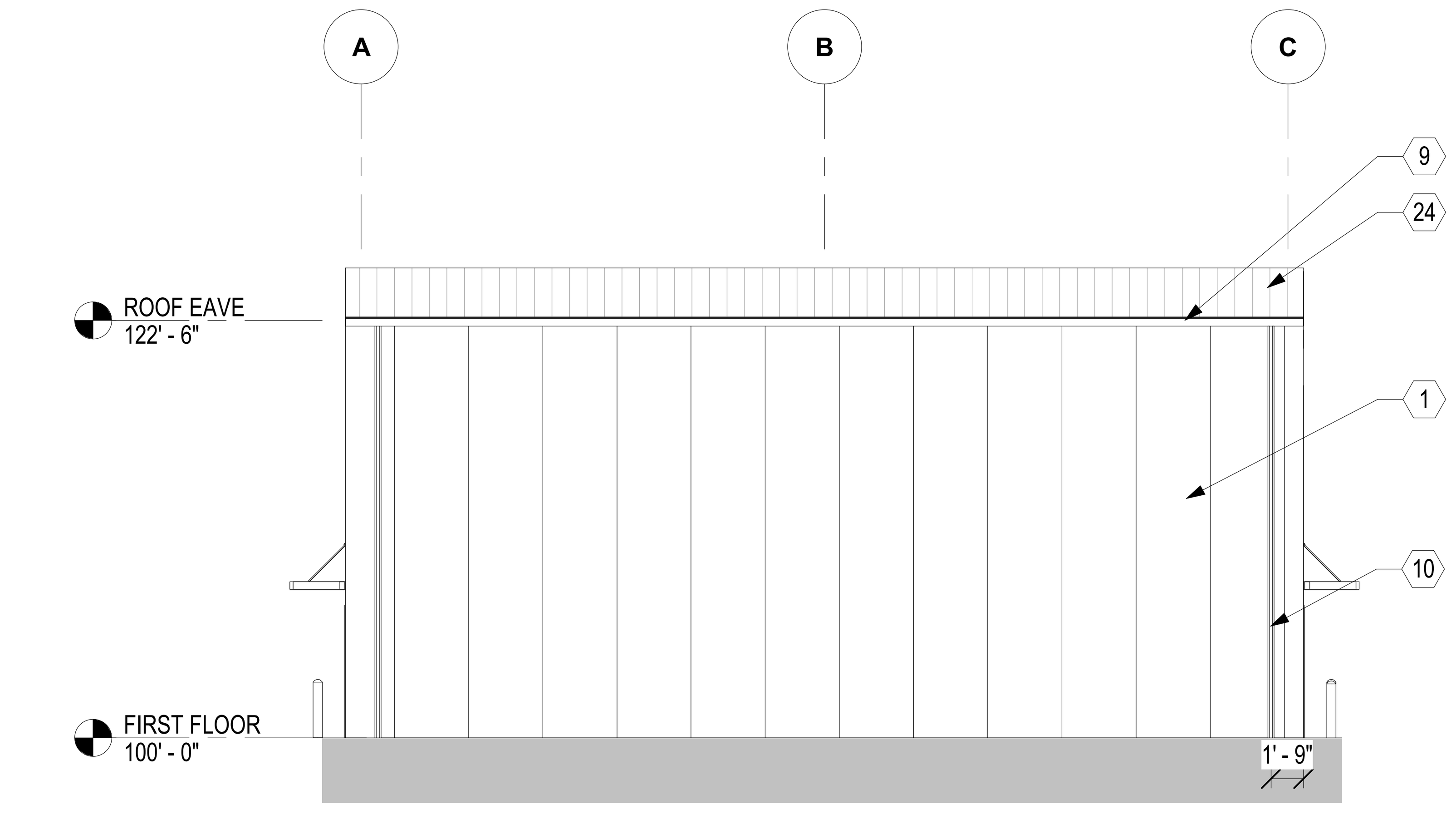
1	PREFINISHED INSULATED METAL WALL PANEL ON PRE-ENGINEERED GIRTS, MIN R-9.8
3	PREFINISHED INSULATED OVERHEAD COILING METAL DOOR
4	INSULATED METAL PERSONNEL DOOR
5	PREFINISHED METAL FASCIA
9	PREFINISHED METAL GUTTER, SIZED PER DRAINAGE CALC ON A-144
10	PREFINISHED METAL DOWNSPOUT, SIZED PER DRAINAGE CALC ON A-170, ROOF DRAINAGE TO EXTEND BELOW GRADE TO STORMWATER SYSTEM, RE: CIVIL DRAWINGS
24	PREFINISHED HYDROSTATIC STANDING SEAM METAL ROOF
91	SELF DRAINING PREFABRICATED PREFINISHED ALUM CANOPY; UNO CENTER ON DOOR BELOW, 3'-0" DEEP AND MOUNTED AT 8'-0" ABOVE FIRST FLOOR. CANOPY SUPPORTS PER METAL BUILDING SYSTEM SUPPLIER.

ELEVATION MATERIAL LEGEND

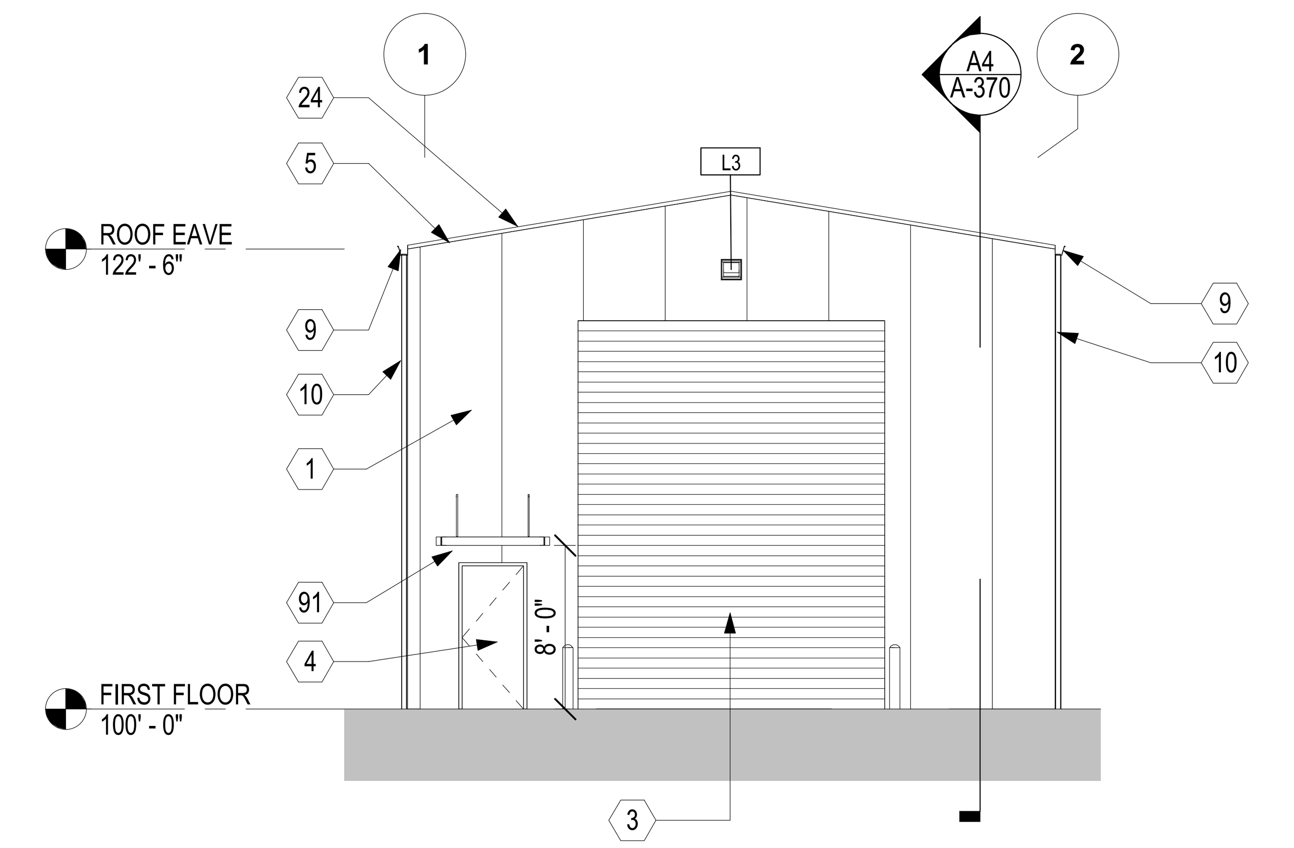
CREAM PREFINISHED ALUM METAL PANEL
IAP WATERFRONT DISTRICT
BODY 1, FEDERAL STANDARD 37778

BROWN PREFINISHED ALUM METAL PANEL
IAP WATERFRONT DISTRICT
BODY 3, FEDERAL STANDARD 26360

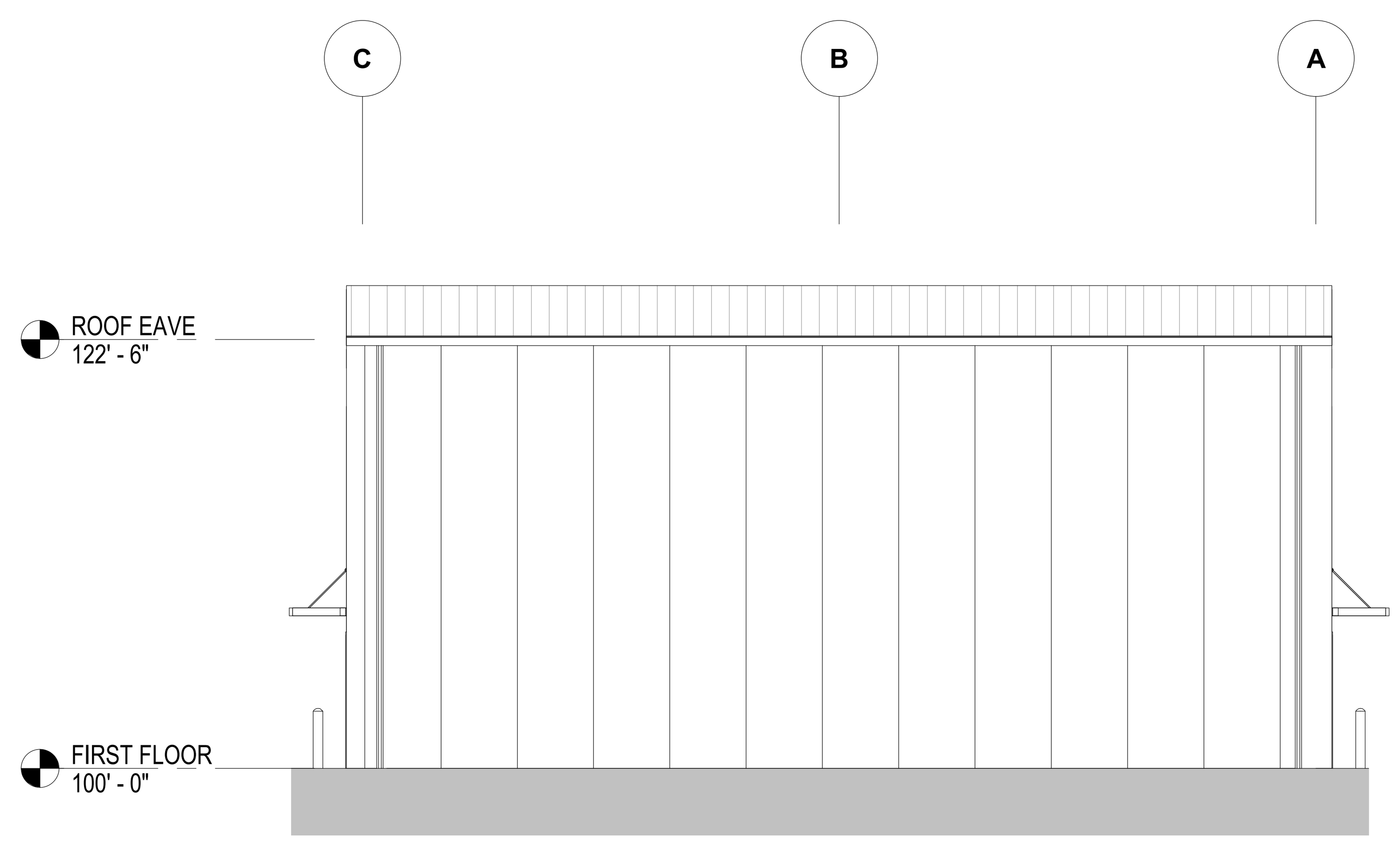
BLUE PREFINISHED ALUM METAL PANEL
IAP WATERFRONT DISTRICT
ACCENT, FEDERAL STANDARD 35109



C1 **ELEVATION - EAST**
1/8" = 1'-0"
0' 4' 8' 16'

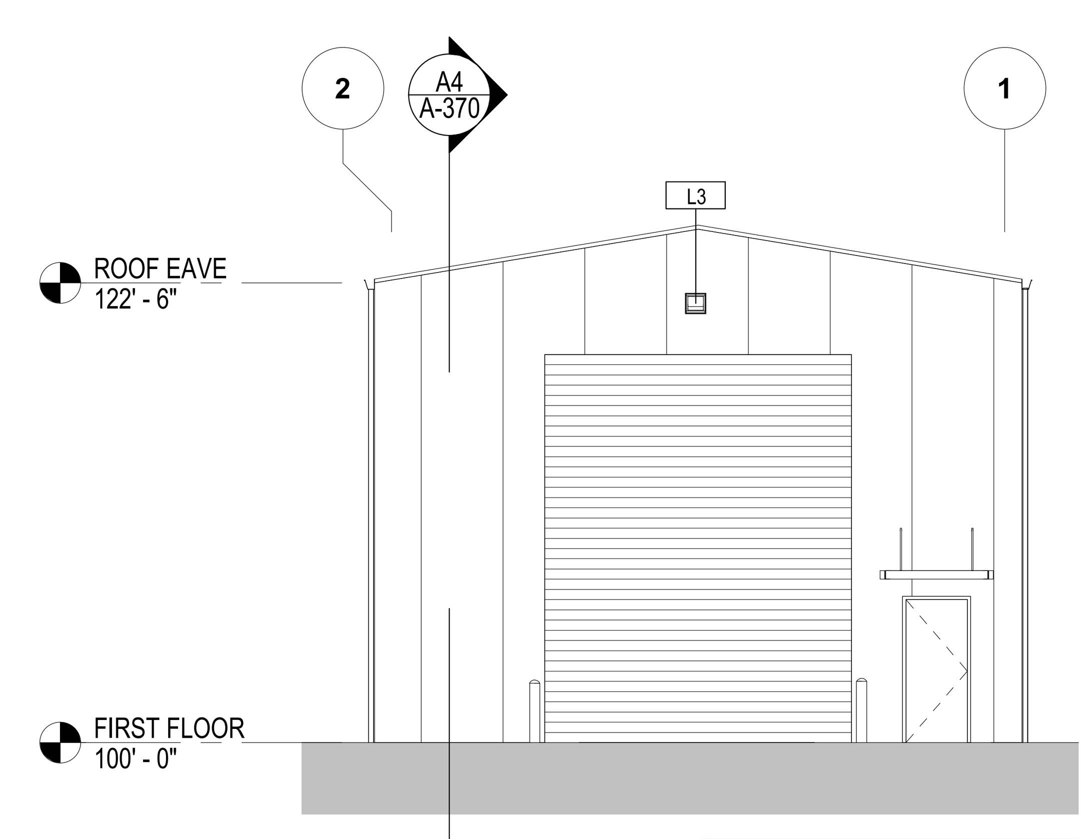


C2 **ELEVATION - SOUTH**
1/8" = 1'-0"
0' 4' 8' 16'



SEE ELEVATION C1/A-270 FOR TYPICAL NOTES

A1 **ELEVATION - WEST**
1/8" = 1'-0"
0' 4' 8' 16'



SEE ELEVATION C3/A-270 FOR TYPICAL NOTES

A2 **ELEVATION - NORTH**
1/8" = 1'-0"
0' 4' 8' 16'

EXTERIOR MATERIAL LEGEND

SHEET KEY NOTE	DESCRIPTION	MANUFACTURER	MODEL/COLOR
4	STEEL DOORS AND FRAME	---	
3	PREFINISHED METAL COILING DOORS		
27	PREFINISHED METAL PANEL VENEER		
	EAVE / RAKE TRIM		
24	PREFINISHED STANDING SEAM METAL ROOF	GARLANDS	
9	PREFINISHED ALUMINUM GUTTER	GARLANDS	ALUMINUM MILL FINISH
10	PREFINISHED ALUMINUM DOWNSPOUT		
51/ L3	PREFINISHED ALUMINUM MECHANICAL LOUVER		

SYM	DESCRIPTION	DATE	APPR
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

SEAL

MN+EMcD Joint Venture

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JMD | DRW SF | CHK EV

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

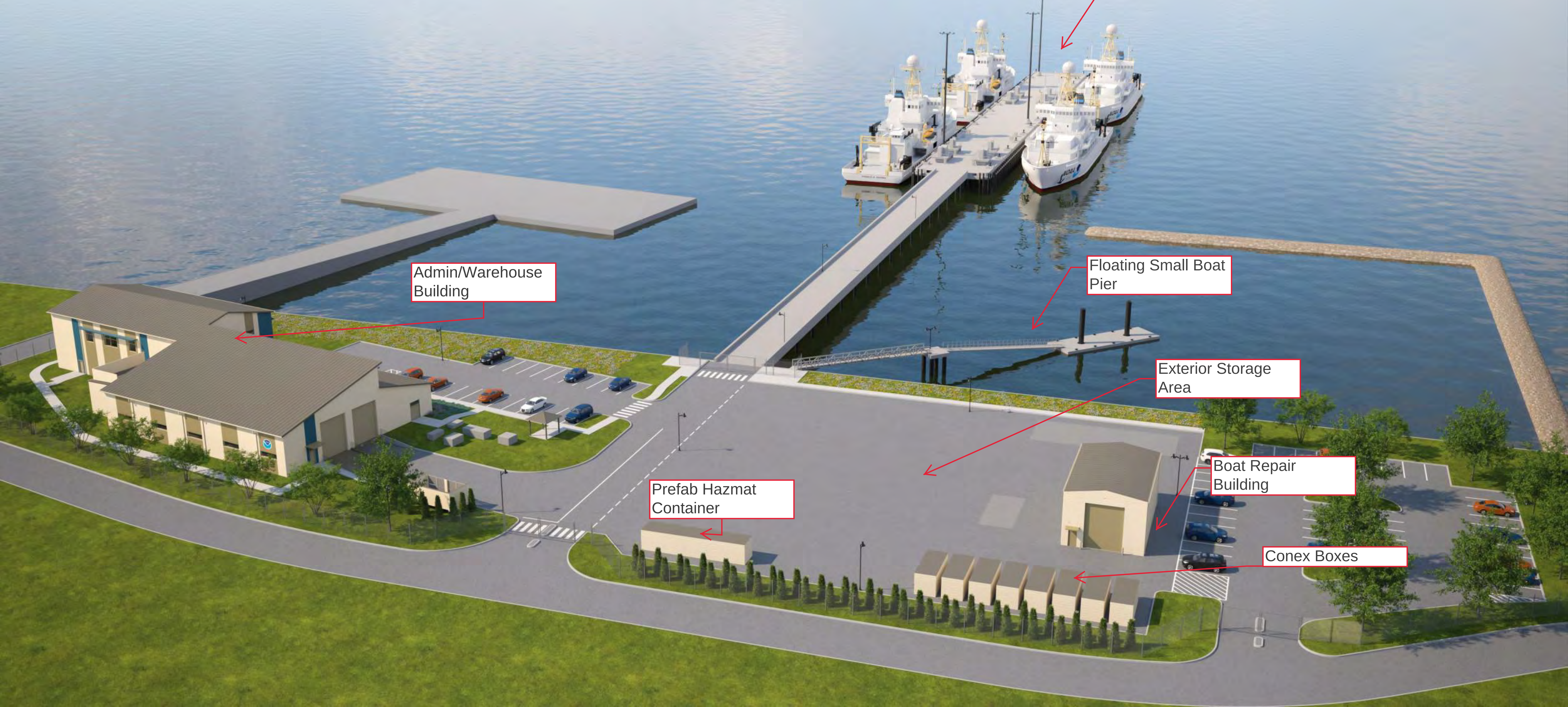
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
BOAT REPAIR - ELEVATIONS

SCALE: AS NOTED
EPROJECT NO.: 1562331
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
SHEET OF

A-270

DRAWFORM REVISION: 25 AUGUST 2020

Renderings to provide visual of the new Pier Landing Site.
Subject to change related to exact locations, and design details.



Renderings to provide visual of the new Pier Landing Site.
Subject to change related to exact locations, and design details.

Administration/Warehouse Building, Main Elevation

Figure 1. Photo Key (general location of photographs); not to scale

Photo 1. Pier Landing Site looking south

Photo 2. Pier Landing Site looking west towards T-pier

Photo 3. Pier Landing Site looking northwest towards Pier 2

Photo 4. Pier Landing Site looking north towards the Destroyer Pier Historic District

Photo 5. Pier Landing Site looking northeast

Photo 6. Building 11 Site looking north

Photo 7. Building 11 Site. View of former basketball/tennis courts looking north

Photo 8. Building 11 Site looking south towards Quarter NB-1. Quarters NB-1 not visible in photograph.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/072

Mr. Edward T. Lopes
Balfour Beatty Communities, Navy Northeast
Project Coordinator
8 Constitution Avenue
Middletown, RI 02842

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Mr. Lopes:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to solicit input from the public and interested parties with regards to identification of historic properties and ways to avoid, minimize or mitigate effects to historic properties. I am writing to notify your organization of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any concerns you may have related to this Undertaking and in particular to historic property, Quarters NB-1, currently owned by your organization. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 1.

Proposed Undertaking:

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are berthed at separate facilities in Rhode Island. The HB is currently located at Pier 2 at NSNPT. Pier 2 does not meet NOAA requirements for this vessel because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX is currently located at commercial waterfront facilities at the Port of Davisville in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicts with adjacent commercial activities and long-term uncertainties exist due to probable time limitations on lease agreements. The remaining two vessels have yet to be determined but will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, North Carolina, or Mississippi.

The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

The APE includes two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District. Quarters NB-1 is a mid-eighteenth century house that is listed on the National Register of Historic Places (NRHP), and was transferred from the Department of Navy to your organization. The Destroyer Piers Historic District is eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. In terms of archaeological resources, there are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance will occur.

Determination of Effect:

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. The Pier Landing and Building 11 Sites are located within the view shed of Quarters NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties.

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

For your awareness, NOAA has initiated consultation with the Rhode Island State Historic Preservation Office based on the determination of a no adverse effect on historic properties. We appreciate your attention to this matter, and look forward to receiving any comments or concerns regarding historic properties that might be affected by the proposed action. Accordingly, we invite your comments on the proposed action within 30 calendar days of confirmed receipt of this letter. In the event we do not receive comments within 30 calendar days upon your receipt of this letter, we will assume you have no comment and would like not to participate in this consultation.

Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description

Copy to: Naval Station Newport Commanding Officer

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/075

Ms. Bettina Washington
Wampanoag Tribe of Gay Head Aquinnah
Tribal Historic Preservation Office
20 Black Brook Road
Aquinnah, MA 02353-1546

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Ms. Washington:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to consult with any federally recognized Indian tribe that might attach religious and cultural significance to historic properties or have identified traditional cultural properties that may be affected by an undertaking. I am writing to notify your tribe of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any historic properties that are of religious and cultural significance to your tribe within, or in the vicinity of, the proposed location that may be affected by this Undertaking. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to

use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 1.

Proposed Undertaking:

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are berthed at separate facilities in Rhode Island. The HB is currently located at Pier 2 at NSNPT. Pier 2 does not meet NOAA requirements for this vessel because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX is currently located at commercial waterfront facilities at the Port of Davisville in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicts with adjacent commercial activities and long-term uncertainties exist due to probable time limitations on lease agreements. The remaining two vessels have yet to be determined but will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, North Carolina, or Mississippi.

The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

At this time, NOAA identified two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District, within the APE. Quarters NB-1 is a mid-eighteenth century house that is listed on the National Register of Historic Places (NRHP). The Destroyer Piers Historic District is eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. In terms of archaeological resources, there are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance is expected to occur. Based on a review of available historic maps, aerials and nautical charts, the area of Coddington Cove has experienced decades of fill alternations and dredging. In the 1950s, land around the cove was built out by approximately 500 feet to support the T pier and its infrastructure. This infilling process continued through the 1960s and by the early 1970s the shoreline had reached its current configuration including two new piers. This suggest that the current shoreline configuration is approximately 500 feet further out into the cove than it would have been prior to the 1950s. Therefore, any potential terrestrial archaeological sites that once abutted the shoreline are located approximately 500 feet east of the current location. This places all of the Pier Landing Site within either this fill area or water with no potential impacts to terrestrial archaeological resources.The fill alterations and dredging within Coddington Cove and areas adjacent to the existing shoreline and piers, have greatly impacted the historic and prehistoric landscape. As stated earlier the pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the preliminary geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Below the water column (25 feet below datum), soils are comprised of loose silty sand with no structure. These sediments overlay the glacial gravel till (down to 36 feet below datum) that predate human occupation of the region. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact now submerged landform. Therefore there is no potential to impact archaeological resources associated with an intact submerged landform. Building 11 Site currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

Determination of Effect:

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. Pier Landing and Building 11 Sites are located within the view shed of Quarters

NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties.

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

For your awareness, NOAA has initiated consultation with the Rhode Island State Historic Preservation Office based on the determination of a no adverse effect on historic properties. We appreciate your attention to this matter, and look forward to receiving any comments or concerns regarding historic properties that are of religious and cultural significance to your tribe that might be affected by the proposed Undertaking. Accordingly, we invite your tribe's comments on the proposed action within 30 calendar days of confirmed receipt of this letter. In the event we do not receive comments within 30 calendar days upon your receipt of this letter, we will assume you have no comment and would like not to participate in this consultation.

Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description

Copy to: Naval Station Newport Commanding Officer

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/074

Mr. Doug Harris and Mr. John Brown
Narragansett Indian Tribe
Historic Preservation Office
4425 South County Trail
Charlestown, Rhode Island 02813

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Mr. Harris and Mr. Brown:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to consult with any federally recognized Indian tribe that might attach religious and cultural significance to historic properties or have identified traditional cultural properties that may be affected by an undertaking. I am writing to notify your tribe of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any historic properties that are of religious and cultural significance to your tribe within, or in the vicinity of, the proposed location that may be affected by this Undertaking. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to

use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 1.

Proposed Undertaking:

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are berthed at separate facilities in Rhode Island. The HB is currently located at Pier 2 at NSNPT. Pier 2 does not meet NOAA requirements for this vessel because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX is currently located at commercial waterfront facilities at the Port of Davisville in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicts with adjacent commercial activities and long-term uncertainties exist due to probable time limitations on lease agreements. The remaining two vessels have yet to be determined but will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, North Carolina, or Mississippi.

The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

At this time, NOAA identified two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District, within the APE. Quarters NB-1 is a mid- eighteenth century house that is listed on the National Register of Historic Places (NRHP). The Destroyer Piers Historic District is eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. In terms of archaeological resources, there are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance is expected to occur. Based on a review of available historic maps, aerials and nautical charts, the area of Coddington Cove has experienced decades of fill alternations and dredging. In the 1950s, land around the cove was built out by approximately 500 feet to support the T pier and its infrastructure. This infilling process continued through the 1960s and by the early 1970s the shoreline had reached its current configuration including two new piers. This suggest that the current shoreline configuration is approximately 500 feet further out into the cove than it would have been prior to the 1950s. Therefore, any potential terrestrial archaeological sites that once abutted the shoreline are located approximately 500 feet east of the current location. This places all of the Pier Landing Site within either this fill area or water with no potential impacts to terrestrial archaeological resources.The fill alterations and dredging within Coddington Cove and areas adjacent to the existing shoreline and piers, have greatly impacted the historic and prehistoric landscape. As stated earlier the pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the preliminary geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Below the water column (25 feet below datum), soils are comprised of loose silty sand with no structure. These sediments overlay the glacial gravel till (down to 36 feet below datum) that predate human occupation of the region. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact now submerged landform. Therefore there is no potential to impact archaeological resources associated with an intact submerged landform. Building 11 Site currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

Determination of Effect:

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. Pier Landing and Building 11 Sites are located within the view shed of Quarters

NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties.

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

For your awareness, NOAA has initiated consultation with the Rhode Island State Historic Preservation Office based on the determination of a no adverse effect on historic properties. We appreciate your attention to this matter, and look forward to receiving any comments or concerns regarding historic properties that are of religious and cultural significance to your tribe that might be affected by the proposed Undertaking. Accordingly, we invite your tribe's comments on the proposed action within 30 calendar days of confirmed receipt of this letter. In the event we do not receive comments within 30 calendar days upon your receipt of this letter, we will assume you have no comment and would like not to participate in this consultation.

Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
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Copy to: Naval Station Newport Commanding Officer

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/076

Mr. David Weeden
Historic Preservation & NAGPRA Department
Mashpee Wampanoag Tribe
483 Great Neck Road
South Mashpee, MA 02649

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Mr. Weeden:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to consult with any federally recognized Indian tribe that might attach religious and cultural significance to historic properties or have identified traditional cultural properties that may be affected by an undertaking. I am writing to notify your tribe of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any historic properties that are of religious and cultural significance to your tribe within, or in the vicinity of, the proposed location that may be affected by this Undertaking. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the

Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

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Proposed Undertaking:

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The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

At this time, NOAA identified two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District, within the APE. Quarters NB-1 is a mid-eighteenth century house that is listed on the National Register of Historic Places (NRHP). The Destroyer Piers Historic District is eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. In terms of archaeological resources, there are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance is expected to occur. Based on a review of available historic maps, aerials and nautical charts, the area of Coddington Cove has experienced decades of fill alternations and dredging. In the 1950s, land around the cove was built out by approximately 500 feet to support the T pier and its infrastructure. This infilling process continued through the 1960s and by the early 1970s the shoreline had reached its current configuration including two new piers. This suggest that the current shoreline configuration is approximately 500 feet further out into the cove than it would have been prior to the 1950s. Therefore, any potential terrestrial archaeological sites that once abutted the shoreline are located approximately 500 feet east of the current location. This places all of the Pier Landing Site within either this fill area or water with no potential impacts to terrestrial archaeological resources. The fill alterations and dredging within Coddington Cove and areas adjacent to the existing shoreline and piers, have greatly impacted the historic and prehistoric landscape. As stated earlier the pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the preliminary geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Below the water column (25 feet below datum), soils are comprised of loose silty sand with no structure. These sediments overlay the glacial gravel till (down to 36 feet below datum) that predate human occupation of the region. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact now submerged landform. Therefore there is no potential to impact archaeological resources associated with an intact submerged landform. Building 11 Site currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

Determination of Effect:

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. Pier Landing and Building 11 Sites are located within the view shed of Quarters

NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties.

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

For your awareness, NOAA has initiated consultation with the Rhode Island State Historic Preservation Office based on the determination of a no adverse effect on historic properties. We appreciate your attention to this matter, and look forward to receiving any comments or concerns regarding historic properties that are of religious and cultural significance to your tribe that might be affected by the proposed Undertaking. Accordingly, we invite your tribe's comments on the proposed action within 30 calendar days of confirmed receipt of this letter. In the event we do not receive comments within 30 calendar days upon your receipt of this letter, we will assume you have no comment and would like not to participate in this consultation.

Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George
Environmental Engineer

Enclosures: (1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description

Copy to: Naval Station Newport Commanding Officer

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

August 12, 2022

Via email: Heather Robbins, heather.L.robbins5.civ@us.navy.mil

Mark George
Environmental Engineer
US Department of Commerce
National Oceanic and Atmospheric Administration Office

Re: RIHPHC Project No. 16763
Relocation of NOAA Research Vessels and related improvements
Naval Station Newport, Rhode Island

Dear Mr. George:

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the information that you provided for the above-referenced project. The National Oceanic and Atmospheric Administration Office (NOAA) is proposing to construct a four-berth pier, small boat pier, parking, and new buildings at the Naval Station Newport, specifically along Coddington Cove.

NOAA has identified the APE as the Coddington Cove area of the Newport Naval Station and the construction footprint for the two project locations. NOAA has identified two historic architectural properties within the APE: Quarter NB-1, which is listed in the National Register of Historic Places and the Destroyer Piers Historic District, which has been determined eligible for listing. As part of the project, a new warehouse-style building will be constructed along Coddington Cove on a vacant lot. The new building will be approximately 38' high. We are uncertain if the APE adequately takes into consideration the visual effect of this new building. Lastly, we are requesting photographs taken from the identified historic properties towards the project area, and from the boundary of the APE towards the project area.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact RIHPHC Project Review Coordinator Elizabeth Totten at 401-222-2671 or elizabeth.totten@preservation.ri.gov.

Sincerely,

Elizabeth Totten FOR

Jeffrey Emidy
Interim Executive Director
Interim State Historic Preservation Officer

Copy via email: Becky Barlow, Naval Station Newport

220812.01est

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

October 19, 2022

Via email: Heather Robbins, heather.L.robbins5.civ@us.navy.mil

Mark George
Environmental Engineer
US Department of Commerce
National Oceanic and Atmospheric Administration Office

Re: RIHPHC Project No. 16763
Relocation of NOAA Research Vessels and related improvements
Naval Station Newport, Rhode Island

Dear Mr. George:

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the additional information that you provided for the above-referenced project in response to our letter dated August 18, 2022. The National Oceanic and Atmospheric Administration Office (NOAA) is proposing to construct a four-berth pier, small boat pier, parking, and new buildings at the Naval Station Newport, specifically along Coddington Cove.

NOAA has identified the APE as the Coddington Cove area of the Newport Naval Station and the construction footprint for the two project locations. NOAA has identified two historic architectural properties within the APE: Quarter NB-1, which is listed in the National Register of Historic Places and the Destroyer Piers Historic District, which has been determined eligible for listing. As part of the project, a new 38'-high warehouse-style building will be constructed along Coddington Cove on a vacant lot. NOAA has submitted additional photographs within the APE and has demonstrated that there are buildings of similar height within the APE. The new buildings will be industrial in style and will be compatible with the Destroyers Piers Historic District. Based upon the available information, it is the RIHPHC's conclusion the project will have no adverse effect on historic properties.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact RIHPHC Project Review Coordinator Elizabeth Totten at 401-222-2671 or elizabeth.totten@preservation.ri.gov.

Sincerely,

Elizabeth Totten
FOR

Jeffrey Emidy
Interim Executive Director
Interim State Historic Preservation Officer

Copy via email: Becky Barlow, Naval Station Newport

Robbins, Heather L CIV USN NAVFAC MIDLANT NOR (USA)

From:	Robbins, Heather L CIV USN NAVFAC MIDLANT NOR (USA)
Sent:	Monday, September 19, 2022 8:43 AM
To:	'Totten, Elizabeth (HPHC)'
Cc:	Barlow, Becky E CIV USN NAVFAC MIDLANT NOR (USA)
Subject:	RE: [EXTERNAL] : CUI: Section 106 Package - Relocation of NOAA Research Vessels at Naval Station Newport, RI - Additional Information
Attachments:	CUI_NS Newport_NOAA Research Vessels_Additional Information_FINAL_ 16SEPT2022.pdf
Signed By:	heather.l.robbins@navy.mil

CUI – Attachment only.

Good morning Elizabeth,

Please find attached requested additional information to support the consultation on the proposed relocation of NOAA Research Vessels at Naval Station Newport to facilitate your review. The information is considered controlled unclassified information (CUI) by the Department of Navy and being provided to support the compliance requirements of NHPA. The Navy requests the information is protected as CUI and please do not distribute the attached PDF without Navy permission.

Photographs from the boundary of the APE towards the project area are limited due to security concerns and some areas are not accessible (such as Pier 1). For Pier 1 we were able to take photographs from Pier 2 that show Pier 1. In addition to the requested photographs, in the attached PDF we provided the topographical map that shows the changes in the elevations for that section of Naval Station Newport and a map of existing heights of buildings within the APE. Within the APE, there are varying building heights from one-story buildings at approximately 16 feet tall to two-to five-story buildings approximately 35 – 82 feet tall that are closer to the Destroyer Pier Historic District.

After your review of the attached, please let us know if you would like to further discuss via conference call and/or if you would like to schedule a site visit in the next two weeks to see the proposed project area.

Controlled by: NAVFACSYSCOM MIDLANT
CUI Category: HISTP, OPSEC
Limited Dissemination Control: DL ONLY
(RI SHPO for purposes of NHPA requirements)
POC: Heather Robbins, 757-341-0925

CUI – Attachment only.

Best regards,
Heather

Heather Robbins
Cultural Resources Supervisor
NAVFACSYSCOM MIDLANT – EV23
757-341-0925 (office, Wednesdays)
910-639-2328 (cell)
heather.L.robbins5.civ@us.navy.mil

From: Totten, Elizabeth (HPHC) <Elizabeth.Totten@preservation.ri.gov>
Sent: Friday, August 12, 2022 2:43 PM
To: Robbins, Heather L CIV USN NAVFAC MIDLANT NOR (USA) <heather.l.robbins5.civ@us.navy.mil>

Cc: Barlow, Becky E CIV USN NAVFAC MIDLANT NOR (USA) <becky.e.barlow.civ@us.navy.mil>
Subject: [Non-DoD Source] RE: [EXTERNAL] : Section 106 Package - Relocation of NOAA Research Vessels at Naval Station Newport, RI

Hello,

Please see the attached letter requesting additional information for our review.

Thank you,

Elizabeth

From: Robbins, Heather L CIV USN NAVFAC MIDLANT NOR (USA) <heather.l.robbins5.civ@us.navy.mil>
Sent: Friday, July 15, 2022 8:31 AM
To: Totten, Elizabeth (HPHC) <Elizabeth.Totten@preservation.ri.gov>
Cc: Barlow, Becky E CIV USN NAVFAC MIDLANT NOR (USA) <becky.e.barlow.civ@us.navy.mil>
Subject: [EXTERNAL] : Section 106 Package - Relocation of NOAA Research Vessels at Naval Station Newport, RI

Ms. Totten,

On behalf of NOAA, please find attached a consultation package in accordance with Section 106 of NHPA of the proposed relocation of NOAA Research Vessels at Naval Station Newport, RI that will establish adequate pier, shoreside and support facilities. The attached letter and associated enclosures provide information related to the location/APE, project description, and additional information related to the proposed action.

The hard copy submittal via FedEx was returned to my office so please accept this electronic submission. If you are not able to open the two attachments: Letter 1_NOAA.Consut.Lttr and Enclosures_Relocation of NOAA vessels please let me know and I can send it to you via our DoD Safe ftp site.

Please let me know if you require any additional information or have any questions related to the proposed action.

Best regards,
Heather

Heather Robbins
Cultural Resources Supervisor
NAVFACSYSCOM MIDLANT – EV23
757-341-0925 (office, Wednesdays)
910-639-2328 (cell)
heather.L.robbins5.civ@us.navy.mil

Appendix C Tribal Correspondence

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/076

Mr. David Weeden
Historic Preservation & NAGPRA Department
Mashpee Wampanoag Tribe
483 Great Neck Road
South Mashpee, MA 02649

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Mr. Weeden:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to consult with any federally recognized Indian tribe that might attach religious and cultural significance to historic properties or have identified traditional cultural properties that may be affected by an undertaking. I am writing to notify your tribe of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any historic properties that are of religious and cultural significance to your tribe within, or in the vicinity of, the proposed location that may be affected by this Undertaking. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the

Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 1.

Proposed Undertaking:

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are berthed at separate facilities in Rhode Island. The HB is currently located at Pier 2 at NSNPT. Pier 2 does not meet NOAA requirements for this vessel because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX is currently located at commercial waterfront facilities at the Port of Davisville in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicts with adjacent commercial activities and long-term uncertainties exist due to probable time limitations on lease agreements. The remaining two vessels have yet to be determined but will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, North Carolina, or Mississippi.

The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

At this time, NOAA identified two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District, within the APE. Quarters NB-1 is a mid-eighteenth century house that is listed on the National Register of Historic Places (NRHP). The Destroyer Piers Historic District is eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. In terms of archaeological resources, there are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance is expected to occur. Based on a review of available historic maps, aerials and nautical charts, the area of Coddington Cove has experienced decades of fill alternations and dredging. In the 1950s, land around the cove was built out by approximately 500 feet to support the T pier and its infrastructure. This infilling process continued through the 1960s and by the early 1970s the shoreline had reached its current configuration including two new piers. This suggest that the current shoreline configuration is approximately 500 feet further out into the cove than it would have been prior to the 1950s. Therefore, any potential terrestrial archaeological sites that once abutted the shoreline are located approximately 500 feet east of the current location. This places all of the Pier Landing Site within either this fill area or water with no potential impacts to terrestrial archaeological resources. The fill alterations and dredging within Coddington Cove and areas adjacent to the existing shoreline and piers, have greatly impacted the historic and prehistoric landscape. As stated earlier the pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the preliminary geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Below the water column (25 feet below datum), soils are comprised of loose silty sand with no structure. These sediments overlay the glacial gravel till (down to 36 feet below datum) that predate human occupation of the region. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact now submerged landform. Therefore there is no potential to impact archaeological resources associated with an intact submerged landform. Building 11 Site currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

Determination of Effect:

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. Pier Landing and Building 11 Sites are located within the view shed of Quarters

NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties.

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

For your awareness, NOAA has initiated consultation with the Rhode Island State Historic Preservation Office based on the determination of a no adverse effect on historic properties. We appreciate your attention to this matter, and look forward to receiving any comments or concerns regarding historic properties that are of religious and cultural significance to your tribe that might be affected by the proposed Undertaking. Accordingly, we invite your tribe's comments on the proposed action within 30 calendar days of confirmed receipt of this letter. In the event we do not receive comments within 30 calendar days upon your receipt of this letter, we will assume you have no comment and would like not to participate in this consultation.

Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description

Copy to: Naval Station Newport Commanding Officer

DEPARTMENT OF THE NAVY
NAVAL STATION NEWPORT
690 PEARY STREET
NEWPORT, RHODE ISLAND 02841-1522

IN REPLY REFER TO:

5090
Ser PRR4/166
03 Jun 22

Mr. Jeffery Emidy
Deputy State Historic Preservation Officer
Rhode Island Historical Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903-1209

SUBJECT: Relocation of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport (NSNPT), Newport, Rhode Island

Dear Mr. Emidy:

The Department of the Navy (Navy) has reviewed the cultural resources analysis contained in the National Oceanic and Atmospheric Administration (NOAA) letter to your office associated with the proposed relocation of NOAA Research Vessels at Naval Station Newport (NSNPT). The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b).

After the completion of the Section 106 consultation process by NOAA with your office, federally-recognized Native American tribes and Balfour Beatty Communities, LLC, on the proposed construction activities the Navy will issue NOAA a real estate agreement. The agreement will grant the rights to use the premises for ingress and egress to the property for a period of approximately 60 years. The Navy is coordinating with NOAA, which has the lead for the Section 106 consultations, and intends to utilize this same consultation to fulfil our requirements pursuant to the National Historic Preservation Act, as amended. If concurrence is received on the finding of no adverse effect on the proposed NOAA construction activities and the consultation is completed, the Navy will determine the proposed real estate agreement will be a no adverse effect in accordance with 36 CFR §800.5.

Please contact Becky Barlow at becky.e.barlow@navy.mil or (401) 841-7672 if you have any questions or require further information.

Sincerely,

J. R. McIVER
Captain, U.S. Navy
Commanding Officer

For purposes of Section 106, the APE consists of the Coddington Cove area of NS Newport to include the water and the project areas that appear in yellow for Pier Landing Site and Building 11 Site.

1. *Real Estate Agreement.*

A real estate use agreement will be executed between the Navy and NOAA to grant NOAA the rights to use the property and rights of ingress and egress to the property.

2. *Pier and Floating Small Boat Pier.*

A new four berth pier will be constructed that will be approximately 995 feet south of Pier 1 between the existing T-pier and the rock breakwater (Facility S44)(Enclosure 2) in Coddington Cove for the berthing of the HB and EX and two additional, unnamed, ships. Approximately 728-feet of pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a combination steel pipe-sheet pile wall with concrete facing and concrete cap constructed outboard of the existing bulkheads. The existing bulkheads (SF50 and portion of bulkhead with no facility number) will remain in place.

The new pre-cast and cast-in-place concrete pier will be approximately 62 feet wide and 587 feet long and will be accessed by a 28-foot wide by 524-foot long access trestle. The access trestle will span over two existing bulkheads: SF50 and portion of bulkhead with no facility number. A 20-foot wide and 66-foot long floating small boat pier will be constructed just north of the trestle (See Enclosure 4 for site plan, elevation, and sections).

The new pier and trestle will be pile-supported structures and will be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that will be connected to shore utilities. Fueling activities will be conducted using a tanker truck. Structural support piles for the new pier will consist of 120 steel pipe piles measuring 30 inches in diameter and 85 feet long. The piles will be driven into the cove bottom from the mudline to a depth of approximately -50 feet mean lower low water. Fender piles will be installed and will consist of 160, 16-inch diameter by 65-foot long steel pipe piles. Structural support piles for the trestle will consist of 38 steel pipe piles measuring 24 inches in diameter and 85 feet long. The piles will be driven to bedrock or a depth of 50 feet below mudline. Trestle and pier piles will be installed using a template. Once the pier or trestle piles are installed in the template, the template will be removed and relocated to the next section of pier / trestle construction. The use of the template will require the driving and removal of the H-piles approximately 50 times (100 piles). It is estimated that the installation of the support piles will occur within one calendar year with fender piles being installed in another year after the superstructure is largely complete.

The floating small boat pier will be constructed northwest of the main pier and trestle structures. The floating system will consist of a single heavy duty 19.7-foot by 65.6-foot concrete float and two, 80-foot long gangway segments. Access to the floating pier will be provided directly from land with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway will be supported by four, 24-inch diameter steel pipe piles. The small boat dock will be equipped with electrical shore power, lighting, communications, and potable water, but will not have fueling or sewage pump out capabilities.

A ten-foot high security fence will be placed at the entrance of the new pier with both vehicle and pedestrian access gates.

Dredging is not required to support the construction of the new pier.

3. *Shoreside and Support Facilities:*

The shoreside area (Pier Landing Site) will be developed with a new administration and warehouse building (approximately 22,182 square foot facility); a 43,560 SF exterior storage area; a 336 square foot, pre-fabricated hazardous material container; a 1,636 square foot boat repair building, and associated parking near the building, the exterior storage area, and at the Building 11 Site (Enclosure 4). A eight (8) foot high fence will be placed around the entirety of the Pier Landing Site and a ten (10) foot high security fence at the vehicle and pedestrian access gates to the site.

The administration and warehouse building will consist of a Concrete Masonry Unit construction with a prefinished metal panel veneer and painted concrete stem/foundation wall. The roof will be a high slope prefinished standing seam metal roof. A rooftop mechanical unit will be located on the low slope roof of the utilities section to the rear of the building and shielded by a louvered screen wall system. Canopies will be provided at the main entrances. The exterior color will be compatible with the industrial setting of Coddington Cove and the Destroyer

Piers Historic District. A paved loading dock area will be located on the north elevation of the warehouse portion of the building. The loading dock will consist of an elevated dock area for delivery truck loading/unloading and a concrete ramp. See Enclosure 4 for proposed elevations of the administration and warehouse building and renderings.

A 30-space parking lot will be located adjacent to the building and a separate, 45-space parking lot will be located north of the exterior storage area. The parking lots will contain pole mounted site lighting (Enclosure 4).

The 43,560 SF exterior storage area will be located on the northern side of the warehouse portion of the building but separated from the administration and warehouse building by the pier accessway, which connects the new pier to the existing Pier Access Road parallel to Burma Road. The exterior storage area will consist of a large paved area.

The exterior storage area will contain the following additional structures and auxiliary areas: four small boat tie-down locations on a concrete slabs, eight Conex boxes, a prefabricated hazardous materials container, a 300 SF boat wash down area, and an approximately 31 foot by 51 foot boat repair building. The boat repair building will be a 1,636 SF, single-bay, single-story pre-engineered metal building with a concrete slab/foundation. The north and south elevations will consist of a large roll-up door and a single pedestrian door. No fenestration on the east and west elevations. The roof system is a low slope prefinished standing seam metal roof (See Enclosure 4 for proposed elevations). The exterior wall system will be prefinished metal panel veneer. Exterior colors to be compatible with the associated Administration / Warehouse Building.

The new construction within the Pier Landing Site will include demolition of existing abandoned utilities and the foundation and wood piles of the former Building 42 and the removal of an existing transformer. An eight foot fence will be placed around the entirety of the Pier Landing Site to delineate the NOAA facility.

Building 11 Site area is located approximately one quarter mile east of Pier Landing Site between the parking lot serving Building 11 and the installation perimeter along Chases Lane. Building 11 Site will consist of a new parking lot of 50 spaces and pole mounted site lighting. The parking lot will be accessed by an existing road. A six-foot high chain link fence will be installed around the parking area and an automated vehicle and pedestrian gate will be installed at the entrance of the parking lot. Installation of electrical conduit will be necessary to support the parking lot lighting and automated gate. The ground disturbance associated with the installation of electrical lines will be confined to the construction limits of Building 11 Site and existing utility right-of-ways. For stormwater management, an underground detention system is proposed beneath the parking lot and the installation of an outlet control basin. The area is currently an open lawn space with remnants of either tennis or a basketball courts within the space proposed for the parking improvements (Enclosure 5). To support the construction of the new parking lot, the lawn, existing tennis/basketball courts, and non-historic memorial plaque and tree will be demolished/removed.

4. *Utility Connections*

Within the proposed site boundaries of the Pier Landing, new utility lines will be required to connect to existing utility systems such as natural gas, potable water, sanitary sewer, stormwater, electrical, communications and network. Ground disturbance associated with the utilities will be confined to the proposed construction limits at the Pier Landing and existing utility right-of-ways. Utility work will consist of: installing natural gas heating for the administration and warehouse building and the boat repair building; installing new potable water lines for the administration and warehouse building and boat wash down area; installing new sanitary sewer lines for the administration and warehouse building and the boat wash down area; construction of new lift stations near the administration and warehouse building; installation of traditional catch basins and storm sewer collection networks for stormwater management; installation of new fire hydrants along the perimeter of the administration and warehouse building; and installation of electrical lines.

Associated utilities for the new pier will consist of a new potable water line to connect to the new potable water line servicing the buildings at the base of the pier; a new sanitary sewer line and construction of a new lift station near the pier; installation of a fire hydrant adjacent to the pier; and installation of electrical lines. The utilities will be connected at the shore near the trestle and will be located on the pier through a concrete conduit installed on either side of the pier.

5. *Construction Support*

The construction contractor will utilize existing transportation routes and roads to and from the pier area, Pier Landing Site and Building 11 Site. At this time, laydown and storage areas are not identified. However, the proposed location of laydown and storage areas will utilize existing paved surfaces and/or areas that are not considered archaeologically sensitive or contain archaeological resources/sites.

N21/08/075

Ms. Bettina Washington
Wampanoag Tribe of Gay Head Aquinnah
Tribal Historic Preservation Office
20 Black Brook Road
Aquinnah, MA 02353-1546

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Ms. Washington:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to consult with any federally recognized Indian tribe that might attach religious and cultural significance to historic properties or have identified traditional cultural properties that may be affected by an undertaking. I am writing to notify your tribe of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any historic properties that are of religious and cultural significance to your tribe within, or in the vicinity of, the proposed location that may be affected by this Undertaking. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to

use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 1.

Proposed Undertaking:

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are berthed at separate facilities in Rhode Island. The HB is currently located at Pier 2 at NSNPT. Pier 2 does not meet NOAA requirements for this vessel because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The EX is currently located at commercial waterfront facilities at the Port of Davisville in North Kingstown, Rhode Island. The pier arrangement at Davisville conflicts with adjacent commercial activities and long-term uncertainties exist due to probable time limitations on lease agreements. The remaining two vessels have yet to be determined but will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, North Carolina, or Mississippi.

The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

Area of Potential Effects (APE):

NOAA has identified the APE as the Coddington Cove area of NSNPT and the construction footprint associated with Pier Landing and Building 11 Sites and associated utility and construction areas (Enclosure 2).

Identification of Historic Properties:

At this time, NOAA identified two identified historic architectural properties, Quarters NB-1 and the Destroyer Piers Historic District, within the APE. Quarters NB-1 is a mid-eighteenth century house that is listed on the National Register of Historic Places (NRHP). The Destroyer Piers Historic District is eligible for inclusion in the NRHP under Criterion A for its association with the Destroyer Fleet and Command Cruiser-Destroyer Force, Atlantic, in Narragansett Bay. In terms of archaeological resources, there are no recorded terrestrial or submerged archaeological sites in the Coddington Cove area of NSNPT, and no archaeologically sensitive areas are within the terrestrial or submerged APE where ground disturbance is expected to occur. Based on a review of available historic maps, aerials and nautical charts, the area of Coddington Cove has experienced decades of fill alternations and dredging. In the 1950s, land around the cove was built out by approximately 500 feet to support the T pier and its infrastructure. This infilling process continued through the 1960s and by the early 1970s the shoreline had reached its current configuration including two new piers. This suggest that the current shoreline configuration is approximately 500 feet further out into the cove than it would have been prior to the 1950s. Therefore, any potential terrestrial archaeological sites that once abutted the shoreline are located approximately 500 feet east of the current location. This places all of the Pier Landing Site within either this fill area or water with no potential impacts to terrestrial archaeological resources.The fill alterations and dredging within Coddington Cove and areas adjacent to the existing shoreline and piers, have greatly impacted the historic and prehistoric landscape. As stated earlier the pre-1950s shoreline is now located inland approximately 500 feet. Any submerged landscapes and resources in this area have been covered with fill. In addition, the review of available historic documentation did not reveal any existing structures within the cove prior to the 1940s when the T-wharf was constructed. As part of the preliminary geotechnical work associated with this project, nine soil borings were performed and the boring data along the length of the proposed pier demonstrate sediment stratigraphy truncated from dredging. Below the water column (25 feet below datum), soils are comprised of loose silty sand with no structure. These sediments overlay the glacial gravel till (down to 36 feet below datum) that predate human occupation of the region. Borings along the APE from the 25 feet to 36 feet where the glacial till begins show no structure or evidence of an intact now submerged landform. Therefore there is no potential to impact archaeological resources associated with an intact submerged landform. Building 11 Site currently consists of an open fallow field with remnants of a basketball/tennis court. The area has historically been used agriculturally and as parking facilities.

Determination of Effect:

Visual impacts of the proposed Undertaking by construction of the new facilities will have the potential to directly affect the integrity of setting of the historic architectural properties in the APE. Pier Landing and Building 11 Sites are located within the view shed of Quarters

NB-1 and the Destroyer Piers Historic District. However, the designs of the new facilities will be consistent with the industrial nature and setting of the existing piers area and will not substantially change the visual character or setting of the two historic properties.

There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

For your awareness, NOAA has initiated consultation with the Rhode Island State Historic Preservation Office based on the determination of a no adverse effect on historic properties. We appreciate your attention to this matter, and look forward to receiving any comments or concerns regarding historic properties that are of religious and cultural significance to your tribe that might be affected by the proposed Undertaking. Accordingly, we invite your tribe's comments on the proposed action within 30 calendar days of confirmed receipt of this letter. In the event we do not receive comments within 30 calendar days upon your receipt of this letter, we will assume you have no comment and would like not to participate in this consultation.

Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description

Copy to: Naval Station Newport Commanding Officer

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

N21/08/074

Mr. Doug Harris and Mr. John Brown
Narragansett Indian Tribe
Historic Preservation Office
4425 South County Trail
Charlestown, Rhode Island 02813

SUBJECT: Relocation of National Oceanic and Atmospheric Administration (NOAA) Research Vessels at Naval Station Newport, Newport County, Rhode Island

Dear Mr. Harris and Mr. Brown:

The regulations implementing Section 106 of the National Historic Preservation Act set forth at 36 Code of Federal Regulations (CFR) Part 800 require federal agencies to consult with any federally recognized Indian tribe that might attach religious and cultural significance to historic properties or have identified traditional cultural properties that may be affected by an undertaking. I am writing to notify your tribe of a proposed action by NOAA that will establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NSNPT) in Newport, Rhode Island (Undertaking).

We seek your input in order to identify any historic properties that are of religious and cultural significance to your tribe within, or in the vicinity of, the proposed location that may be affected by this Undertaking. We also seek your comments related to our determination of a finding of no adverse effect related to this Undertaking pursuant to 36 CFR 800.5.

The proposed Undertaking will include the construction of a four berth pier, floating small boat pier, associated utilities and parking, and a supporting land-based administration/warehouse building with associated parking, boat repair building, boat wash area, hazardous materials building, exterior storage and adjacent loading and laydown area. In addition, pile supported concrete bulkhead will be installed from the existing pier to the rock jetty. The bulkhead will be a Pipe-Z combination bulkhead with a concrete cap and a concrete facing. The existing bulkheads (Facility SF50 and portion of bulkhead with no facility number) will remain in place. After completion of all environmental regulatory consultations and associated permitting requirements related to the construction, and approval of an official request submitted by Naval Station Newport to Naval Facilities Engineering Systems Command, Mid-Atlantic, the Department of the Navy (Navy) will issue NOAA a real estate agreement to grant the rights to

use the premises and rights of ingress and egress to the property there after for a period of approximately 60 years. The Navy has collaborated with NOAA and concurs with the analysis that there will be no adverse effect on NSNPT cultural resources in accordance with 36 CFR §800.5(b)(Enclosure (1)). NOAA has the lead for the Section 106 consultations, and is coordinating with the Navy since it intends to use this same consultation to fulfil their requirements pursuant to the National Historic Preservation Act, as amended.

The proposed Undertaking is described in further detail below and in the enclosures.

Project Location:

The proposed Undertaking is located at NSNPT, Newport County, Rhode Island, along the Coddington Cove waterfront. Coddington Cove is a large area at NSNPT between Midway (Greene Lane) and Coddington Point. The area contains multiple commands within a diverse array of facilities, including the Naval Undersea Warfare Center, the Naval Supply Depot, and the Destroyer Piers, which are located along the coast. The proposed location of the NOAA pier and shoreside facilities will be at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Pier Landing Site. Additional parking facilities will be constructed on a vacant site located approximately one quarter mile east of the Pier Landing Site, herein referred to as Building 11 Site. The proposed Undertaking at Coddington Cove (Pier Landing and Building 11 Sites) are identified in Enclosure 1.

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The relocation of NOAA vessels at NSNPT will support increase efficiencies in NOAA operations and align with mission and operational requirements consistent with the NOAA - U.S. Coast Guard (USCG) Fleet Plan (2016) and Cooperative Maritime Strategy (2013). To support the relocation of the NOAA vessels, the proposed Undertaking will consist of the following: 1) real estate agreement between the Navy and NOAA; 2) construction of new pier and floating small boat pier to the south of Pier 1 between the T-Wharf and breakwater (Facility S44); 3) construction of shoreside and support facilities at Pier Landing and Building 11 Sites; 4) utility installation and connections at the new pier, Pier Landing and Building 11 Site; 5) replacement/repair of portion of the bulkhead (Facility SF50); and 6) construction support activities. Enclosure 3 provides specific project information related to the proposed construction activities. Pier 2 will continue to be utilized by the United States Coast Guard and no proposed work to Pier 2 will occur as part of the Undertaking.

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There are no identified archaeological resources within the APE. There will be no potential to impact terrestrial or submerged archaeological resources due to prior fill alterations, dredging, plowing, and other types of ground disturbance. There are no identified shipwrecks or obstructions in Coddington Cove. While planned pier construction requires sub-bottom disturbances from pile driving along the length of the pier, the piling footprints are minimal and no effects to an unrecorded shipwreck are anticipated. However, in the event that archaeological resources are discovered during proposed construction and ground-disturbance activities, NOAA will follow the procedures of inadvertent discovery in accordance with 36 CFR 800.

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Please contact me at mark.george@noaa.gov or (805) 982-3110, if you have any questions or require further information.

Sincerely,

Mark George
Environmental Engineer

Enclosures:
(1) Naval Station Newport Concurrence on NOAA Consultation Letter
(2) APE and Historic Properties Map
(3) Detailed Project Description

Copy to: Naval Station Newport Commanding Officer

Appendix D Magnuson–Stevens Fishery Conservation and Management Act Documents

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

June 14, 2022

Ms. Karen Greene
Habitat Conservation Division, Fisheries Service
National Oceanic and Atmospheric Administration
55 Great Republic Drive
Gloucester, MA 01930

Dear Ms. Greene:

SUBJECT: SUBMITTAL OF ESSENTIAL FISH HABITAT (EFH) ASSESSMENT FOR THE PROPOSED PROJECT FOR RELOCATION OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESEARCH VESSELS AT NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (RI). The Proposed Action includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove (Pier Landing Site) and construction of a parking lot near Building 11 to the east of Pier Landing Site. The proposed location of the pier and shoreside facilities would be at the former site of Derecktor Shipyard in Coddington Cove. Construction is planned to begin in 2024, and take approximately two years.

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* and *Okeanos Explorer*, are located in Rhode Island at Pier 2 at NAVSTA Newport. Pier 2 does not meet NOAA requirements for NOAA vessels because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and exclusive use of shoreside areas. The other two vessels will be part of NOAA's existing Atlantic fleet, which is currently located in New Hampshire, Virginia, South Carolina, and Mississippi.

Because many NOAA research cruises are conducted in the Northeast, permanently relocating and homeporting four vessels to this area presents logistical advantages as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for the four NOAA research vessels. Under the preferred alternative, a new pier would be constructed approximately 450 feet north of the existing T pier in Coddington Cove for the berthing of NOAA vessels.

The enclosed EFH Assessment has been prepared to describe how the Proposed Action may adversely affect EFH and Habitat Areas of Particular Concern (HAPC), pursuant to Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act.

If you have any questions or require additional information on the information presented in the Assessment, please contact Mark George.

Sincerely,

GEORGE.MARK.S.1365873786 Digitally signed by GEORGE.MARK.S.1365873786 Date: 2022.06.14 16:51:50 -06'00'

Mark George

Essential Fish Habitat Assessment

in support of the Environmental Assessment for
Relocation of National Oceanic and Atmospheric Administration Research
Vessels at Naval Station Newport, Newport, Rhode Island

June 2022

Prepared for:

National Oceanic and Atmospheric Administration

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Appendices

Acronyms and Abbreviations

ASMFC	Atlantic States Marine Fisheries Commission
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
FMP	Fishery Management Plan
GARFO	Greater Atlantic Regional Fisheries Office
HAPC	Habitat Areas of Particular Concern
MAFMC	Mid Atlantic Fishery Management Council
MLLW	Mean lower low water
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NA	Not applicable
NAVSTA	Naval Station
NEFMC	New England Fishery Management Council
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NUWC	Naval Undersea Warfare Center
RICRMC	Rhode Island Coastal Resources Management Council
RIDEM	Rhode Island Department of Environmental Management
U.S.	United States

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1. Background

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation and homeporting of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (RI). The proposed location of the pier and shoreside facilities would be at the former site of the Robert E. Derecktor Shipyard in Coddington Cove, now designated as Environmental Restoration Program Site 19 and herein referred to as Pier Landing Site (Figure 1-1). Construction is planned to begin in 2024 and take approximately two years to complete.

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (16 U.S.C. § 1801-1882) as amended by the Sustainable Fisheries Act, charges the NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS) with designating and conserving essential fish habitat (EFH) for species managed under existing Fishery Management Plans (FMPs). This is intended to minimize, to the extent practicable, any adverse effects on habitat caused by fishing or non-fishing activities, and to identify other actions to encourage the conservation and enhancement of such habitat. In 2006, Congress passed the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, which was signed into law in January 2007. EFH, as defined by the MSFCMA, includes "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

Under the MSFCMA, federal agencies are required to consult with the NMFS when any of their proposed activities may have an adverse effect on EFH. The MSFCMA defines an adverse effect as "any impact which reduces quality and/or quantity of EFH." Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual or synergistic consequences of actions.

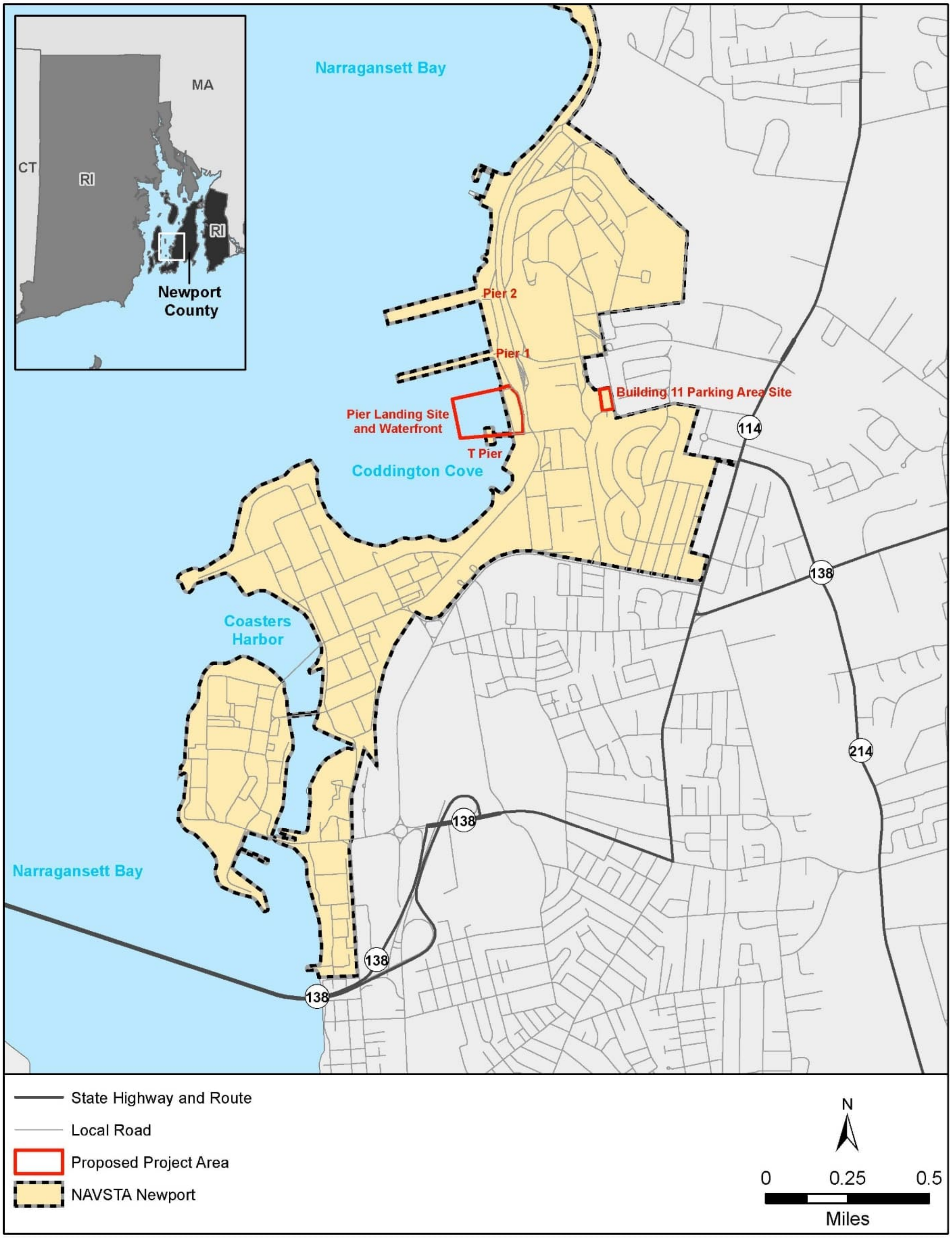

Figure 1-1 Project Site Map

2. Description of the Proposed Project

NOAA proposes to establish adequate pier, shoreside, and support facilities to support the relocation and homeporting of four NOAA Atlantic Fleet research vessels at NAVSTA Newport (see Figure 1-1). Currently, two of the four NOAA research vessels, the *Henry B. Bigelow* and *Okeanos Explorer*, are located at Pier 2 at NAVSTA Newport and awaiting their exclusive pier space. Pier 2 does not meet NOAA requirements for these vessels because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The other two vessels are part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, South Carolina, or Mississippi.

Because many of NOAA research cruises are conducted in the Northeast, relocating four vessels to this area presents logistical advantages as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for the four NOAA research vessels (Cardno, 2016a; 2016b).

Following preliminary design sessions and initial consultation meetings with several regulatory agencies, NOAA determined that constructing a new pier at a new location approximately 450 feet north of the existing T-Pier was the preferred alternative. After further study of existing conditions, NOAA decided that the bulkhead in the vicinity of the proposed new pier and shoreside facilities needed substantial reinforcement to support the new facilities and added the installation of 728 feet of new bulkhead to the project.

Pier and Floating Dock

A new four-berth pier would be constructed approximately 450 feet north of the existing T-pier (Figure 2-1) in Coddington Cove for the berthing of the *Henry B. Bigelow* and *Okeanos Explorer* and two additional ships. The new pier would be approximately 62-feet wide and 587-feet long (approximately 36,400 square feet). The pier would be accessed by a 28-foot wide by 5-foot long trestle (portion over water would be 506 feet and approximately 14,200 square feet). Plan views of the pier and trestle are provided in Figures 2-2 and 2-3, respectively.

The new pier and trestle would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that would connect to shore utilities. Fueling of ships would be conducted using a tanker truck. NAVSTA Newport has an existing Spill Prevention, Containment, and Countermeasure Plan already in place to provide timely containment and clean-up instructions for any potential spill.

The pier would be a pile-supported concrete deck. Structural support piles for the new pier would consist of 120 steel pipe piles measuring 30 inches in diameter. The piles would have permanent high-density polyethylene grouted jackets. The piles would be driven into the cove bottom from the mudline to weathered bedrock by vibratory and impact hammers to depths required to achieve bearing capacity. If obstructions, such as glacial boulders, are encountered, a rotary drill may be used to clear the obstruction. Fender piles would be installed along the perimeter of the pier and would consist of 201, 16-inch diameter steel pipe piles. A typical cross section of the pier is shown in Figure 2-2.

The access trestle would span over two existing bulkheads (a U-pile wall with an internal wale that was noted as existing circa 1950, and a sheet pile (MZ 32) bulkhead with an external double channel wale placed circa 1980) and the new bulkhead. The trestle access would be located upland, or behind the existing bulkhead and would provide access (i.e., bridge) to the pier. Structural support piles for the trestle concrete deck would consist of 36 steel pipe piles with permanent high-density polyethylene grouted jackets measuring 18-inches in diameter and two steel pipe piles measuring 30-inches in diameter. The piles would be driven to depths required to achieve bearing capacity. A typical trestle cross section is shown in Figure 2-3.

Trestle and pier piles would be installed using a template that would be secured by four, 16-inch pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of pier/trestle construction. The use of the template would require the driving and removal of the template piles approximately 19 times for the trestle and 30 times for the pier (196 total installation/extraction moves of pipe piles). Pile installation is estimated to occur within approximately one year.

The pier would have a deck elevation of 15.25 feet (North American Vertical Datum 1988), sloping down to 12 feet at grade level at the bulkhead. Critical equipment located on the pier deck, such as electrical transformers, would be elevated 3 feet above base flood elevation (Zone VE on the coastline, elevation 16.0 North American Vertical Datum 1988) to the elevation of 19.0 feet. Constructing the pier deck at 19.0 feet is not possible as it would negatively impact pier-side vessel operations.

The small floating dock would be constructed northwest of the main pier and trestle structures (Figure 2-1). The floating system would consist of a single heavy duty 20-foot by 66-foot concrete float (approximately 1,300 square feet) with a continuous pre-installed waler system and two, 80-foot long and 5.5-foot wide gangway segments (approximately 440 square feet each). Access to the floating pier would be directly from land with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway would be supported by four, 18-inch diameter steel pipe piles and would be fully compliant with the Americans with Disabilities Act. The floating dock would provide berthing on three sides; Two 36-inch diameter, steel pipe guide piles would provide lateral support to the floating dock. The guide piles would be rock socketed into bedrock. The floating dock would be equipped with electrical shore power, lighting, communications, and potable water, but would not have fueling or sewage pump out capabilities.

Demolition would be required at the proposed site of the floating dock to remove an existing abandoned dock. Demolition would require vibratory extraction of three 12-inch diameter steel pipe piles and four 12-inch timber piles.

Bulkhead Reinforcement

Approximately 728 feet of bulkhead would be constructed at the Pier Landing Site to reinforce and stabilize the existing deteriorating bulkhead and support the new facilities. The deterioration includes corrosion of the steel sheet piles and sinkholes in the fill behind the concrete cap (Childs Engineering Corporation, 2012).

The new bulkhead would be constructed in front of the existing bulkhead from the T-pier to the existing breakwater (Figure 2-1). A combination of approximately 115, 18-inch diameter pipe piles and 230 steel Z-shaped sheet piles (each 55 inches long and 18 inches deep) would be installed along the face of the existing bulkhead (Figure 2-4). Piles would be installed in front of the existing double channel wale, which extends approximately 12 inches from the existing bulkhead face. The existing bulkhead wale cannot be removed to place the new bulkhead closer because such disturbance could cause collapse of the existing bulkhead. Thus, the bulkhead would project a total of approximately 30 inches into the water beyond the existing bulkhead. This space would be filled with pea gravel. The combination bulkhead would provide sufficient support so that anchors on land would not be required, thus avoiding disturbance of the existing shoreline anchoring system and soils. The new bulkhead would be topped with a concrete cap and concrete facade that would extend to just below mean high water.

The pipe piles would be driven into the cove bottom from the mudline to weathered bedrock and sheet piles would be driven into dense glacial till by vibratory and impact hammers. If obstructions, such as solid bedrock, boulders, or debris are encountered, pile installation may require use of a “down-the-hole” hammer to break up rock or may require moving the obstruction aside using mechanical means with incidental sediment disturbance. Debris would be pulled from the water and disposed of appropriately. Rock would be stockpiled during pile driving and then reset as close to the original position as possible.

Minimal demolition would be required along the existing bulkhead. No demolition would occur in the water. The existing concrete sheet pile cap would be removed along with several feet of the steel sheet piles to enable construction of the new combination bulkhead. To tie in the ends of the new bulkhead, a portion of the existing revetment rock at the north and south ends would be removed and salvaged.

Shoreside and support facility construction is terrestrial and will not be covered here but is fully discussed in the project Environmental Assessment (EA) (NOAA, 2022).

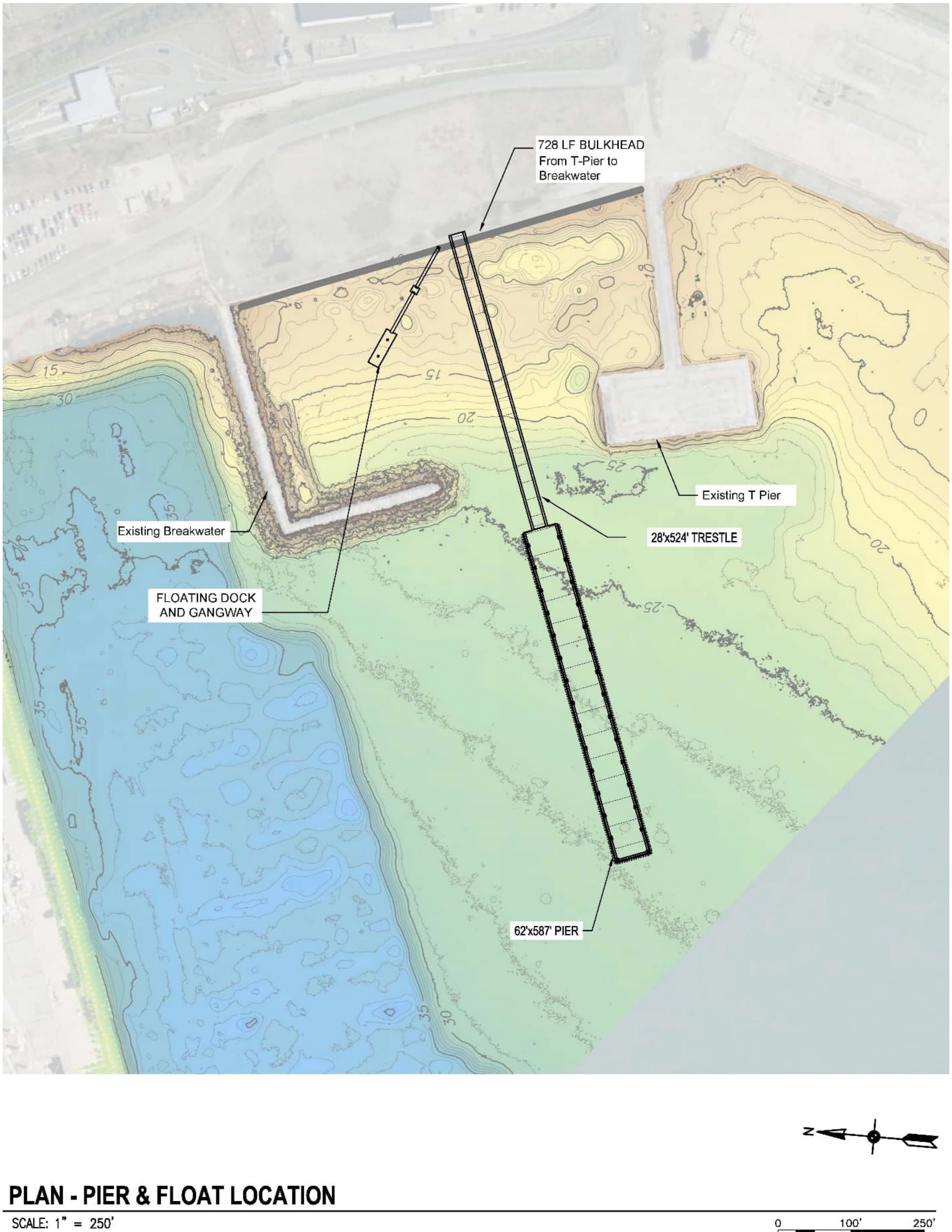

Figure 2-1. Plan View of the Proposed Pier, Trestle and Floating Dock

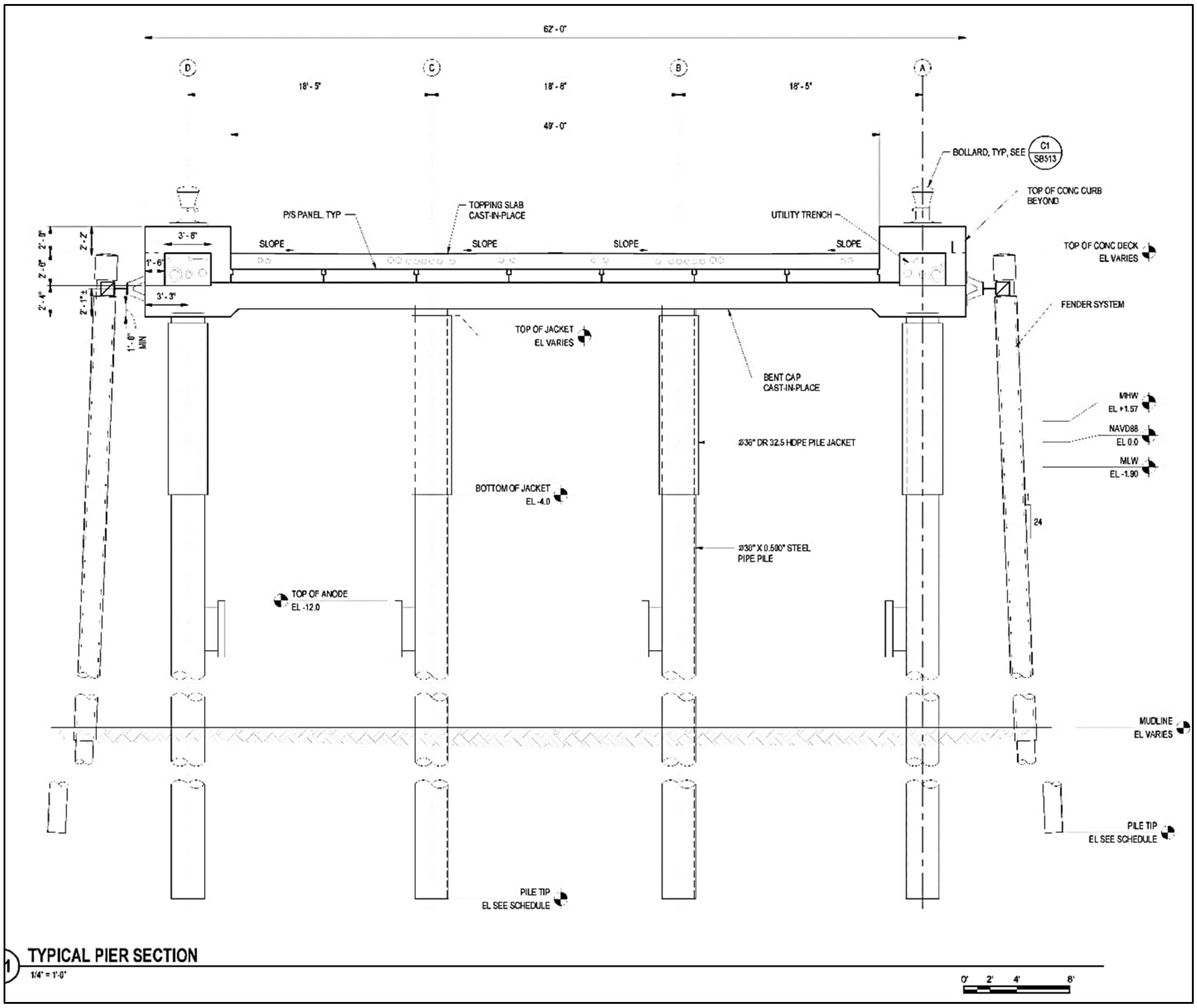

Figure 2-2. Pier Cross Section (Typical)

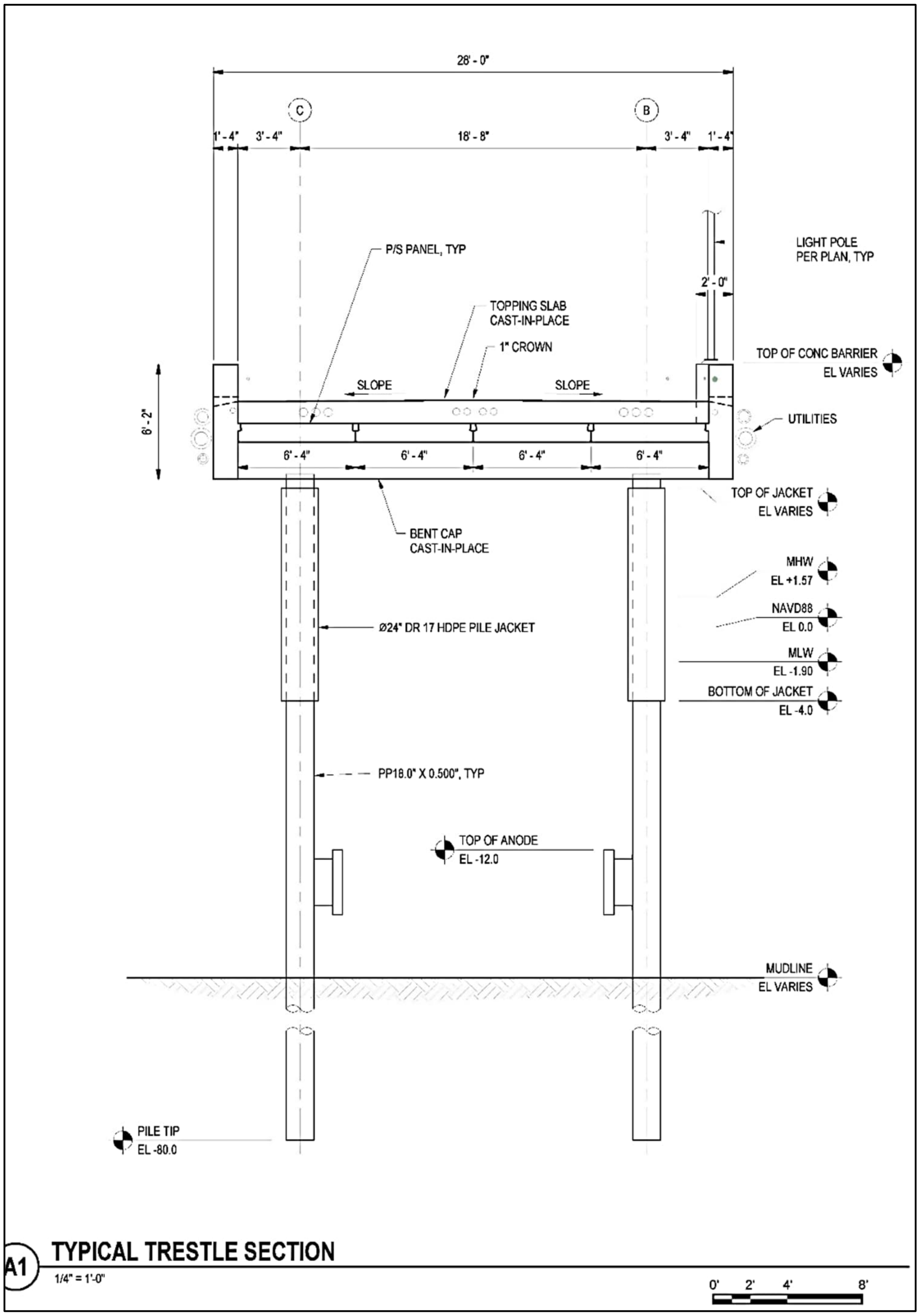

Figure 2-3. Trestle Cross Section (Typical)

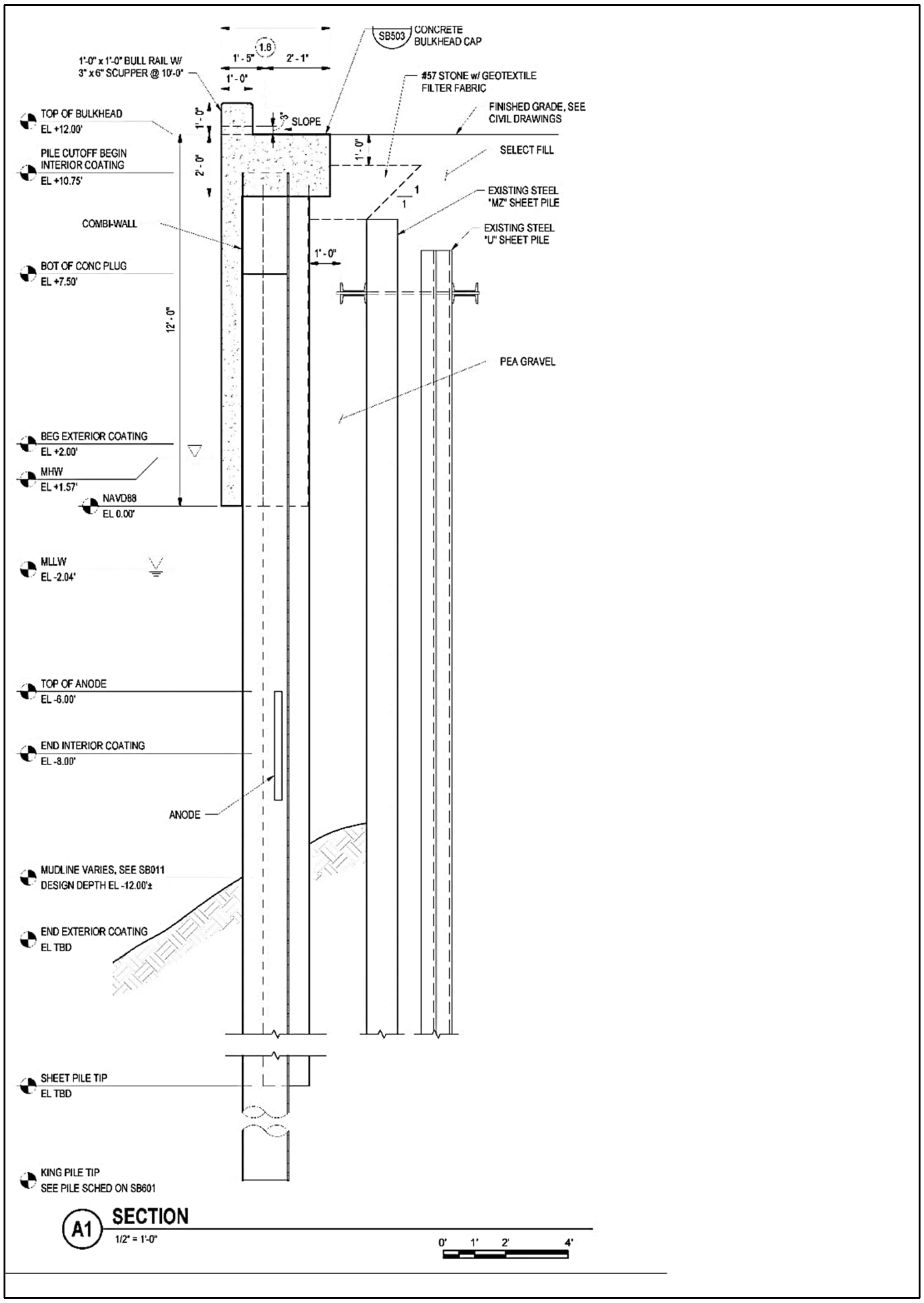

Figure 2-4. Bulkhead Cross Section (Typical)

3. Affected Environment

The affected environment described here includes the physical environment and biological resources within the water resources only of the proposed project area. Descriptions of the terrestrial resources can be found in the project EA.

3.1 Physical Environment

All work is proposed in waters of Coddington Cove within Narragansett Bay. The waterfront of Coddington Cove is limited to Naval Undersea Warfare Center (NUWC) research facilities and Research, Development, Training and Education buildings, as well as use by the United States (U.S.) Coast Guard (USCG). NAVSTA Newport's two piers are located north of Pier Landing Site and provide berthing for two inactive ships, the USCG, and other visiting vessels. They are not currently designated for any Navy missions.

3.1.1 Surface Water and Hydrological Processes

Coddington Cove is partially protected by the mass of Coddington Point to the south and east and by a breakwater to north. However, the northwestern section of the cove is exposed to the open water conditions of Narragansett Bay.

The Narragansett Bay watershed encompasses 1,705 square miles, of which over 60 percent is located in Massachusetts. Approximately 1.95 million people live within the watershed. Historically, population growth was the main factor affecting the condition of the Narragansett Bay watershed, as it led to severe pollution. Industrial operations released lead, chromium, and other contaminants; sewer systems discharged untreated sewage; and pavement and rooftops enabled rainwater to carry pollutants directly into waterways. In recent decades, government agencies and private-sector partners have sharply reduced some contaminants, nutrient pollution, and harmful bacteria by upgrading wastewater treatment facilities and stormwater systems. In the last two decades, upper estuary water quality has improved and in 2005, acreage open for shellfishing began to increase. In 2017, an additional 3,711 acres were opened (Narragansett Bay Estuary Program, 2017).

The waters of Coddington Cove are classified as SB water by Rhode Island Department of Environmental Management (RIDEM). Class SB waters are designated for primary and secondary contact recreational activities; fish and wildlife habitat; and good aesthetic value (RIDEM, 2010). According to the 2018 state water quality assessment conducted under Section 303(d) of the Clean Water Act (CWA), Newport Harbor/Coddington Cove is listed as impaired or Category 5 and does not support its designated use as fish and wildlife habitat due to the presence of pollutants in sediments (sediment bioassay for estuarine and marine water). Category 5 waters are identified as impaired and require the establishment of a total maximum daily load (RIDEM, 2021). Pier Landing Site contains several permitted stormwater outfalls that discharge into Coddington Cove.

In addition to the RIDEM classification, the waters of Coddington Cove are also classified as Category 6 Industrial Waterfronts and Commercial Navigation Channels by the Rhode Island Coastal Resources Management Council (RICRMC). This category includes water areas that are extensively altered in order to accommodate industrial waterfronts and commercial navigation channels (RICRMC, 2022).

Hydrographic surveys of the former Derecktor Shipyard Coddington Cove system were conducted in 1997 to determine the general circulation patterns and bottom energies responsible for controlling resuspension and deposition dynamics of sediments. A consistent counterclockwise circulation pattern was observed at the mouth of Coddington Cove with tidal water inflowing at the southern extent of the cove near Coddington Point and outflowing at the northern extent near the breakwater. While some variability is seen in the details of the flow pattern at the mouth, the basic lateral structure of inflow at the southern end of the cove and outflow at northern end also occurs during slack and receding (ebb) tides (SAIC/URI, 1997). Within Coddington Cove, the characteristic counterclockwise flow pattern recorded at the mouth of the Cove sets up a net counterclockwise circulation within the interior of the Cove. Water flows in the enclosed area between the T-pier and breakwater displayed a circular swirling motion, suggesting that the flushing of water within this area is less than that of the open cove areas (SAIC/URI, 1997).

Water quality within Coddington Cove is relatively homogeneous. Water quality observations obtained in the fall indicated low biomass productivity and low ammonia relative to other areas of Narragansett Bay. Dissolved oxygen concentrations ranged from 7.22 to 8.48 milligrams per liter or greater than 90 percent saturation. Sediment oxygen demand measurements, corrected for a temperature of 20 degrees centigrade, ranged from 0.17 to 0.27 grams of oxygen per square meter per day (g O_2/m^2-day). These rates suggest a moderate sediment oxygen demand exerted on the water column relative to literature values showing a range from 2 to 33 g O_2/m^2-day in the vicinity of municipal wastewater treatment and paper mill outfalls to 0.05 to 0.10 g O_2/m^2-day for some U.S. rivers. Dissolved oxygen in the Cove was predicted to approach a minimum of 6 milligrams per liter during the summer indicating that low dissolved oxygen is not adversely impacting biota within Coddington Cove. However, localized hypoxia may occur in the enclosed area between the T-pier and the breakwater (SAIC/URI, 1997).

The overall pattern of circulation and bottom energy in Coddington Cove is such that the majority of sediment is carried out with the vigorous outflow. A portion is expected to fall out of suspension depending on bottom energies. The sediments, once resuspended or imported into the cove, will be transported, sorted, and deposited by particle size in a counterclockwise pattern. Within the enclosed area between the T-pier and the breakwater some deposition occurs and the circular currents tend to retain particulates (SAIC/URI 1997). A nearshore survey of the NAVSTA Newport site in 2017 found total suspended solids (TSS) ranging from 4 to 7 mg/L (Navy, 2017).

3.1.2 Bathymetry

Narragansett Bay is one of Rhode Island's principal water features. Narragansett Bay is approximately 22 nautical miles (40 kilometers) long and 7 nautical miles (16 kilometers) wide. The average depth of Narragansett Bay is 29 feet. The Narragansett Bay's most prominent bathymetric feature is a submarine valley that runs between Conanicut and Aquidneck Islands to Rhode Island Sound and defines the East Passage of Narragansett Bay. The shipping channel in the East Passage serves as the primary shipping channel for the rest of Narragansett Bay and is generally 100 feet deep. The shipping channel from the lower East Passage splits just south of Gould Island with the western shipping channel heading to Quonset Point and the eastern shipping channel heading to Providence and Fall River (Navy, 2008).

Coddington Cove is located on the western side of Aquidneck Island and is a protected embayment formed by Coddington Point to the south and a 4,000-foot-long rubble-mound breakwater to the north. It covers an area of 1.6 square nautical miles with water depths up to 50 feet. According to a 2015 bathymetric survey of Coddington Cove, water depths in the proposed project area are less than 34 feet mean lower low water (MLLW). Water depths within the protected area between the breakwater and the T-pier range between approximately 6 feet and 25 feet MLLW. Beyond the protected areas water depths gradually deepen towards Narragansett Bay to a maximum depth of approximately 36 feet MLLW (NAVFAC, 2015).

3.1.3 Marine Sediments

Surface sediments in Coddington Cove tend to be finer grained (contained more silt and clay) than underlying sandy sediments, probably due to the significantly decreased bottom energy and increased likelihood of fine-grained sediment deposition resulting from construction of the Coddington Cove breakwater in 1957 (NAVFAC, 2014).

Marine sediments in Coddington Cove are part of the former Robert E. Derecktor Shipyard, now designated as Environmental Restoration Program Site 19. A human health risk assessment determined that concentrations of benzo(a)pyrene in shellfish pose unacceptable risk to potential future subsistence fishermen, and a marine ecological risk assessment identified concentrations of high molecular weight polyaromatic hydrocarbons, polychlorinated biphenyls, and lead in sediment posing an unacceptable risk to environmental receptors within this site. Asbestos was also detected in sediment, presenting a potential future risk if the associated sediment were to be dredged and allowed to dry out, resulting in potential inhalation hazards (NAVFAC, 2014). The selected remedy for sediment contamination was a combination of dredging and offsite disposal and placement of a sand/gravel cap in the under pier areas to the north of the breakwater to eliminate potential unacceptable exposure of human and environmental receptors to contaminants. A Record of Decision for the selected remedy was issued by the U.S. Environmental Protection Agency (USEPA) in September 2014 (NAVFAC, 2014). The remedy of dredging and upland disposal of contaminated sediment was completed in 2017.

3.2 Biological Environment

3.2.1 Benthic Community

Benthic grabs were collected as part of an ecological risk assessment (SAIC/URI 1997). The authors noted a basic difference in benthic community structure between silt-bottom and sand-bottom habitats, with greater variability in sand-bottom stations. They found that all of the silt-bottom stations (silt-clay content ≥60 percent), with the exception of DSY-29 (just south of the T-pier at the shoreline), had similar benthic community structure.

SAIC/URI (1997) found the bivalves *Nucula annulata* and *Macoma tenta*, and the polychaetes *Mediomastus ambiseta* and *Nephtys incisa* were the four most abundant and frequently observed (>67 of the time) species at the silt-bottom stations, with *N. annulata* the numerical dominant and the larger polychaete *N. incisa* as the biomass dominant. Numerical dominants at sand-bottom stations included the polychaetes *Aricidea catherinae*, *Glycera Americana*, *Monticellina baptistae* and *Macroclymene zonalis*, Oligochaeta spp., the bivalve *Gemma gemma*, and the amphipod *Photis pollex*. They noted the presence of species common to silt-bottom communities within the sand-bottom stations but at lower densities.

In 2017, AECOM and C.R. Environmental performed a site-specific benthic survey within the proposed project area in which benthic grab samples were taken for macroinvertebrate identifications and enumeration. A towed camera video survey was also completed in order to assess a broad area of the proposed project area for general habitat and megafauna assessment (Figure 3-1). The results are summarized in Table 3-1 and Table 3-2, and the detailed survey report is in Appendix A. Approximately 96 percent of the individual animals sorted from the benthic samples were identified to the species level. Polychaetes comprised approximately 43 percent of the individuals that were identified to species, with mollusks comprising approximately 32 percent, arthropods another 17 percent, oligochaetes 8 and nemerteans less than 1 percent. No echinoderms, anemones, or any other taxa were found in the samples (Table 3-1) (AECOM, 2017).

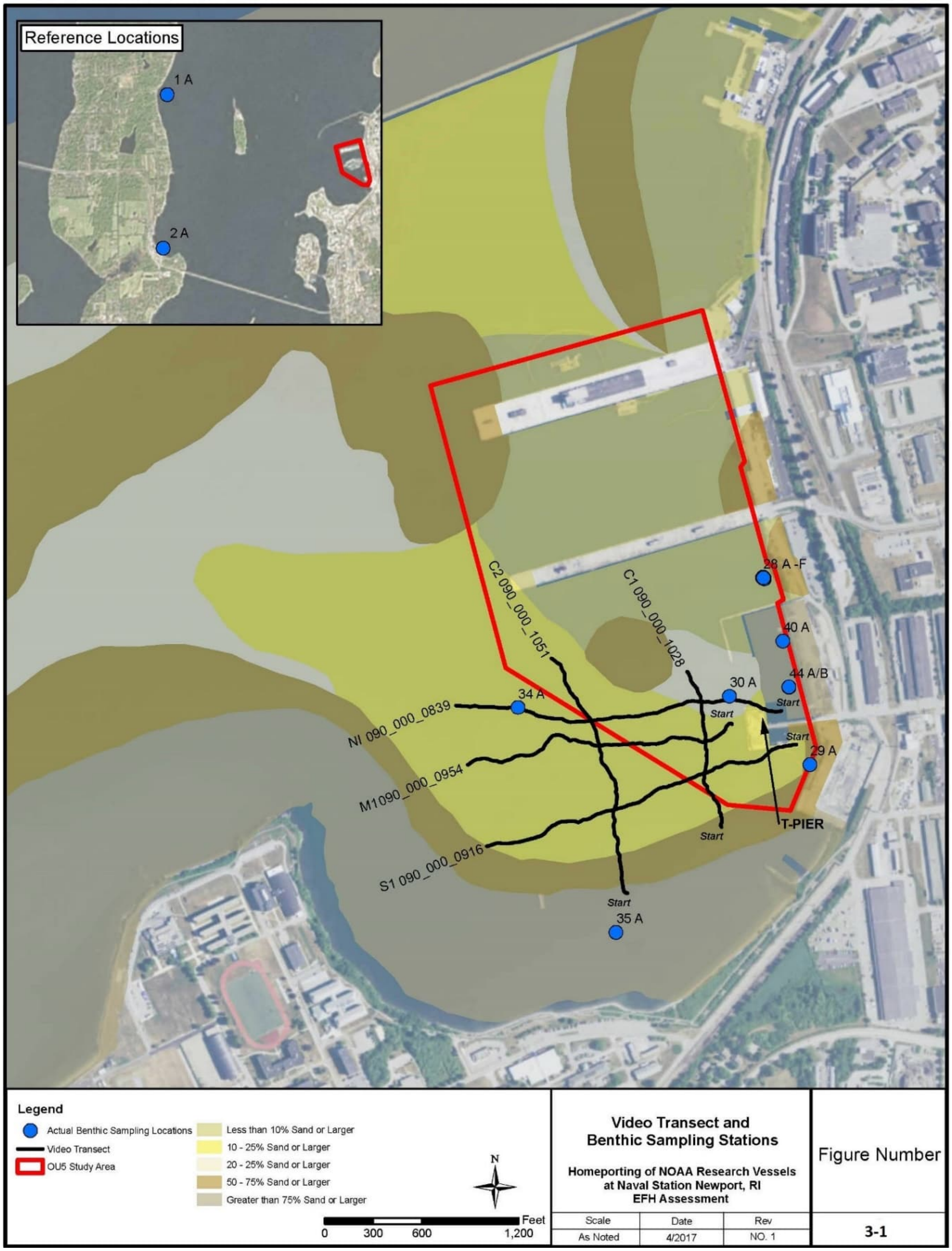

Figure 3-1. Port area showing all benthic grab sample locations and video transects collected and analyzed during the benthic survey March 30-31, 2017

Table 3-1. Numbers of Individuals Found and Identified to the Species Level in 2017

Taxon	*Number of Individuals of Infaunal Taxa Keyed to Species*	*Number of Individuals of Infaunal Taxa Keyed to Genus or Higher*	*Total Infaunal Individuals*	*Percent of Infaunal Individuals Identified to Species Level*	*Percent of Total Keyed to Species*
Arthropoda	518	78	596	86.91	17.02
Mollusca	962	7	969	99.28	31.60
Oligochaeta	240	1	241	99.59	7.88
Polychaeta	1307	25	1332	98.12	42.94
Nemertea	17	0	17	100.00	0.56
All species	3044	111	3155	96.48	--

Source: AECOM, 2017

The top 10 dominant species found in the 2017 benthic samples included annelids (polychaetes and oligochaetes), mollusks (bivalves and gastropods), and crustaceans (amphipods) (AECOM, 2017) (Table 3-2).

Table 3-2. Top 10 Numerical Dominant Species from the Nine Samples Collected in 2017

Species	*Class/Order*	*Total Number of Individuals*	*Percent of Total*
Mediomastus ambiseta	Polychaete	640	20.60
Boonea seminuda	Gastropod	176	5.66
Crepidula fornicata	Gastropod	173	5.57
Nucula proxima	Bivalve	131	4.22
Microdeutopus anomalus	Amphipod	129	4.15
Haminoea solitaria	Gastropod	92	2.96
Spiophanes bombyx	Polychaete	89	2.86
Nephtys picta	Polychaete	85	2.74
Tubificoides benedii	Oligochaete	84	2.70
Mya arenaria	Bivalve	77	2.48
Total		1676	53.94

Source: AECOM, 2017

During the towed camera survey, video was collected along five transects within the proposed project area: three east/west and two north/south. In total, a distance of approximately 6,000 feet was covered by the east/west transects and approximately 3,000 feet through the north/south transects. Commonly observed throughout all of the video segments were slipper snails (*Crepidula fornicata*), burrowing anemones (*Ceriantheopsis americanus*), hermit crabs (*Pagurus* spp.) and amphipods. No fish or large pelagic or benthic invertebrates (squid, lobster, urchins, etc.) were observed in any of the videos. Empty quahog valves (*Mercenaria mercenaria*) were commonly seen on the sediment surface. Shrimp and spider crabs (possibly *Libinia emarginata,* the common spider crab in New England) were rarely seen. Macroalgae was encountered in all videos and throughout the port area. *Enteromorpha, Spermothamnion,* and *Codium* were the most abundant species, but others were present as well. No eelgrass beds were observed (Figure 3-2) (AECOM, 2017).

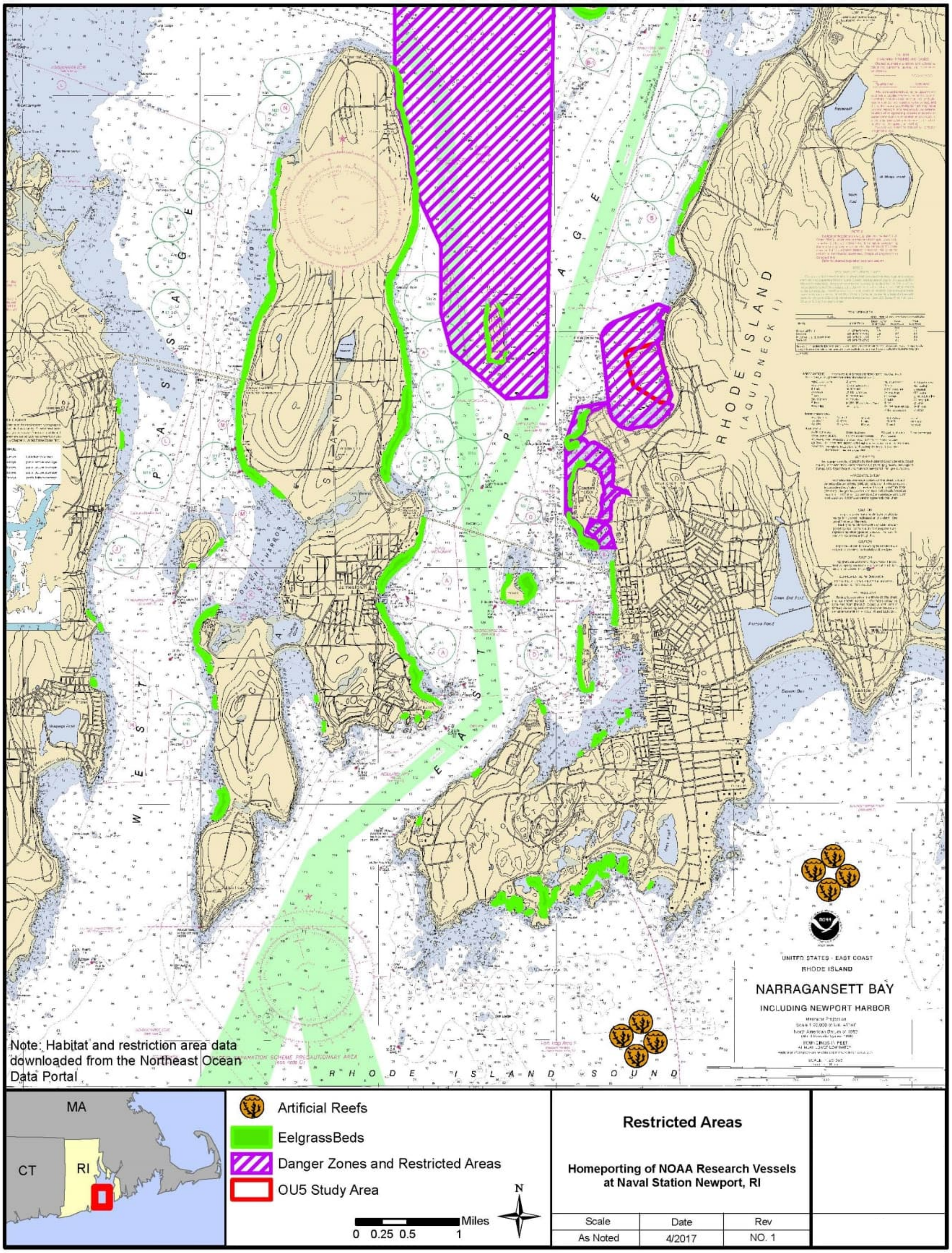

Figure 3-2. Restricted Areas and Eelgrass Beds in Narragansett Bay

3.2.2 Marine Vegetation

Available mapping indicates that eelgrass (*Zostera marina*) beds are prolific along the Newport shoreline including southwest of Coddington Point, but not within Coddington Cove (Figure 3-2). Eelgrass tends to be found on sand or silt substrate on the lee side of landforms where they are protected from predominant winds, at depths of 6 to 10 feet at low tide. Macroalgal beds and eelgrass are protected as Special Aquatic Sites by the CWA and frequently share the same habitat. They are a primary source of food for many animals in Narragansett Bay and a critical nursery and shelter for shellfish and finfish; a filter of pollutants; a key place for nutrient cycling; and a guard against shoreline erosion by dampening wave energy and storms (SAIC, 1997).

The 2017 benthic survey included a towed camera video survey in order to assess a broad area of the proposed project area for general habitat and megafauna. Three habitat types were observed in the area of Coddington Cove that was surveyed: 1) silty sand/sandy silt areas where much of the bottom is visible, and macroalgae is sparse; 2) areas of narrow bands where the substrate is covered by shells and macroalgae is abundant; and 3) large expanses of silt bottom with little to no macroalgae. The silt bottom habitat was the most prevalent within the survey area (AECOM, 2017).

An eelgrass survey of the proposed project area was conducted on July 10 and 11, 2018, during the time of peak biomass in New England, in accordance with an approved work plan (AECOM, 2018). The survey was conducted in general accordance with the protocols outlined in the Joint Federal Agency Submerged Aquatic Vegetation Survey Guidance for the New England Region prepared in 2016 by members of NOAA, USEPA, and U.S. Army Corps of Engineers. Live eelgrass was not observed in the proposed project area. Additional observations west of the survey area (beyond the breakwater [>500 feet from the bulkhead]) also confirmed that live eelgrass was not present at the site. There were limited observations of dead eelgrass blades present at the site (likely transported by currents from other portions of Narragansett Bay), but no live eelgrass was observed within or near the study area during survey activities.

3.2.3 Fish Community

All of Coddington Cove is located in a restricted area (Figure 3-2). Code of Federal Regulations (33 CFR 334.81) defines a restricted area as, “*A defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government’s use of that area.*” All persons, swimmers, vessels and other craft, except those vessels under the supervision or contract to local military or Naval authority, vessels of the USCG, and local or state law enforcement vessels, are prohibited from entering the restricted area without specific permission from the Commanding Officer, Naval Station Newport or his/her authorized representative. NAVSTA Newport allows recreational fishing according to conditions specified in Navy Instruction 5090.26C *Naval Station Newport Recreational Fishing Procedures*, including authorization from the Commanding Officer, and state regulations. A base fishing license is required (except for minors under the age of 16 years old, any blind person, or any disabled veteran), along with a state license. Only line fishing is allowed. Unauthorized/prohibited fishing sites include Pier 1, Pier 2, and Environmental Restoration Program Site 19, Stillwater Basin and Breakwater, Gould Island, and seven other sites. Therefore, fishing is not allowed within the proposed project area.

There is prime marine fishing available for both recreational and commercial interests in the Narragansett Bay area. Recreational anglers use many of the same fishing grounds as the commercial fishery. Major species targeted include, but are not limited to, the following: bluefish, weakfish, striped bass, black sea bass, tautog, summer flounder, Atlantic mackerel, red hake, spot, croaker, and scup. Party/charter boats from various ports in transport recreational anglers to fish for striped bass, scup, summer flounder, tautog, black sea bass, Atlantic cod, and bluefish (NOAA Fisheries, 2020a). Recreational fishing is closely regulated in nearshore waters by RIDEM which determines size limits, bag limits, and fishing seasons from collected data, Atlantic States Marine Fisheries Commission (ASMFC) FMPs, and recommendations from the NMFS.

Oviatt et al. (2003) summarized differences in fish and shellfish abundances in Narragansett Bay and coastal Rhode Island from landing data and surveys performed from the late 1800s to the late 1900s. They noted three trends in species composition, which they suggest may be related to climate change, pressure of the bottom trawl fishery, or both. The first trend observed was that northern species have decreased (e.g., reduced numbers of northern sea robin [*Prionotus carolinus*] and winter flounder [*Pseudopleuronectes americanus*]). The second trend observed was that with decreased numbers of bottom fish, there was an increase in decapods (blue crabs [*Callinectes sapidus*], cancer crabs [*Cancer* spp.], lady crabs [*Ovalipes ocellatus*] and lobsters [*Homarus americanus*]). The third trend observed was that bottom fish have decreased in number while pelagic species have increased (with the exception of scup). They note that RIDEM trawl surveys in Narragansett Bay show a decrease in northern sea robins, red hake (*Urophycis chuss*), cod (*Gadus morhua*), sea raven (*Hemipterus americanus*), skates, dogfish (*Squalus acanthias*), tautog (*Tautoga onitis*), windowpane flounder (*Scopthalmus aquosus*) and winter flounder; and an increase in bluefish (*Pomatomus saltatrix*), anchovy (*Engraulis mordax*) and butterfish (*Peprilus triacanthus*).

Collie, Wood and Jeffries (2008), analysed data on 25 fish and invertebrate species collected in trawls from 1959 to 2005 by the University of Rhode Island from one location inside Narragansett Bay and another in Rhode Island Sound. They also noted a shift from vertebrates to invertebrates and from benthic to pelagic species. They documented declines in winter flounder, silver hake (*Merluccius bilinearis*), and red hake; and an increase in butterfish, scup, lobster, squid, and crab.

Herman (1963) collected fish eggs and larvae weekly from four stations in Narragansett Bay from March 1957 to March 1958. He identified 36 species of fish eggs and larvae during this timeframe. He found peak spawning activity to be late May through mid-August, with peak egg production in June and July. A period of low abundance occurred between September and February. Peak larval abundance was in July and August (18 different species), and again in January and March (American sand lance [*Ammodytes americanus*] and sculpin [*Myoxocephalus spp*.]). The period of low larval abundance was September through December. He noted that deeper areas of the Bay had greater concentrations and a greater diversity of species than shallow areas.

Some studies indicate that with climate change and an increase in average bottom temperatures in the North Atlantic, there is a response by fish to move further north as well as to deeper waters (Rose, 2005; Nye et al. 2009). Nye et al. (2009) found that distributional responses were most pronounced in species in southern New England and the mid-Atlantic Bight.

4. Essential Fish Habitat Descriptions

The Greater Atlantic Regional Fisheries Office (GARFO), the New England and the Mid-Atlantic Fishery Management Councils (NEFMC and MAFMC respectively) have designated EFH for the species they manage. The highly migratory species (tuna, swordfish, shark, and billfish) are managed by the NOAA Fisheries headquarters. The fish in the proposed project area will fall under all three of these management units. EFH is mapped throughout the U.S., and for areas managed by GARFO, the data is available online and can be queried to determine a list of species with EFH within any proposed project area (NOAA Fisheries, 2022).

Table 4-1 summarizes the fish and invertebrate species, respective jurisdiction, correlating FMPs, and EFH life stages for species within the proposed project area. In total, 23 species have EFH designated for all, or a portion, of their life stages within the proposed project area.

The following subsections provide designated EFH descriptions for each EFH species and life stages applicable to the proposed project area compiled from EFH source documents.

Within the EFH designated for various species are habitat areas of particular concern (HAPCs), which have also been identified and mapped throughout the U.S. HAPCs are defined as subsets of EFH that exhibit one or more of the following traits: rare, stressed by development, provide important ecological functions for federally managed species, or are especially vulnerable to anthropogenic degradation. Only two species with EFH within the proposed project area have identified HAPC (Table 4-1).

Table 4-1 Summary of Essential Fish Habitat and HAPC Designations in the Proposed Project Area

Species	Scientific Name	Eggs	Larvae	Juveniles	Adults
Summer Flounder, Scup, Black Sea Bass FMP (Mid-Atlantic Fishery Management Council)					
Summer Flounder	*Paralichthys dentatus*		X	X + HAPC	X + HAPC
Scup	*Stenotomus chrysops*	X	X	X	X
Black Sea Bass	*Centropristis striata*			X	X
Atlantic Mackerel, Squid & Butterfish FMP (Mid-Atlantic Fishery Management Council)					
Atlantic Mackerel	*Scomber scombrus*	X	X	X	X
Longfin Inshore Squid	*Doryteuthis pealeii*			X	X
Atlantic Butterfish	*Peprilus triacanthus*	X	X	X	X
Bluefish FMP (Mid-Atlantic Fishery Management Council)					
Bluefish	*Pomatomus saltatrix*			X	X
Northeast Multispecies FMP (New England Fishery Management Council)					
Atlantic Cod	*Gadus morhua*	X	X	X + HAPC	
Pollock	*Pollachius virens*			X	
Ocean Pout	*Macrozoarces americanus*	X			
Winter Flounder	*Pseudopleuronectes americanus*	X	X	X	X
Windowpane Flounder	*Scophthalmus aquosus*	X	X	X	X
Small Mesh Multispecies FMP (New England Fishery Management Council)					
Red Hake	*Urophycis chuss*	X	X	X	X
Silver Hake	*Merluccius bilinearis*	X	X		X
Atlantic Herring FMP (New England Fishery Management Council)					
Atlantic Herring	*Clupea harengus*		X	X	X
Northeast Skate Complex FMP (New England Fishery Management Council)					
Little Skate	*Leucoraja erinacea*			X	X
Winter Skate	*Leucoraja ocellata*			X	X
Atlantic HMS FMP (Secretarial)					
Sand Tiger Shark	*Carcharias taurus*		X	X[1]	
White Shark	*Carcharodon carcharias*			X[2]	
Yellowfin Tuna	*Thunnus albacares*			X	
Albacore tuna	*Thunnus alalunga*			X	
Skipjack tuna	*Katsuwonus pelamis*				X
Bluefin tuna	*Thunnus thynnus*			X	

"X"= Life Stage has defined EFH within project boundaries (NOAA Fisheries, 2022).
[1]= Life stage is juvenile/neonate for sand tiger shark
[2]= Life stage is neonate for white shark

5. Assessment of Impacts

5.1 Construction Impacts

Construction related activities that have the potential to cause adverse effects include pile driving and placement for the bulkhead reinforcement, pier, trestle, and small floating dock as well as the filling of the bulkhead area. Potential adverse effects to fish and fish habitat directly related to construction activities including alteration of sea floor habitat (including shading), water quality impairment, underwater noise, displacement, and physical impairment/injury are discussed in this section along with best management practices (BMPs) to minimize these effects.

5.1.1 Alteration to Sea Floor Habitat

The construction of the pier would be within an area devoid of sensitive biological resources such as hard bottom areas and submerged aquatic vegetation. However, the construction of the new bulkhead for stabilization of the shoreline would require the filling of approximately 2,400 square feet (0.6 acres) of surface water in front of the existing bulkhead and require the placement of approximately 895 cubic yards of pea gravel fill with geotextile filter fabric to prevent soil from leaking into the water. The placement of fill would extend approximately 3 feet seaward of the existing bulkhead for approximately 728 linear feet. Temporary impacts to the cove bottom would be incurred from the spudding/anchoring of construction vessels and from the driving and removal of the template being used for pier and trestle installation.

The construction of the new pier, trestle, and floating dock would directly impact approximately 960 square feet (0.2 acres) of cove bottom and result in the filling of approximately 875 cubic yards of open water with the addition of the pilings. In total, impacts to the water column and sea floor from bulkhead, pier, and floating dock construction would be 1,770 cubic yards and 3,360 square feet (0.8 acres), respectively. Construction of the new pier, trestle, floating dock, and bulkhead would cover a total of approximately 55,000 square feet (1.26 acres) of surface water, resulting in a permanent, indirect adverse effect to the benthic habitat.

The benthic community that would be temporarily adversely impacted during construction activities is expected to rapidly recover upon project completion (Brooks et al., 2006). The sea floor in the proposed project area is a soft-bottom environment, comprised of fine sands with silts and clays; therefore, no impact to hard-bottom habitat is expected.

5.1.2 Impacts to the Water Column

Temporary turbidity and increased suspended solids in the immediate area will occur during construction. The surficial sediments are comprised of a high percent of silt, but the pile driving is expected to produce a limited extent of sediment dispersion due to the weak currents found in the proposed project area (SAIC/URI, 1997). The dissolved oxygen may drop from ambient temporarily when bottom sediments are resuspended but should return to ambient shortly after construction ends. There would be no permanent change in salinity regime, tidal height, water temperature or dissolved oxygen. Tidal flow would be slightly impacted from the presence of the new piles but is not expected to significantly alter the habitat. Therefore, no significant permanent impacts to water column EFH are expected due to the proposed project. Pelagic species and life-stages are expected to continue using unaffected portions of the water column during and after construction. Pelagic larval and egg life stages would be carried through the active proposed project area on prevailing currents and tides, resulting in limited exposure to areas disturbed by construction. Turbidity impacts are discussed fully below.

5.1.3 Turbidity Impacts

Increased turbidity and sedimentation from construction activities could result in direct and indirect impacts on the habitat of demersal and pelagic fish, spawning and nursery areas, and sessile organisms. Construction activities (pile driving) would result in short-term turbidity increases. Construction vessel operations in shallower areas may be necessary, and prop wash could potentially cause localized, temporary resuspension of sediment. In shallow areas along the existing bulkhead, construction activities would be conducted from the landside to the extent practicable. It is expected that any sediments resuspended by prop wash would settle out of the water column quickly, any associated turbidity plume would dissipate rapidly, and the overall effect would be negligible. Turbidity from both prop wash and pile driving would decrease water clarity, which could affect the foraging behavior of both visual predators and filter feeders. It is expected that mobile species would be displaced temporarily from the habitat but would be expected to return to the area following construction. Turbidity would result in temporary impacts on the soft-bottom community, such as partial burial and perhaps mortality depending on the rate of sedimentation. The sediment consists mostly of sandy silt. Therefore, the effects of turbidity and sedimentation would extend to a larger corridor than if the sediments contained high sand inventories. If mortality does occur, the benthic community is expected to recolonize quickly. However, SAIC/URI (1997) identified much of the proposed project area as depositional; and AECOM observed areas of deposition and sedimentation in all video transects as a baseline condition (AECOM, 2017). It is likely that some macroalgae would not survive if in proximity to construction activities with high turbidity, though tidal exchange may assist in cleaning the deposition off the plants.

Pile driving activities are expected to produce total suspended sediment concentrations of approximately 5.0 to 10.0 mg/L above background levels within approximately 300 feet of the pile being driven (Federal Highway Administration, 2012 as cited in NOAA Fisheries, 2020b). Many of the managed fish species that may be present in the proposed project area are visual predators. Increased turbidity in the water column could affect their ability to forage efficiently. However, most of the potentially impacted organisms are highly mobile and would escape or avoid the impacted area of the water column during periods of increased turbidity. Photosynthetic activity would return to normal levels as suspended sediments settle out of the water column, and displaced species would quickly return to the area. The turbidity caused by installation of piles is expected to settle out of the water column within a few hours (NOAA Fisheries, 2020b). Fertilization success of individual pelagic spawners and survivorship of individual pelagic larvae could be affected by turbidity, but spawning occurs over broad areas and the construction footprint is small, therefore population-level adverse impacts to pelagic spawners would not be expected. Impacts to the marine water column would therefore be minor and temporary.

5.1.4 Impacts to HAPC

The summer flounder HAPC is defined as all species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile EFH. The findings of a site specific benthic survey (details provided in Sections 3.2.1 and 3.2.2) include previously unmapped macroalgae that would be considered part of HAPC for this species.

The construction of the new pier with paved decking would shade the benthic habitat underneath. The lack of light may cause any areas of macroalgae under the new pier to wither or perhaps die. The macroalgae in the area of the footprint of the proposed new pier is common, but in small patches in the sandy, shallow area just north of the T-pier. Most of the patches themselves are very small (<1 square foot) with large bare areas in between (AECOM, 2017). Therefore, the potential impact to macroalgae would be limited to a very small amount of patchy macroalgae, with no impact to eelgrass. However, any impact to macroalgae would be a permanent adverse effect.

HAPC for juvenile Atlantic cod has been designated as inshore areas of the Gulf of Maine and southern New England between 0-20 meters (relative to mean high water). Clarification of this area further demarcates HAPC as those areas of structurally complex habitats including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna. This habitat is not found within the proposed project area. Therefore, no impact to Atlantic cod HAPC is expected.

5.1.5 Potential for Oil Spills

Another category of potential impact to marine and estuarine fish and wildlife is the risk of accidental spills of petroleum lubricants and fuel during construction. These spills could originate from: accidental spills from construction barges or support boats, loss of fuel during fuel transfers, or accidents resulting from collisions. Construction activities would involve work aboard vessels and the movement of barges, supporting vessels, and other specialized marine equipment. Construction contractors must comply with all laws and regulations related to handling of fuels and lubricants, including 40 CFR Part 110, and related to vessel-to-vessel transfers, including 33 CFR Part 155.

5.1.6 Impacts from Noise

There may be impacts to managed species and water column EFH from sound generated during pile installation for the new pier, trestle, and floating dock as well as from bulkhead stabilization. Pile driving activities create sounds that are pulsed or continuous based on the type of activity. In general, pulsed sounds have an increased capacity to induce physical harm compared with continuous sounds (ICF Jones and Stokes and Illingworth and Rodkin, Inc., 2009). Impact pile driving produces pulsed sounds, while vibratory pile driving produces continuous sounds. Underwater sound-generating activities may adversely affect fishes through direct mortality, injury, or behavioral changes (Caltrans, 2015; Longmuir and Lively, 2001; Stotz and Colby, 2001).

In-water work is estimated to take approximately one year. Details on the number of piles to be driven are listed in Table 5-1.

Table 5-2 includes proxy sound sources for the pile driving for underwater acoustic sound pressure levels as formulated from the underwater acoustic transmission loss modeling conducted for the project (NAVFAC, 2022).

Table 5-1. Pile Installation/Extraction, Drilling, and Down the Hole Hammer Activity

Facility	*Pile Type*	*Pile Diameter (inch)*	*Number of Piles*	*Method of Pile Driving/Extraction*	*Daily Production Rate*	*Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)*	*Impact Pile Driving (Strikes)*	*Total Production Days [(1)]*
Abandoned guide piles along bulkhead	Steel Pipe	12.0	3	Vibratory Extraction	3 piles/day	30	n/a	1
Floating dock demolition (Timber Guide Piles)	Timber	12.0	4	Vibratory Extraction	4 piles/day	30	n/a	1
Bulkhead construction (Combination Pipe/Z-pile)	Steel Pipe Pile	18.0	115	Vibratory / Impact	8 piles/day	30	1,000 strikes/pile	15
			12	Mono-hammer DTH [(2, 3)]	1 hole/day	300	13 strikes/second	12
	Steel Sheet pile Z26-700	18.0 deep	230 (115 pairs)	Vibratory	8 pair/day	30	n/a	15
	Template Steel Pipe Pile	16.0	60 (4 x 15 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	30
Trestle (Bents 1-18)	Steel Pipe Pile	18.0	36	Vibratory / Impact	2 piles/day	30	1,500 strikes/pile	18
			4	Rotary Drilling [(4)]	1 hole/day	300	n/a	4
	Template Steel Pipe pile	16.0	72 (4 x 18 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	36
Trestle (Bent 19)	Steel Pipe Pile	30.0	2	Vibratory / Impact	2 piles/day	45	2,000 strikes per pile	1
	Template Steel Pipe pile	16.0	4 (4 x 1 move)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2

Facility	*Pile Type*	*Pile Diameter (inch)*	*Number of Piles*	*Method of Pile Driving/Extraction*	*Daily Production Rate*	*Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)*	*Impact Pile Driving (Strikes)*	*Total Production Days* [(1)]
Pier	Steel Pipe Pile	30.0	120	Vibratory / Impact	4 piles/day	45	2,000 strikes/pile	30
			12	Rotary Drilling [(4)]	1 hole/day	300	n/a	12
	Template Steel Pipe Pile	16.0	120 (4 x 30 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	60
Fender Piles	Steel Pipe Pile	16.0	201	Vibratory	4 piles/day	20	n/a	50
	Template Steel Pipe Pile	16.0	96 (4 x 24 moves)	Vibratory Installation / Extraction	4 pile/day	30	n/a	48
Gangway support piles (small boat floating dock)	Steel Pipe Pile	18.0	4	Vibratory / Impact	2 piles/day	30	1,000 strikes/pile	2
Small Boat Floating Dock	Steel Casing w/ Rock Socket (Guide Pile)	36-inch shaft	2	Vibratory / Impact	1 pile/day	60	1,000 strikes/pile	2
			2	Mono-hammer DTH [(2, 3, 5)]	1 hole/day	300	13 strikes/second	2
	Template Steel Pipe Pile	16.0	4 (4 x 1 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2

Notes: n/a=not applicable

*Pile installation at Bulkhead and Trestle may be concurrent

**Pile installation of Pier, Fender, Gangway, and Floating Dock may be concurrent

(1) Total production days for template piles includes the time to install and the time to extract the piles.

(2) "Down the hole hammer" (DTH) may be used to clear boulders and other hard driving conditions for pipe piling at the bulkhead. DTH will only be used when obstructions or refusal (hard driving) occurs that prevents the pile from being advanced to the required tip elevation using vibratory/impact driving. The DTH is placed inside of the steel pipe pile and operates at the bottom of the hole to clear through rock obstructions, hammer does not "drive" the pile but rather cleans the pile and removes obstructions such that the piles may be installed to "minimum" tip elevation.

(3) DTH uses both impulsive (strikes/second) and continuous methods (minutes).

(4) Rotary drilling may be used to clear boulders/obstructions for trestle and pier. Core barrel will be lowered through the pile and advanced using rotary methods to clear the obstruction. After the obstruction is cleared, the piling will be advanced to the required tip elevation using impact driving methods.

(5) DTH will be used to create a rock socket at each of the 36-inch shafts for the floating dock.

Table 5-2. Underwater Noise Source Levels Modeled for Impact and Vibratory Pile Driving/Extracting, Drilling, and DTH Mono-Hammer

Pile Type	***Installation/ Extraction Method***	***Pile Diameter***	***Peak (dB re 1 µPa)***	***rms (dB re 1 µPa)***	***SEL (dB re 1 µPa² sec)***	***Reference***
Steel pipe	Vibratory Extraction	12-inch[1]	171	155	155	Caltrans 2020, Table 1.2-1d
Timber	Vibratory Extraction	12-inch	NA	158	NA	NOAA Fisheries 2021, Table 4
Steel pipe	Vibratory Install	18-inch[2]	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4
Steel pipe	Impact Install	18-inch[2]	208	187	176	Caltrans 2020, Table 1.2-1a
Sheet pile	Vibratory Install	Z26-700[3]	NA	156	NA	NOAA Fisheries 2019, p.37846
Steel pipe	Vibratory Installation/Extraction	16-inch	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4
Steel pipe	DTH mono-hammer	18-inch	172	167	146	Egger 2021; Guan and Miner 2020
Steel pipe	Rotary Drilling	18-inch and 30-inch	NA	154	NA	Dazey et al. 2012
Steel Pipe	Vibratory Install	30-inch	NA	167	167	Navy 2015, p.14
Steel Pipe	Impact Install	30-inch	211	196	181	NAVFAC Southwest 2020, p.A-4
Steel Pipe	DTH mono-hammer	30-inch[4]	194	167	164	Egger 2021; Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019
Casing/Shaft for Steel pipe	Vibratory Install	36-inch	NA	175	175	NAVFAC Mid-Atlantic 2019, Table 6-4
Casing/Shaft for Steel pipe	Impact install	36-inch	209	198	183	NAVFAC Mid-Atlantic 2019, Table 6-4
Casing/Shaft for Steel pipe	DTH mono-hammer	36-inch[4]	194	167	164	Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019

Source: NAVFAV, 2022.

Notes: Proxy for 13-inch steel pipe used as data not available for vibratory install/extract of 12-inch steel pipe.

1. Proxy for impact install of 20-inch steel pipe as data were not available for 18-inch.
2. A proxy value for vibratory pile driving Z26-700 steel sheet piles could not be found so a proxy for a 30-inch steel pipe pile has been used (Navy 2015 [p. 14]).
3. Guidance from NMFS states: combination of (whichever higher for given metric) Reyff and Heyvaert (2019), Reyff (2020), and Denes et al. (2019).

Notes: All SPLs are unattenuated; dB=decibels; NA = Not applicable/Not available; rms = root mean square; SEL = sound exposure level; single strike SEL are the proxy sources levels presented for impact pile driving and were used to calculate distances to PTS.

dB re 1 µPa = dB referenced to a pressure of 1 microPascal, measures underwater SPL. dB re 1 µPa²-sec = dB referenced to a pressure of 1 microPascal squared per second, measures underwater SEL.

All recordings were made at 10 meters unless noted otherwise.

Caltrans = California Department of Transportation; NA = Not Applicable; NAVFAC = Naval Facilities Engineering Systems Command

The noise generated from pile driving permeating the water column has the potential to impact fish species and EFH. When exposed to pile driving sounds, one variable that could potentially be the difference between sustaining life threatening, moderate, or minor injuries versus not is the presence and type of a swim bladder (Halvorsen et al., 2012). In a study using lake sturgeon (*Acipenser fulvescens*) with an open (physostomous) swim bladder, Nile tilapia (*Oreochromis niloticus*) which have a closed (physoclistous) swim bladder, and the hogchoker (*Trinectes maculatus*) with no swim bladder the authors found total and most severe injuries from the loudest cumulative and single-strike sound exposure levels occurred in the Nile tilapia, with more moderate injuries in the lake sturgeon, but that the hogchoker had no visible injuries. Fish lacking swim bladders include flatfishes (flounders, etc.), sharks, skates, and rays. Fish with swim bladders not involved in hearing include salmonids and some tunas and mackerels; fish with swim bladders linked to the ear include drums, croakers, and herrings.

There is little data on the behavioral response of fish to loud sounds in general and to pile driving specifically (Popper et al., 2014). The NMFS, in some but not all of their Biological Opinions addressing underwater sound, has used a fish behavioral threshold criteria of 150 dB rms. This value is based on studies that did not evaluate some critical aspects of behavioral responses, including how long animals responded to the sound sources, whether their responses habituated over time, and whether animals would have moved away from the source had the sounds continued (Popper et al., 2019). None of the current research available on fish behavioral response to sound makes recommendations for a behavioral threshold. Therefore, sound exposure guidelines developed by Popper et al. (2014) are contained in Table 5-3. The Transmission Loss formula below was used for determining distance to thresholds as calculated and shown in Table 5-3.

$$Transmission\ Loss\ =\ 15 * Log10[radius]$$

As shown in Table 5-3 and Figure 5-1, the maximum distances to the 207 dB cumulative sound exposure level (SEL_{cum}) onset of mortality threshold is threshold for fishes with swim bladders calculated to 154 feet (47 meters), or less. The 203 dB (SEL_{CUM}) injury threshold is calculated to 282 feet (86 meters) or less. This guideline is the lowest level where injury is found (Popper, et al., 2014) and results in an area where fish are anticipated to potentially be exposed to injury. In all cases, because the cumulative SEL formula takes into account all impact pile strikes within a 24-hour period, the size of the injury zones are presented as they have increased to their maximum extent through the course of a pile-driving day. As a result, during the early portion of the construction day, the injury zone would be smaller and would only gradually increase out to a maximum extent as calculated in Table 5-3 after all strikes have been completed. Further, the formula assumes fish are remaining within the effect range during the entirety of active impact pile driving. In other words, an individual fish would have to be constantly within the calculated range during all impact pile driving in order to accumulate energy from every impact strike.

Fish exposed to pile driving sounds of 186 dB cumulative SEL or higher could experience Temporary Threshold Shift (TTS) out to a distance of 3,825 feet (1,166) meters. At this distance, fish present within this threshold could modify their behavior (i.e., site avoidance or move further offshore).

Impact minimization measures, including the use of soft start for impact pile driving, would further reduce the potential for adverse impacts to fish. Soft start involves an initial set of strikes from the impact hammer at reduced energy before operating at full power which allows fish an opportunity to move away from the construction area.

Based on reference sound level data and established criteria for physical injury, the proposed pile driving activities are not anticipated to have pathological or physiological impacts on EFH species; however, it is anticipated that some individuals would move to adjacent habitats during active pile driving because of increased underwater sound. While pile driving activities would displace individuals, fishes would not be permanently deterred from foraging or otherwise using EFH in the proposed project area. Therefore, impacts on EFH from pile driving sound would be short-term and minor.

Figure 5-1. Noise Zones of Influence for Fish from Impact Driving of 30-inch Steel Piles – Trestle, Pier, Gangway

Table 5-3. Maximum Range to Fish Sound Thresholds from Impact Pile-Driving

Section	Pile Size and Count	Fishes Without a Swim Bladder					Fishes with a Swim Bladder not Involved in Hearing					Fishes with a Swim Bladder Involved in Hearing				
		Onset of Mortality		Recoverable Injury		TTS	Onset of Mortality		Recoverable Injury		TTS	Onset of Mortality		Recoverable Injury		TTS
		>219 SEL_{cum}	>213 SPL_{peak}	>216 SEL_{cum}	>213 SPL_{peak}	>186 SEL_{cum}	210 SEL_{cum}	>207 SPL_{peak}	203 SEL_{cum}	>207 SPL_{peak}	186 SEL_{cum}	207 SEL_{cum}	>207 SPL_{peak}	203 SEL_{cum}	>207 SPL_{peak}	186 SEL_{cum}
Bulkhead,	18-inch Steel pipe	5 m	5 m	9 m	5 m	541 m	22 m	12 m	63 m	12 m	541 m	34 m	12 m	63 m	12 m	541 m
Trestle, Pier, Gangway	18-inch Steel Pipe	3 m	5 m	4 m	5 m	448 m	11 m	12 m	33 m	12 m	448 m	18 m	12 m	33 m	12 m	448 m
	30-inch Steel Pipe	7 m	7 m	12 m	7 m	1,166 m	29 m	18 m	86 m	18 m	1,166 m	47 m	18 m	86 m	18 m	1,166 m
Small Boat Floating Dock	36-inch Steel Casing	4 m	5 m	6 m	5 m	631 m	16 m	14 m	46 m	14 m	631 m	25 m	14 m	46 m	14 m	631 m

Notes: m = meters; SEL_{cum} = Cumulative sound exposure level (decibel referenced to 1 micropascal squared seconds [dB re 1 μPa^2-s]), SPL_{peak} = Peak sound pressure level (decibel referenced to 1 micropascal [dB re 1 μPa]), ">" indicates that the given effect would occur above the reported threshold; TTS = Temporary Threshold Shift > indicates that the given effect would occur above the reported threshold. Distances are based on maximum number of pile strikes per day for any given pile type installed (see Table 2); Due to the lack of studies on fish supporting injury or behavioral disturbance from vibratory pile driving methods, the range of effects on fish focuses on impact pile driving.

Source: NAVFAC, 2022

5.2 Vessel Operation

The following impacts can be anticipated due to the presence of the pier and associated structures or through day-to-day operation of the completed project.

5.2.1 Impacts to the Sea Floor

Pier pilings would provide habitat for colonization by a diverse attached faunal community which is likely to include species of sponges (Porifera), tunicates, hydrozoa, bryozoa and others. The pier would also provide a source of shelter for lobsters and crabs in the proposed project area. There are no naturally occurring hard bottom areas in the vicinity of the project, so the addition of hard substrate may encourage new species or enhance density of others already present.

There is no eelgrass or other submerged aquatic vegetation in the proposed project area. There is a small amount of HAPC for summer flounder in the proposed project area due to the presence of macrophytic algae. There would be an increase in the number of large and small vessels coming into and out from this area; however, anchoring to the sea floor is not allowed as part of homeporting. Therefore, minimal permanent impacts to the sea floor and the available macroalgae habitat within Coddington Cove and Narragansett Bay are anticipated from the proposed project.

5.2.2 Impacts to the Water Column

No impacts to the water column are expected due to the proposed project. No cooling water withdrawals would be made, and no ballast water would be discharged. The water depth at the pier where vessels will be located is greater than 25 feet (Figure 2-1) and would be sufficient as to not have any impact from propeller wash from the planned vessels.

5.2.3 Potential for Oil Spills

There is some potential for accidental spills of petroleum lubricants and fuel to occur during pier operations. Fueling of ships would be conducted using a tanker truck. NAVSTA Newport has an existing Spill Prevention, Containment, and Countermeasure Plan already in place to provide timely containment and clean-up instructions for any potential spill. Vessel operators and contractors must comply with all laws and regulations related to handling of fuels and lubricants, including 40 CFR Part 110.

6. Summary of EFH Impacts

The EFH impact evaluation process for the project is summarized in Table 6-1. Impacts are listed by type and nature (i.e., significance of effects). Impacts are considered direct, indirect, temporary, short-term, long-term, permanent, and/or cumulative. Most of the effects are temporary and would be offset by environmental protection guidelines or are negligible considering the localized effect of the actions compared to the area of Narragansett Bay that would be unaffected.

Table 6-1 Summary of Anticipated Impacts to EFH

Type of Impact	Temporary [Recovery within Days to Weeks]	Short Term [Recovery within <3 Years]	Long Term [Recovery in >3 to <20 Years]	Permanent [Recovery in >20 Years]	Cumulative
Turbidity/Sedimentation	I	NA	NA	NA	NA
Disruption of Hard Bottom Habitat	NA	NA	NA	NA	NA
Disruption of Macroalgae Habitat Occupied by Pier	NA	NA	NA	I	NA
Sea Floor Area Occupied by Pier	NA	NA	NA	D	NA
Fish Fauna Disruption Species	D/I	D/I	NA	NA	NA
Fish Fauna Disruption Habitat	D	D	NA	NA	NA
Water Column Underwater Noise	D/I	D/I	NA	NA	NA
Potential of Fuel/Toxic Substance Spills	D	D	D	D	NA

D = Potential Direct Adverse Impact
I = Potential Indirect Adverse Impact
NA = Not Applicable/No Adverse Impact

The summary of potential impacts to all federally managed species from construction and operation of the proposed project are summarized by species in Table 6-2. Finfish juvenile and adult stages would likely leave the construction areas to nearby unaffected habitat. Impacts to these life stages would consist of temporary displacement and a temporary loss of a small portion of food/foraging area. Impacts to demersal eggs, larvae, and to a lesser extent, juveniles may include mortality from construction methods. No impacts to pelagic eggs and larvae are expected. Overall, the impacts to federally managed species would be mostly temporary and are not expected to have any lasting effect upon the status or sustainability of the fisheries.

Table 6-2. Summary of Potential Impacts to Federally Managed Species that may Utilize the Proposed Project Area for Habitat.

Common Name	Scientific Name	Comment
Summer flounder	*Paralicthys dentatus*	Only larvae, juvenile, and adult life stages have EFH listed within the waters of the proposed project area. Larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers. Temporary impacts from construction are expected to individual juveniles and adults from displacement, but they are expected to return upon completion. Impact to macroalgae (HAPC to adult and juvenile life stages) may occur from deck shading, but is expected to be minor.
Scup	*Stenotomus chrysops*	All life stages (egg, larvae, juvenile and adults) have EFH listed within the waters of the proposed project area. Eggs and larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Foraging for prey by juveniles and adults within temporarily affected benthic areas will be affected until the benthic fauna recovers. Temporary impacts from construction are expected to individual juveniles and adults from displacement, but they are expected to return upon completion.
Black sea bass	*Centropristus striata*	Only juveniles and adults have EFH listed within the waters of the proposed project area. Juveniles and adults may temporarily be displaced from the area during construction but would be expected to return once construction is completed. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers. An overall positive impact from new pier structure may eventually be expected.
Atlantic mackerel	*Scomber scombrus*	All life stages (egg, larvae, juvenile and adults) have EFH listed within the waters of the proposed project area. Egg and larval life stages may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Individual juveniles and adults may be temporarily displaced during construction, but they are expected to return upon completion.
Longfin inshore squid	*Loligo pealeii*	Only juvenile and adult life stages have EFH listed within the waters of the proposed project area. Juveniles and adults would be temporarily displaced during construction but would be expected to return once construction is completed.
Atlantic butterfish	*Peprilus triacanthus*	All life stages (egg, larvae, juvenile and adults) have EFH listed within the waters of the proposed project area. Egg and larval life stages may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Temporary impacts from displacement from construction to juveniles and adults may occur but they would be expected to return once construction is completed.
Bluefish	*Pomatomus saltatrix*	Only juvenile and adult life stages have EFH listed within the waters of the proposed project area. Individual juveniles and adults would be temporarily displaced during construction but would be expected to return once construction is completed.

Common Name	Scientific Name	Comment
Atlantic cod	*Gadus morhua*	Only eggs, larvae and juvenile life stages have EFH listed within the waters of the proposed project area. Egg and larval life stages may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Juveniles would be temporarily displaced during construction but would be expected to return once construction is completed. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers. No impact to juvenile HAPC is expected as no hard bottom or structurally complex habitat is found in the proposed project area.
Pollock	*Pollachius virens*	Only the juvenile life stage of pollock has EFH listed within the waters of the proposed project area. Juveniles would be temporarily displaced during construction but would be expected to return once construction is completed. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers.
Ocean pout	*Pollachius virens*	Only the egg life stage of ocean pout has EFH listed within the waters of the proposed project area. Because no hard bottom habitat is found in the proposed project area it is unlikely any eggs will be affected.
Winter flounder	*Pseudopleuronectes americanus*	All life stages (egg, larvae, juvenile and adults) have EFH listed within the waters of the proposed project area. Any eggs in the area of the pier footings at the time of construction would be destroyed. Larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers. Individual juveniles and adults may temporarily be displaced from the area during construction but would be expected to return once construction is completed.
Windowpane flounder	*Scopthalmus aquosus*	All life stages (egg, larvae, juvenile and adults) have EFH listed within the waters of the proposed project area. Eggs and larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers. Individual juveniles and adults may temporarily be displaced from the area during construction but would be expected to return once construction is completed.
Red hake	*Urophycis chuss*	All life stages (egg, larvae, juvenile and adults) have EFH listed within the waters of the proposed project area. Eggs and larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers. Individual juveniles and adults may temporarily be displaced from the area during construction but would be expected to return once construction is completed.

Common Name	Scientific Name	Comment
Silver hake	*Merluccius bilinearis*	Eggs, larvae, and adult life stages of silver hake have EFH listed within the waters of the proposed project area. Eggs and larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. Individual adults may temporarily be displaced from the area during construction but would be expected to return once construction is completed.
Atlantic sea herring	*Clupea harengus*	Larvae, juveniles, and adults have EFH within the proposed project area. Larvae may be carried through the active construction area on prevailing currents and tides, resulting in limited exposure to construction-disturbed areas with no impact expected. The juveniles and adults would be expected to avoid the area during construction but return once construction is completed.
Little skate	*Leucoraja erinacea*	Juveniles and adults have EFH listed within the waters of the proposed project area. Both life stages would be temporarily displaced by the construction but would be expected to return upon completion. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers.
Winter skate	*Leucoraja ocellata*	Juveniles and adults have EFH listed within the waters of the proposed project. Both life stages would be temporarily displaced by the construction but would be expected to return upon completion. Foraging for prey within temporarily affected benthic areas will be affected until the benthic fauna recovers.
Sand tiger shark	*Odontaspis Taurus*	Only the neonate larval stage of sand tiger shark has EFH listed within the proposed project area. Minimal and temporary construction impacts to this species are expected, limited to displacement during construction.
White shark	*Carcharodon carcharias*	Only the neonate larval stage of white shark has EFH listed within the proposed project area. Some temporary impact from construction may occur as temporary displacement.
Yellowfin tuna	*Thunnus albacares*	Only the juvenile stage of yellowfin tuna has EFH listed within the proposed project area. Some temporary impact from construction may occur as temporary displacement.
Albacore tuna	*Thunnus alalunga*	Only the juvenile stage of albacore tuna has EFH listed within the proposed project area. Some temporary impact from construction may occur as temporary displacement.
Skipjack tuna	*Katsuwonus pelamis*	Only the adult stage of skipjack tuna has EFH listed within the proposed project area. Some temporary impact from construction may occur as temporary displacement.
Bluefin tuna	*Thunnus thynnus*	Only the juvenile stage of bluefin tuna have EFH listed within the waters of the proposed project area. Some temporary impact from construction may occur as temporary displacement.

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Appendix A

Benthic Survey Report

in support of the
Environmental Assessment for Proposed Homeporting of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport, Rhode Island

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1.0 Introduction

This Appendix to the Essential Fish Habitat Assessment presents the results of a site-specific benthic survey that was conducted in support of the Environmental Assessment (EA) for the proposed homeporting of two and up to six National Oceanic and Atmospheric Administration (NOAA) Research Vessels (R/V) at Naval Station Newport, Rhode Island. This benthic survey was performed in March 2017 aboard the R/V *Lophius*. The results are intended to help address questions pertaining to potential impacts of Project activities on the essential habitat for fish and fisheries within the proposed Project area, and to provide a baseline for evaluating long-term impacts of the fully operational Port. The field survey was designed to collect data to be used for assessing benthic habitats and megafauna, and characterization of benthic sediments for biology (macrofauna).

The Project area benthic survey included collecting grab samples for macrofaunal analysis at nine (9) stations, and used a towed camera system to obtain video along five (5) transects (Figure 1). The video was used to characterize benthic habitat types. The macrofaunal sampling stations were a subset of the stations, with one modification due to recent dredging, as those sampled in 1997 (SAIC/URI 1997). Seven stations were within the Project footprint while two (Sta. 1 and 2) were reference stations located across the Bay.

The overall sampling design incorporated a strategy of oversampling with the video camera to provide data sufficient to map the benthic habitats within much of the Project area. Grab samples for benthic biology were limited to previously sampled stations within the Project area. The results of the survey include an analysis of benthic infaunal community structure, and the distribution, diversity, density, and richness of the resident fauna.

2.0 Methods

2.1 Field Methods

The benthic survey in support of the EA for the homeporting of NOAA Research Vessels at Naval Station Newport, Rhode Island Project (the Project) was conducted on the 30th and 31st of March 2017 on the R/V *Lophius*, which is owned and operated by C.R. Environmental, Inc. The vessel was mobilized and demobilized in Portsmouth, Rhode Island. Coordinates for the nine benthic grab stations sampled during the survey are provided in Table 1. Video transect data was recorded in the field and provided via GIS shapefiles.

Table 1: Benthic grab station data and field observations

Station ID	Date/Time (EDT)	Latitude (N)	Longitude (W)	Water Depth (ft)	RPD[1] Depth (mm)	Sediment Texture	Fauna and Miscellaneous Observations
Station 1	3/30/2017 14:56	41.51154	71.36347	26.4	3.0	Organic, silty	Snails
Station 2	3/30/2017 14:23	41.54037	-71.36239	4.7	To depth	Fine sand	Tubes
Station 28	3/30/2017 10:40	41.52719	-71.31275	25.0	To depth	Sandy, some rocks	Amphipods, mud snails
Station 29	3/30/2017 12:54	41.52402	-71.31171	16.0	0.0	Silty, organic	*Crepidula fornicata,* amphipods, tubes, hydrocarbon odor and sheen
Station 30	3/30/2017 12:20	41.52518	-71.31352	27.5	2.0	Silty sand	No fauna visible
Station 34	3/30/2017 13:47	41.52500	-71.31830	36.6	0.0	Sandy	Tubes
Station 35	3/30/2017 13:23	41.52117	-71.31609	8.0	To depth	Fine sand	No fauna visible
Station 40	3/30/2017 11:13	41.52612	-71.31232	14.1	0.0	Silty sand	Shell hash, *crepidula fornicata*
Station 44	3/30/2017 11:48	41.52534	-71.31218	21.1	To depth	Sandy	No fauna visible

Grid: MA State Plane NAD-83, Ellipsoid: WGS-84, Zone: RI-3800 Rhode Island, Distance: U.S. Survey Foot

[1]RPD = Redox Potential Discontinuity

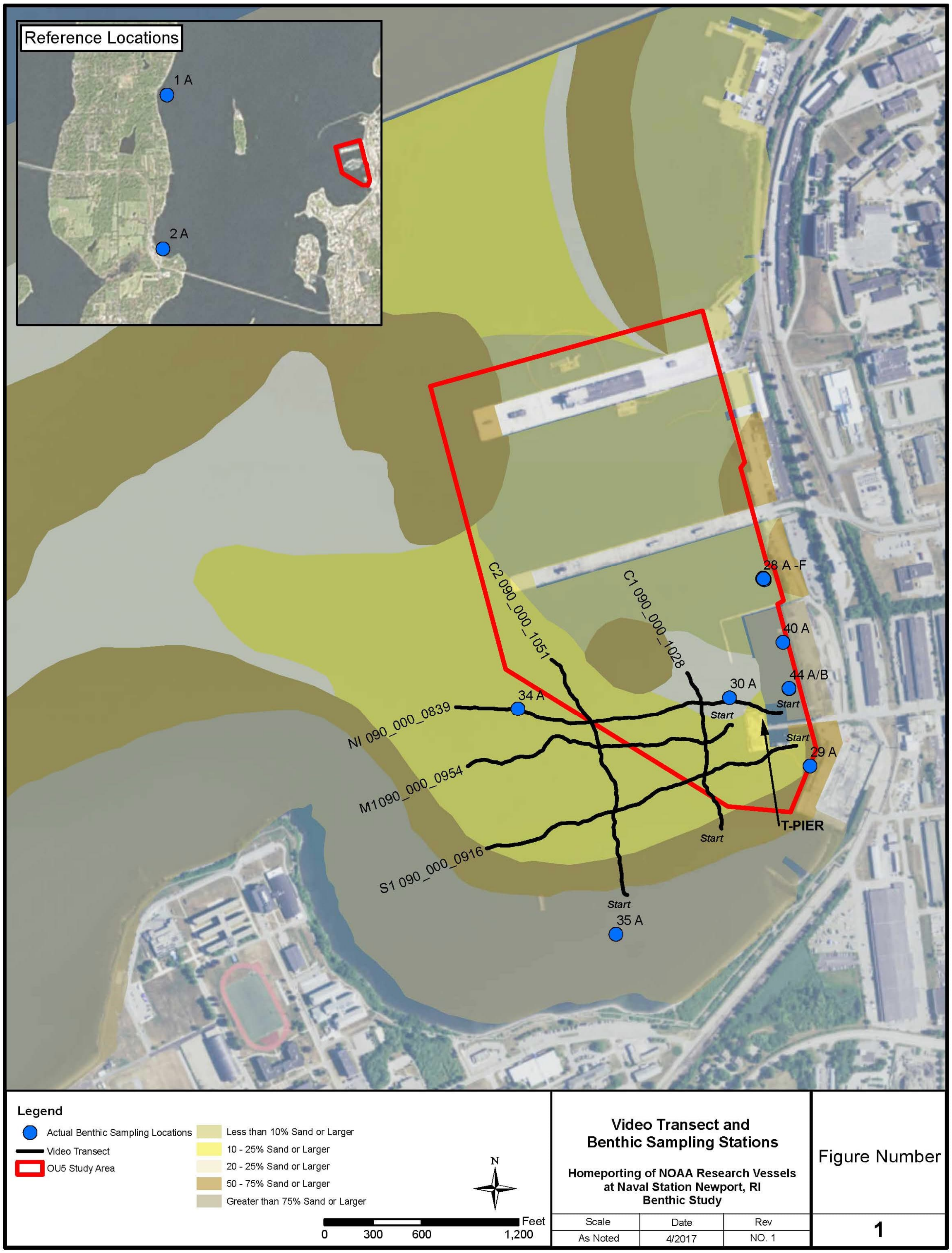

Figure 1. Port area showing all benthic macrofauna stations and video transect locations

2.1.1 Survey Vessel and Navigation

The R/V *Lophius* is a 26-ft Stanley bullnose aluminum workboat with shallow (1.5 ft) draft and lab space within the pilot house. It is equipped with a 2000 lb capacity winch and a 1000 lb capacity 10-ft. hydraulic A-frame, and additional rear heavy duty aluminum davit to perform a wide variety of oceanographic tasks.

Vessel heading and position were provided by a Hemisphere V 102 GPS Compass with sub-meter accuracy. The GPS was interfaced to a laptop computer with the HYPACK survey software. HYPACK navigation files were recorded while on station for each drop of the grab and during each video transect. For the video transects a 70 ft offset from the GPS antennae to the video sled was applied to the navigation data to obtain a more accurate location of the towed system while in the water.

2.1.2 Benthic Grab Sampling

Sediment samples were collected at nine (9) stations for benthic community analysis. At each station, one acceptable 0.04-m² Ted Young modified Van Veen grab sample was collected. Once the vessel was on station the sediment grab was deployed. When slack in the winch wire indicated that the grab was on the bottom, the grab and captured sample were brought back to the surface and retrieved on-board. Each sample was inspected for the following acceptability criteria:

- 7 cm minimum penetration depth (10 cm was considered full);
- Surface of the sample was not disturbed/sloped; and
- Jaws of sampler remained closed during retrieval and no part of the sample was lost.

If the sample was unacceptable, the grab was emptied, rinsed, and redeployed until an acceptable sample was obtained. The letter after each station identification indicates the grab number (i.e., 1A indicated the first sample was acceptable, 28F indicates that 6 attempts had to be made to obtain an acceptable sample). The acceptable samples were checked for penetration depth, depth of the apparent Redox Potential Discontinuity (aRPD) layer, sediment color and texture, odor, and observed biota (Table 1). Contents of acceptable grab samples were washed into a bucket, and then sieved through a 0.5 mm (500 micron) mesh screen using filtered seawater. The portion retained on the screen was transferred to labeled jars and fixed in 10% buffered formalin. Sample jars were filled no more than half full of sieved material and topped-off with filtered seawater after adding the formalin. The jar was gently turned around on its side to distribute the buffered formalin evenly throughout the sample. Sieves and the grab were cleaned between samples using the filtered seawater and a scrub brush. The samples remained in the custody of AECOM staff throughout the survey and subsequent transport to the AECOM lab in Pocasset, Massachusetts.

2.1.3 Video Transects

The video survey was conducted using a towed camera system equipped with Outland Technologies' high-resolution low light color camera, and two wide-angle LCD lights with variable output control. The video camera was cabled to the surface to an OTI-960 DVR recorder and topside HD monitor. The video sled was raised and lowered using the vessel winch, and the height of the system off the bottom was continually adjusted to achieve the best bottom coverage and video quality. The video sled was deployed off the survey vessel's bow mounted A-Frame and the sled was typically towed between 0.5 to 1 knots.

Mounted lasers on the video sled frame were set at 25 cm and used for scaling purposes. When the video camera was one foot (ft) off the bottom, the viewing area of the camera was approximately 1.5 ft x 1.5 ft and the video quality was optimal for bottom sediment characterization and biota identification.

The system was deployed and video was collected along transects within the port area (Figure 1). The survey included a biological review along three east/west and two north/south transects. In total, a distance of approximately 6,000 ft was covered by the east/ west transects and approximately 3,000 ft through the north/south transects. This methodology encompassed much of the seafloor in the Project area.

3.1 Laboratory/Desktop Methods

3.1.1 Benthic Biology Laboratory Methods

Samples were sorted and the animals were identified by marine scientists at the AECOM Marine and Coastal Center in Pocasset, MA. The samples were transferred to 80% ethanol as soon as they were received in Pocasset to ensure that molluscs and other organisms with calcareous structures were not corroded by the slightly acidic formalin. Prior to sorting, samples were stained with Rose Bengal to facilitate removal of small organisms from the sediment. The samples were sorted under a dissecting microscope and each organism was removed. The organisms were sorted to major taxonomic groups that included polychaete families, oligochaetes, bivalves, gastropods, amphipods, isopods, tanaids, and nemerteans. Specimens were then identified and enumerated. During the identification process, names of organisms and counts were recorded on project specific data sheets. These data were later entered electronically into an Excel spreadsheet.

3.1.2 Data Analysis and Interpretation

Prior to performing any analyses, the data were examined for taxa that should not be included in the statistical treatments. Calculations of abundance included all infaunal taxa occurring in each sample, whether identified to species level or not. Calculations based on species (number of species, and dominance) included only those taxa identified to species level, or those treated as such. A list of all taxa identified from the benthic grab samples is contained in Attachment 1.

Initial inspection of the benthic data included production of summaries of species densities by sample, tables of species dominance, and lists of numbers of species and numbers of individuals per sample.

3.1.3 Video Analysis Methodology

AECOM reviewed approximately 124 minutes of video. The video recording included a date/ time stamp. Navigation data of the vessel was also recorded separately. The videos were viewed using VLC Media Player on a laptop computer. The date, time, surface topography, and flora and fauna were recorded as handwritten notes during the video review. Observations of debris or unusual observations were also noted. All organisms encountered were identified to the lowest practicable taxonomic level, many to species.

4.0 Results

4.1 Benthic Infaunal Composition

Samples were collected from all nine (9) planned grab sample stations on 30 March 2017 and analyzed for macroinfauna. Most stations were field characterized as being predominantly sand or fine sand. Only two stations were characterized in the field as being comprised of mostly silt: station 1 (reference) and station 29 (Table 1). A total of 3,155 organisms were sorted from the nine samples and were identified to the lowest practical taxon (Table 2). Raw data for each sample is provided in Attachment 2. The material was very well preserved and fine discriminations could be made, but some specimens included very small juveniles and could not be identified beyond family or genus level. Therefore, 111 organisms (1.52 percent of the total individuals) were not identified to the species level and were not included in the dominant analyses.

Table 2: Percent of Taxa Identified to Species.

Taxon	Number of individuals keyed to species	Number of individuals keyed to Genus or higher	Total individuals	Percent of individuals identified to species level	Percent of the total number of individuals identified
Arthropoda	581	15	596	97.48	19.18
Mollusca	962	7	969	99.28	31.19
Oligochaeta	240	1	241	99.59	7.76
Polychaeta	1307	25	1332	98.12	42.87
Others	17	0	17	100.00	0.55
All species	**3107**	**48**	**3155**	**98.48**	

The 3,107 specimens that were identified to species level yielded 102 valid taxa (Attachment 1). Species of polychaete annelids were especially common, accounting for 42.9 percent of all individuals identified. Molluscs and arthropods were also dominant phyla, as is typical for benthic environments, with 26 species of molluscs accounting for 31.2 percent of the identified fauna and 26 species of arthropods accounting for 19.2 percent. Together, these three groups accounted for 93.2 percent of the entire identified fauna, while oligochaetes and nemerteans made up the remainder. No echinoderms or other phyla were found in the March 30, 2017 benthic grabs.

The overall 20 top numerical dominant species are provided in Table 3, while the dominant species at each station are provided in Table 4. The capitellid polychaete *Mediomastus ambiseta*, an opportunistic species that can take advantage of shifting conditions, was by far the most dominant organism overall numerically, and was the dominant numerically at Stations 30 and 44. The two stations characterized as silty in the field (Stations 1 and 29) had no dominant species in common, but that may be due to geographical differences as station 1 is a reference station across the Bay. Station 35 had the lowest total abundance of organisms (88 individuals) and the lowest species richness (15 species), while Station 40 had the highest total abundance (778 organisms) and the highest species richness (49 species).

Table 3: Top numerical dominants in 9 samples collected in March 2017

Species	Class/Order	Total number of individuals	Percent of total
Mediomastus ambiseta	Polychaete	640	20.60
Boonea seminuda	Gastropod	176	5.66
Crepidula fornicata	Gastropod	173	5.57
Nucula proxima	Bivalve	131	4.22
Microdeutopus anomalus	Amphipod	129	4.15
Haminoea solitaria	Gastropod	92	2.96
Spiophanes bombyx	Polychaete	89	2.86
Nephtys picta	Polychaete	85	2.74
Tubificoides benedii	Oligochaete	84	2.70
Mya arenaria	Bivalve	77	2.48
Mytilus edulis	Bivalve	75	2.41
Ericthonius rubricornis	Amphipod	68	2.19
Crassicorophium bonellii	Amphipod	67	2.16
Tanaissus psammophilus	Tanaid	63	2.03
Astyris lunata	Gastropod	61	1.96
Levinsenia gracilis	Polychaete	57	1.83
Sabellaria vulgaris	Polychaete	55	1.77
Gammarus lawrencianus	Amphipod	45	1.45
Alitta succinea	Polychaete	44	1.42
Nephtys incisa	Polychaete	42	1.35
Total		**2253**	**72.51**

Table 4: Dominant species, percent of total individuals and identified individuals by station.

Station	Rank	Species	Number of Ind.	% Total	% Ident.	Cum % (Total)	Cum % (Ident.)
Station 1	1	*Levinsenia gracilis*	43	20.48	20.67	20.48	20.67
	2	*Haminoea solitaria*	27	12.86	12.98	33.34	33.65
	3	*Acteocina canaliculata*	22	10.48	10.58	43.82	44.23
	4	*Ninoe nigripes*	16	7.62	7.69	51.44	51.92
	5	*Nephtys incisa*	15	7.14	7.21	58.58	59.13
	6	*Ampelisca abdita*	12	5.71	5.77	64.29	64.90
	7	*Yoldia limatula*	10	4.76	4.81	69.05	69.71
	8	*Carinomella lactea*	8	3.81	3.85	72.86	73.56
	9	*Turbonilla interrupta*	7	3.33	3.37	76.19	76.93
	9	*Mediomastus ambiseta*	7	3.33	3.37	79.52	80.30
(No. Species)	(26)	Station Abundance		210(all) 208(ident.)			
Station 2	1	*Mya arenaria*	29	18.83	20.14	18.83	20.14
	2	*Spiophanes bombyx*	27	17.53	18.75	36.36	38.89
	3	*Nephtys picta*	22	14.29	15.28	50.65	54.17
	4	*Gemma gemma*	19	12.34	13.19	62.99	67.36
	5	*Byblis serrata*	14	9.09	9.72	72.08	77.08
	6	*Limnodriloides medioporus*	8	5.19	5.56	77.27	82.64
	7	*Idunella clymenellae*	7	4.55	4.86	81.82	87.50
	8	*Leitoscoloplos fragilis*	3	1.95	2.08	83.77	89.58
	8	*Dipolydora socialis*	3	1.95	2.08	85.72	91.66
	9	*Clymenella torquata*	2	1.30	1.39	87.02	93.05
	9	*Prionospio steenstrupi*	2	1.30	1.39	88.32	94.44
(No. Species)	(19)	Station Mean Abundance		154(all) 144(ident.)			

Table 4 (cont.). Dominant species, percent of total individuals and identified individuals by station.

Station	Rank	Species	Number of Ind.	% Total	% Ident.	Cum % (Total)	Cum % (Ident.)
Station 28	1	*Sabellaria vulgaris*	49	11.56	11.67	11.56	11.67
	2	*Gammarus lawrencianus*	45	10.61	10.71	22.17	22.38
	3	*Spiophanes bombyx*	37	8.73	8.81	30.90	31.19
	4	*Limnodriloides medioporus*	33	7.78	7.86	38.68	39.05
	5	*Mediomastus ambiseta*	30	7.08	7.14	45.76	46.19
	6	*Crassicorophium bonellii*	28	6.60	6.67	52.36	52.86
	7	*Naididae* sp. 1	25	5.90	5.95	58.26	58.81
	8	*Limnodriloides* sp. 1	23	5.42	5.48	63.68	64.29
	9	*Tharyx acutus*	19	4.48	4.52	68.16	68.81
	10	*Boonea seminuda*	13	3.07	3.10	71.23	71.91
(No. Species)	(45)	Station Abundance		424(all) 420(ident.)			
Station 29	1	*Mytilus edulis*	73	21.10	21.28	21.10	21.28
	2	*Crepidula fornicata*	66	19.08	19.24	40.18	40.52
	3	*Boonea seminuda*	43	12.43	12.54	52.61	53.06
	4	*Microdeutopus anomalus*	29	8.38	8.45	60.99	61.51
	5	*Capitella capitata*	28	8.09	8.16	69.08	69.67
	6	*Caprella linearis*	17	4.91	4.96	73.99	74.63
	6	*Paracaprella tenuis*	17	4.91	4.96	78.90	79.59
	7	*Petalosarsia declivis*	16	4.62	4.66	83.52	84.25
	8	*Microprotopus raneyi*	14	4.05	4.08	87.57	88.33
	9	*Tubificoides benedii*	11	3.18	3.21	90.75	91.54
(No. Species)	(21)	Station Mean Abundance		346(all) 343(ident.)			

Table 4 (cont.). Dominant species, percent of total individuals and identified individuals by station.

Station	Rank	Species	Number of Ind.	% Total	% Ident.	Cum % (Total)	Cum % (Ident.)
Station 30	1	*Mediomastus ambiseta*	560	74.37	74.97	74.37	74.97
	2	*Nucula proxima*	37	4.91	4.95	79.28	79.92
	3	*Haminoea solitaria*	22	2.92	2.95	82.20	82.87
	4	*Tubificoides* sp. *1*	21	2.79	2.81	84.99	85.68
	5	*Turbonilla interrupta*	14	1.86	1.87	86.85	87.55
	6	*Ampelisca abdita*	12	1.59	1.61	88.44	89.16
	7	*Boonea seminuda*	9	1.20	1.20	89.64	90.36
	8	*Sabellaria vulgaris*	6	0.80	0.80	90.44	91.16
	9	*Crepidula fornicata*	5	0.66	0.67	91.10	91.83
	9	*Nephtys picta*	5	0.66	0.67	91.76	92.50
(No. Species)	(39)	Station Abundance		753(all) 747(ident.)			
Station 34	1	*Nucula proxima*	80	37.21	37.38	37.21	37.38
	2	*Haminoea solitaria*	43	20.00	20.09	57.21	57.47
	3	*Nephtys incisa*	18	8.37	8.41	65.58	65.88
	4	*Turbonilla interrupta*	15	6.98	7.01	72.56	72.89
	5	*Acteocina canaliculata*	12	5.58	5.61	78.14	78.50
	5	*Levinsenia gracilis*	12	5.58	5.61	83.72	84.11
	6	*Yoldia limatula*	7	3.26	3.27	86.98	87.38
	7	*Mya arenaria*	6	2.79	2.80	89.77	90.18
	7	*Carinomella lactea*	6	2.79	2.80	92.56	92.98
	8	*Pitar morrhuanus*	3	1.40	1.40	93.96	94.38
(No. Species)	(19)	Station Mean Abundance		215(all) 214(ident.)			

Table 4 (cont.). Dominant species, percent of total individuals and identified individuals by station.

Station	Rank	Species	Number of Ind.	% Total	% Ident.	Cum % (Total)	Cum % (Ident.)
Station 35	1	*Nephtys picta*	30	34.09	36.59	34.09	36.59
	2	*Mya arenaria*	17	19.32	20.73	53.41	57.32
	3	*Spiophanes bombyx*	12	13.64	14.63	67.05	71.95
	4	*Byblis serrata*	5	5.68	6.10	72.73	78.05
	5	*Leitoscoloplos fragilis*	4	4.55	4.88	77.28	82.93
	6	*Gemma gemma*	3	3.41	3.66	80.69	86.59
	7	*Eobrolgus spinosus*	2	2.27	2.44	82.96	89.03
	7	*Crepidula fornicata*	2	2.27	2.44	85.23	91.47
(No. Species)	(15)	Station Abundance		88(all) 82(ident.)			
Station 40	1	*Boonea seminuda*	110	14.14	14.40	14.14	14.40
	2	*Crepidula fornicata*	94	12.08	12.30	26.22	26.70
	3	*Microdeutopus anomalus*	90	11.57	11.78	37.79	38.48
	4	*Ericthonius rubricornis*	68	8.74	8.90	46.53	47.38
	5	*Tanaissus psammophilus*	62	7.97	8.12	54.50	55.50
	6	*Tubificoides benedii*	54	6.94	7.07	61.44	62.57
	7	*Astyris lunata*	44	5.66	5.76	67.10	68.33
	7	*Alitta succinea*	44	5.66	5.76	72.75	74.09
	8	*Crassicorophium bonellii*	38	4.88	4.97	77.64	79.06
	9	*Caprella penantis*	15	1.93	1.96	79.57	81.02
	10	*Harmothoe extenuata*	13	1.67	1.70	81.24	82.72
(No. Species)	(49)	Station Mean Abundance		778(all) 764(ident.)			

Table 4 (cont.). Dominant species, percent of total individuals and identified individuals by station.

Station	Rank	Species	Number of Ind.	% Total	% Ident.	Cum % (Total)	Cum % (Ident.)
Station 44	1	*Mediomastus ambiseta*	33	17.65	17.84	17.65	17.84
	2	*Naididae* sp. *2*	29	15.51	15.68	33.16	33.52
	3	*Aricidea catherinae*	22	11.76	11.89	44.92	45.41
	4	*Tubificoides benedii*	18	9.63	9.73	54.55	55.14
	4	*Nephtys picta*	18	9.63	9.73	64.18	64.87
	5	*Polygordius jouinae*	12	6.42	6.49	70.60	71.36
	6	*Spiophanes bombyx*	10	5.35	5.41	75.95	76.77
	7	*Leitoscoloplos fragilis*	8	4.28	4.32	80.23	81.09
	8	*Naididae* sp. *1*	6	3.21	3.24	83.44	84.33
	8	*Nephtys incisa*	6	3.21	3.24	86.65	87.57
	9	*Mya arenaria*	5	2.67	2.70	89.32	90.27
	10	*Owenia fusiformis*	3	1.60	1.62	90.92	91.89
(No. Species)	(23)	Station Abundance		187(all) 185(ident.)			

4.2 Video Analysis Results

The composition and surface topography of the seafloor was patchy along all portions of the study area that were surveyed. The primary substrate types were 1) silty sand or sandy silt with shells and shell hash and macroalgae; and 2) silt with few shells and little shell hash. Image captures of some of the fauna observed in the videos are provided in Figures 2 through 4. Fauna could not practically be enumerated by species from the footage, but qualitative notes were made as to the relative abundance of each species (i.e., rare, few, common, or abundant). Commonly observed throughout all of the video segments were slipper snails (*Crepidula fornicata*) (Figure 2A), burrowing anemones (*Ceriantheopsis americanus*) (Figure 2B), hermit crabs (most likely *Pagurus* spp.) (Figure 2C), and amphipods (Figure 2D). No fish or large pelagic or benthic invertebrates (squid, lobster, urchins, etc.) were observed in any of the videos. Empty quahog valves (*Mercenaria mercenaria*) were commonly seen on the sediment surface. Shrimp (Figure 2E) and spider crabs (Figure 2F) (most likely *Libinia emarginata;* the common spider crab in New England) were infrequently seen. Macroalgae was encountered in all transects and throughout the port area. *Enteromorpha*, *Spermothamnion*, and *Codium* (Figures 3 A, 3B, 3E and 3F) were the most abundant species, but others were present as well (Figures 3 C and 3D). Depressions could be seen along all transects, and appear to have been caused by recent remedial dredging operations. The depressions had relatively steep sides with no visible organisms, but the bottom areas were colonized with benthic organisms as in the surrounding sediments. The following paragraphs describe the observations from each video transect.

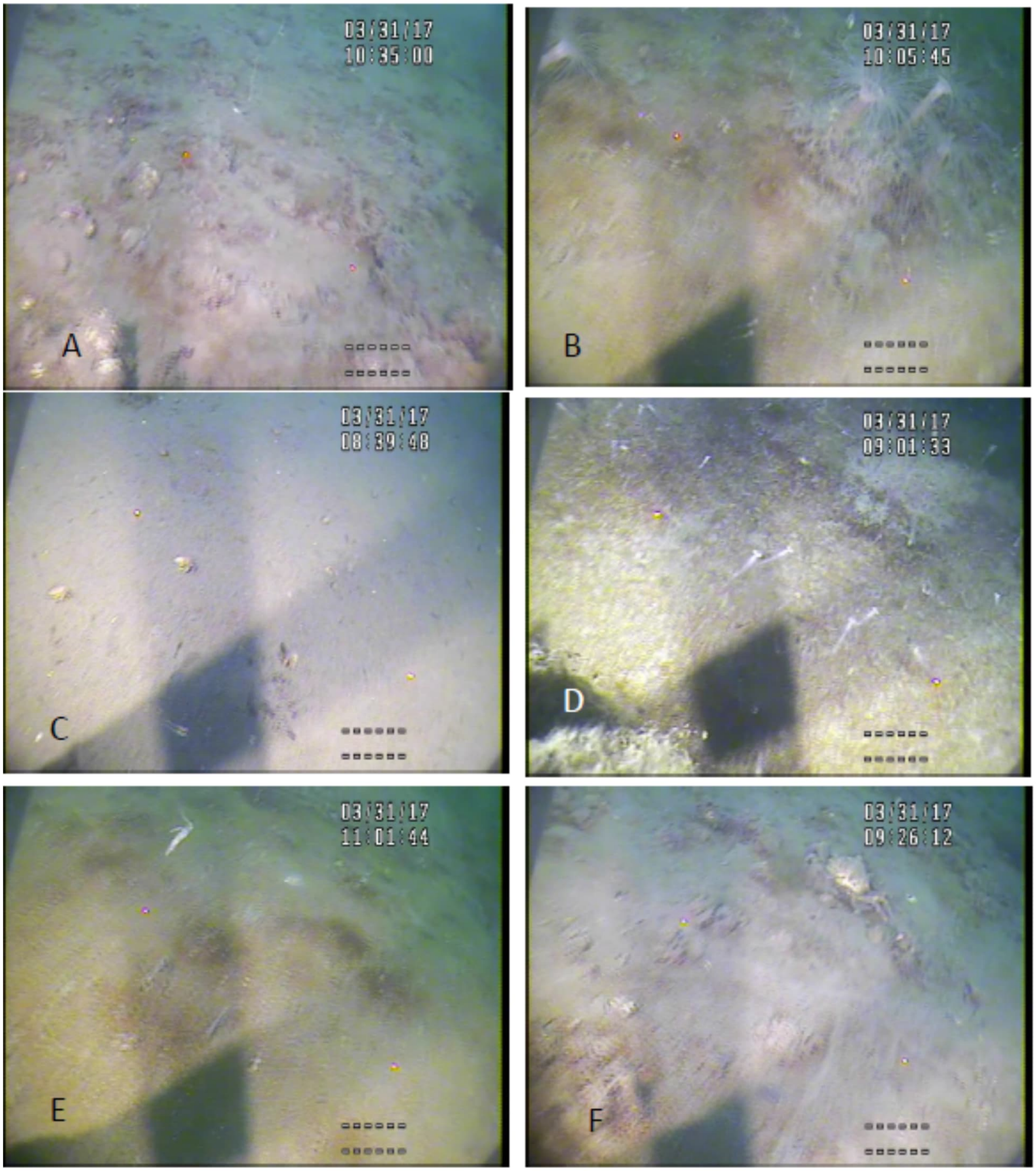

Figure 2. Invertebrates observed within the port area March 2017: A, slipper snails (*Crepidula fornicata*); B, burrowing anemones (*Ceriantheopsis americanus*); C, hermit crabs (*Pagurus* spp.); D, amphipods; E, shrimp; F, spider crab (possibly *Libinia emarginata*)

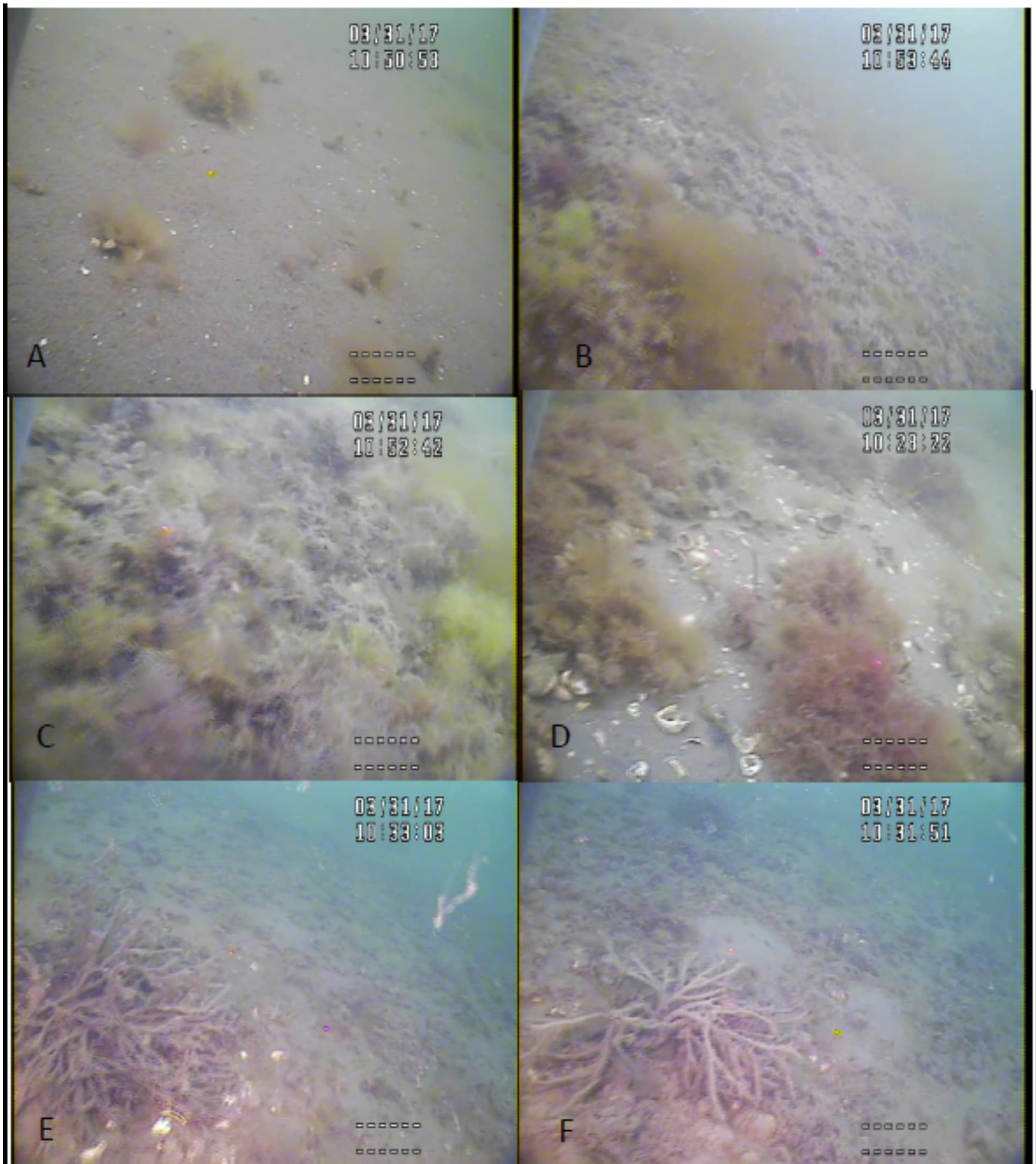

Figure 3. Macroalgaes observed within the port area March 2017: A, *Enteromorpha*; B, *Enteromorpha* and *Spermothamnion*; C and D Various species of macroalgae; E and F, *Codium*

4.2.1 Video Observations

Transect N1 (090_000_0839)

Transect N1 (090_000_0839) was collected through the northern port area in a general east to west direction (Figure 1). The camera touched down 2 minutes and 26 seconds into the video at a depth of 13 ft, in an area with abundant macroalgae and leaves and leaf litter (from shore trees). Whole dead quahog valves could also be seen. The bottom appeared to be sandy. Amphipods were abundant throughout the video, present in the water column just above the sediment-water interface. Also abundant in the area were *Crepidula*, hermit crabs were common, and one spider crab was observed in this area. Further along the transect (approximately 7 minutes in) the bottom turns siltier, and tracks could be seen along the bottom, perhaps from snails. *Crepidula* were only common in this area, and macroalgae was common, attached to shells. This area was where burrowing anemones, *Cerianthids*, began appearing, and became abundant. Also observed were a few mounds with empty burrows; and small areas of microbial mats were common, seen on the sediment surface. Some debris was also seen along this transect – rope and an abandoned lobster trap. The video ended after just over 29 minutes after covering a distance of 2076 ft. The ending depth was 39 ft.

Transect S1 (090_000_0916)

Transect S1 (090_000_0916) was collected through the southern T-Pier area in a general east to west direction (Figure 1). The camera touched down 1 minute and three seconds into the video at a depth of 17 ft in an area of bare silt. Several shrimp were seen darting from the sediment and swimming away as the camera approached. Approximately 1 minute and 45 seconds into the video patches of algae and areas with quahog valves and live and dead *Crepidula*, some very densely concentrated, began to be visible and became common, interspersed with areas of bare silt. Some debris (rope, bricks or pavers, tires and a ladder among other items) were seen along this transect. Most of the *Crepidula* and macroalgaes were living, but everything in the area was covered by sediment (Figures 3B, 3C, 3E and 3F). Few burrows were observed, but no visible organisms within. It is likely some of these belonged to *Cerianthids* that had died or been preyed upon. Amphipods became abundant approximately five minutes into the video, and can be seen in the water column just above the sediment. Few hermit crabs were observed. Eleven minutes and 22 seconds into the video one spider crab was observed. About halfway through the video (16 minutes and 28 seconds) *Cerianthids* began appearing, and became very common. The same tracks as in the North transect were visible here, and microbial mats were observed but not until the latter third of the video. The video ended after a total of 31 minutes after covering a distance of 2079 ft. The ending depth was 29 ft.

Transect M1 (090_000_0954)

Transect M1 (090_000_0954) was collected beginning at the middle of the T-pier and ran generally east to west through the port area (Figure 1). The camera touched down 56 seconds into the video at a depth of 28 ft, in an area of bare sand (no turbidity upon touchdown) with visible tracks. Amphipods could be seen just above the sediment. After another minute and 25 seconds the bottom became silty (turbidity plume visible when camera hit bottom). Few quahog valves and shell hash were observed, but the area was mostly bare sediment. Hermit crabs were rarely seen. Empty burrows were also seen. Approximately 4 minutes into the video the bare bottom became interspersed with areas of *Crepidula* with live and dead algae. Sediment covered everything in this area. Approximately five minutes into the video *Cerianthids* appeared and became abundant. Microbial mats were also commonly observed within the silty area and became abundant after 22 minutes. The video ended after 27.5 minutes in a depth of 40 ft, after covering a distance of 1804 ft.

Transect C1 (090_000_1028)

Transect C1 (090_000_1028) ran through the eastern side of the port area in a south to north direction (Figure 1). The camera touched down after 54 seconds at a depth of 15.5 ft in an area of flat sand (no plume) with abundant algae, shells and shell hash and some large debris. A visible layer of sediment covered everything. At approximately 1 minute and 45 seconds in, the algae was less abundant and bare patches of sand with quahog valves and shell hash were visible. After 4.5 minutes the bottom was essentially covered with live and dead *Crepidula* and quahog valves, with few occurrences of algae. *Codium* was the dominant species seen in the area. Amphipods were abundant and could be seen in the water column just above the sediment-water interface. Microbial mats became common, visible after 13.5 minutes along with *Cerianthids*. The video ended at a depth of just over 30 ft after obtaining approximately 16 minutes of video and covering a distance of 1039 ft.

Transect C2 (090_000_1051)

Transect C2 (090_000_1051) ran through the western side of the port in a south to north direction (Figure 1). The camera touched down after 49 seconds at a depth of approximately 15 ft in an area of mostly bare sand with common *Crepidula*, quahog valves, and shell hash. *Enteromorpha* was common in this area. Few hermit crabs were observed. Two minutes into the video *Crepidula* became abundant along with a variety of macroalgaes. Very little bare bottom was observable. There was little to no sediment covering the organisms until approximately four minutes in. At 5.5 minutes in, an empty burrow was visible; then tracks first appeared; *Crepidula* became less abundant and more of the bottom was visible. The bottom was silty. *Cerianthids* began to appear after seven and a half minutes; became common after eight minutes; and, after 10 minutes, were abundant. Amphipods became common to abundant in the same areas as the *Ceriantihids*, and could be seen in the water column just above the sediment-water interface. Little else was observed in the areas where *Cerianthids* were abundant, other than the amphipods. There were occasional clumps of algae, but most of those appeared dead. Microbial mats were first observed approximately half way through the video (10 minutes). A shrimp was seen leaving the sediment and swimming away from the camera at approximately 12 minutes. The video ended at a depth of approximately 42 ft after obtaining just over 20 minutes of video and covering a distance of 1629 ft.

The area of *Coddington* Cove that was reviewed in the video survey displayed a few general habitat types (Table 5). The first type is an area of silty sand, or sandy silt where much of the bottom is visible (Figure 4A and 4B). *Crepidula* and hermit crabs were commonly seen in these areas. These areas had some macroalgae present, but it was sparse. The second general habitat type was characterized by areas of abundant *Crepidula* and macroalgaes where the bottom was only visible occasionally (Figure 4 C and 4D). The shells and algae were typically covered in a thin layer of sediment. Quahog valves were also common in these areas. The third habitat type was the most prevalent within the area reviewed, and included large expanses of silt with either abundant burrowing anemones (*Ceriantheopsis americanus*), or abundant *Crepidula*, and little else on the substrate (Figure 4E and 4F). This was also where abundant amphipods were visible in the water column just above the sediment surface.

Table 5: Habitat types observed throughout the Project area.

Habitat Type	General Coverage	Description
SILTY SAND OR SANDY SILT	Typically seen only for a short time at the beginning of transects.	Biological coverage is sparse with much of the sandy bottom visible. *Crepidula fornicata* and hermit crabs (*Pagurus* spp) were the dominant organisms. Little macroalgae was present.
SHELLS AND MACROALGAE	Viewed in transition zones between the sparse silty sand and the silty areas. Usually found in narrow bands.	In these zones the bottom was only occasionally visible. Most substrate was covered by *Crepidula* (live and dead) with abundant macroalgaes. Quahog (*Mercenaria mercenaria*) valves were commonly observed, though no live animals were seen. All organisms were typically covered with a thin layer of sediment.
SILTY AREAS	This was the most dominant habitat type comprising much of the benthic substrate within the Project area.	Large expanses of silt with abundant burrowing anemones (*Ceriantheopsis americanus*). Amphipods were also abundant just above the water/sediment interface. In some areas *Crepidula* were also abundant over silt. Microbial mats were also common in these areas.

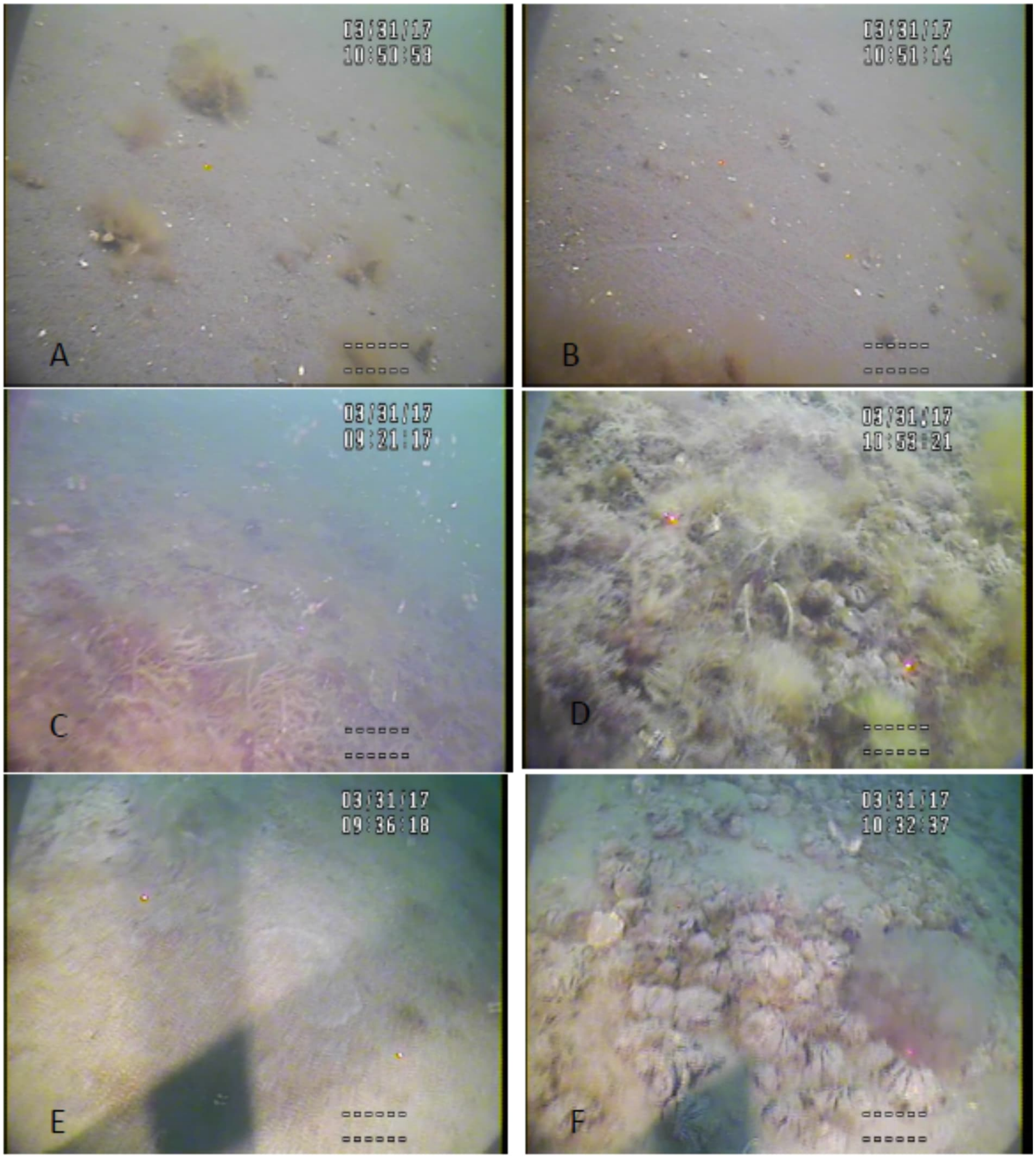

Figure 4. Habitat types observed within the port area March 2017: A and B, silty sand with sparse *Crepidula* and macroalgae; C and D, shells and macroalgae, very little substrate visible; E, silty area with little life (microbial mat in view); and F, silty area with dense *Crepidula*

5.0 Discussion

The benthic habitats observed during this survey at NAVSTA Newport are consistent with expectations for nearshore portions of Narragansett Bay (Raposa and Schwartz 2009). The physical habitat was primarily silt with occasional bands of shells and macroalgae. There was no evidence of eelgrass beds in the underwater imagery. The observed benthic infauna observed in the grab samples were also typical for this habitat type. Finding high densities of *Cerianthids* in this area is not uncommon. Klos and Holohan (1995) reported densities up to 10-20 *Cerianthids* per square meter in Narragansett Bay. This common burrowing anemone (*Ceriantheopsis americanus*) lives in tubes that can extend up to 1 meter into the substrate. They can extend up to 10 centimeters from their tubes to feed on benthic harpacticoids and pelagic calanoid copepods (Klos and Holohan 1995, Holohan 1993). Klos and Holohan (1995) noted a rapid decline in *Cerianthid* abundance from late August through October. Scup or porgy (*Stenotomus chrysops*) are known to prey on anemones (Michelman 1988). The juvenile scup population in Narragansett Bay peaks in September. They migrate from the Bay when the water temperature cools below 17°C (Sisson 1974). Klos and Holohan (1995) theorize that the decline of burrowing anemones in the fall is due to the presence of scup.

All of Coddington Cove is mapped as a restricted area by the U.S. government. The Code of Federal Regulations (CFR) defines a restricted area as, "A defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government's use of that area." Authoritative information was found in Title 33, Chapter II of the CFR (Part 334.81) which states: (a) The area includes all of the navigable waters of Coddington Cove east of a line that connects Coddington Point at latitude 41°31′24.0″ N, longitude 071°19′24.0″ W; with the outer end of the Coddington Cove Breakwater on the north side of the cove at latitude 41°31′55.7″ N, longitude 071°19′28.2″ W. (b) All persons, swimmers, vessels and other craft, except those vessels under the supervision or contract to local military or Naval authority, vessels of the United States Coast Guard, and local or state law enforcement vessels, are prohibited from entering the restricted area without specific permission from the Commanding Officer, Naval Station Newport, USN, Newport, Rhode Island or his/her authorized representative. Therefore, it is assumed that commercial and recreational fishing would not be allowed within the restricted area.

The 3,107 specimens that were identified to species level yielded 102 valid taxa (Attachment 1). Polychaete annelids were especially common with 41 different species, accounting for 42.9 percent of all individuals identified. As is typical for benthic environments, molluscs and arthropods were also dominant phyla, with 26 species of molluscs accounting for 31.2 percent of the identified fauna and 26 species of arthropods accounting for 19.2 percent. Together, these three groups accounted for 93.2 percent of the entire identified fauna, while oligochaetes and nemerteans made up the remainder. No echinoderms or other phyla were found in the March 30, 2017 benthic grabs.

It is difficult to compare the results of this survey to general studies of Narragansett Bay due to the confined geographical nature of the current study. As discussed by Calabretta and Oviatt (2008), replicate cores between four stations throughout the Bay showed a significant ($p < 0.001$) difference in the benthic community composition across years. They found the greatest separation of community composition occurred between their north Jamestown station and the remaining three stations to the north of this station. The authors did not have a station near Aquidneck Island, so no direct comparisons could be made. Calabretta and Oviatt reported the highest species richness at the station north of Jamestown (37 ± 8 species) and the lowest at the Mt. Hope Bay station (29 ± 4 species). Overall they reported finding 100 species of polychaetes, 37 species of molluscs and 17 species of arthropods. This is somewhat in line with the findings of the site specific survey done in March 2017 with findings of species richness varying from 15 to 49 species, 41 different species of polychaetes, and 26 species each of molluscs and arthropods.

6.0 References

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Sisson, R. T. 1974. The growth and movement of scup (Stenotomus chrysops) in Narragansett Bay, RI, and along the Atlantic Coast. Rhode Island Department of Natural Resources Complete Report PL 88-309.

Attachment 1 List of species found during the March 30, 2017 benthic survey in Coddigton Cove

NEMERTEA
- *Carinomella lactea* Coe, 1905

ANNELIDA

Polychaeta
- Capitellidae
  - *Capitella capitata* complex (Fabricius, 1780)
  - *Mediomastus ambiseta* (Hartman, 1947)
- Cirratulidae
  - *Tharyx acutus* Webster & Benedict, 1887
- Cossuridae
  - *Cossura longocirrata* Webster & Benedict, 1887
- Flabelligeridae
  - *Pherusa affinis* (Leidy, 1855)
- Glyceridae
  - *Glycera americana* Leidy, 1855
  - *Glycera capitata* Örsted, 1843
  - *Glycera dibranchiata* Ehlers, 1868
- Goniadidae
  - *Goniadella gracilis* (Verrill, 1873)
- Hesionidae
  - *Oxydromus obscurus* Verrill, 1873
- Lumbrineridae
  - *Drilonereis longa* Webster, 1879
  - *Ninoe nigripes* Verrill, 1873
- Maldanidae
  - *Clymenella torquata* (Leidy, 1855)
  - *Clymenella zonalis* (Verrill, 1873)
  - *Sabaco elongatus* (Verrill, 1873)
- Nephtyidae
  - *Nephtys caeca* (Fabricius, 1780)
  - *Nephtys incisa* Malmgren, 1865
  - *Nephtys picta* Ehlers, 1868
- Nereididae
  - *Alitta succinea* Leuckart, 1847
  - *Allita virens* Sars, 1835
  - *Nereis pelagica* Linnaeus, 1758
  - *Platynereis dumerilii* (Audouin & Milne Edwards, 1834)
- Orbiniidae
  - *Leitoscoloplos fragilis* Verrill, 1873
- Oweniidae
  - *Owenia fusiformis* Delle Chiaje, 1844
- Paraonidae
  - *Aricidea catherinae* Laubier, 1967
  - *Levinsenia gracilis* (Tauber, 1879)
- Pectinariidae
  - *Pectinaria gouldii* (Verrill, 1873)
- Phyllodocidae
  - *Eumida sanguinea* (Örsted, 1843)
  - *Hypereteone heteropoda* Hartman, 1951
  - *Phyllodoce arenae* Webster, 1879
- Polygordiidae
  - *Polygordius jouinae* Ramey, Fiege & Leander, 2006
- Polynoidae
  - *Harmothoe extenuata* (Grube, 1840)
- Sabellidae
  - *Sabellaria vulgaris* Verrill, 1873
  - *Parasabella microphthalma* Verrill, 1873
- Sigalionidae
  - *Sthenelais boa* Johnston, 1839
- Spionidae
  - *Dipolydora caulleryi* Mesnil, 1897
  - *Dipolydora socialis* (Schmarda, 1861)
  - *Prionospio steenstrupi* Malmgren, 1867
  - *Spio filicornis* (O.F.Müller, 1766)
  - *Spiophanes bombyx* Claparède, 1870
- Syllidae
  - *Exogone dispar* (Webster, 1879)

Oligochaeta
- Naididae
  - *Limnodriloides medioporus* Cook, 1969
  - *Limnodriloides* sp. 1
  - Naididae sp. 1
  - Naididae sp. 2
  - *Tubificoides benedii* Udekem, 1855
  - *Tubificoides intermedius* Cook, 1969
  - *Tubificoides* sp. 1
  - *Tubificoides* sp. 2

ARTHROPODA

CRUSTACEA

Amphipoda
- Ampeliscidae
  - *Ampelisca abdita* Mills, 1964
  - *Byblis serrata* S.I. Smith, 1873
- Aoridae
  - *Microdeutopous anomalus* (Rathke, 1843)
- Caprellidae
  - *Aeginina longicornis* Krøyer, 1843
  - *Caprella linearis* (Linnaeus, 1767)
  - *Caprella penantis* Leach, 1814
  - *Paracaprella tenuis* Mayer, 1903
- Corophiidae
  - *Crassicorophium bonnelli* (Milne Edwards, 1830)
- Gammaridae
  - *Gammarus lawrencianus* Bousfield, 1956
- Ischyroceridae
  - *Erichthonius rubricornis* (Stimpson, 1853)
- Liljeborgiidae
  - *Idunella clymenellae* (Mils, 1962)
- Microprotopidae
  - *Microprotopus raneyi* Wigley, 1966
- Phoxocephalidae
  - *Eobrolgus spinosus* Holmes, 1905
  - *Rhepoxinius hudsoni* Barnard & Barnard, 1982
- Unciolidae
  - *Unciola inermis* Shoemaker, 1945
  - *Unciola irrorata* Say, 1818

Cumacea
- Diastylidae
  - *Oxyurostylis smithi* Calman, 1912
- Pseudocumatidae
  - *Petalosarsia declivis* (Sars, 1865)

Decapoda
- Brachyura
  - Panopeidae
    - *Panopeus herbstii* H. Milne Edwards, 1834
  - Pinnotheridae
    - *Pinnixa retinens* Rathbun, 1918
    - *Pinnixa sayana* Stimpson, 1860
- Caridea
  - Crangonidae
    - *Crangon septemspinosa* Say, 1818
  - Inachoididae
    - *Euprognatha rastellifera* Stimpson, 1871
  - Paguridae
    - *Pagurus longicarpus* Say, 1817
    - *Pagurus pubescens* Krøyer, 1838

Tanaidacea
Tanaissuidae
Tanaissus psammophilus (Wallace, 1919)

MOLLUSCA
Bivalvia
Anomiidae
Anomia simplex Orbigny, 1842
Arcidae
Anadara transversa (Say, 1822)
Mactridae
Mulinia lateralis (Say, 1822)
Myidae
Mya arenaria Linnaeus, 1758
Mytilidae
Mytilus edulis Linnaeus, 1758
Nuculidae
Nucula proxima Say, 1822
Pandoridae
Pandora gouldiana Dall, 1886
Periplomatidae
Periploma leanum (Conrad, 1831)
Pharidae
Ensis leei M. Huber, 2015
Veneridae
Gemma gemma (Totten, 1834)
Pitar morrhuanus Linsley, 1848
Yoldiidae
Yoldia limatula (Say, 1831)
Yoldia sapotilla (Gould, 1841)

Gastropoda
Caenogastropoda
Muricidae
Urosalpinx cinerea (Say, 1822)
Heterobranchia
Acteonidae
Japonactaeon punctostriatus (C.B. Adams, 1840)
Haminoeidae
Haminoea solitaria (Say, 1822)
Pyramidellidae
Boonea seminuda (C.B. Adams, 1839)
Turbonilla interrupta (Totten, 1835)
Littorinimorpha
Calyptraeidae
Crepidua fornicata (Linnaeus, 1758)
Crepidula plana Say, 1822
Neogastropoda
Nassariidae
Phrontis vibex (Say, 1822)
Tritia obsoleta (Say, 1822)
Ophisthobranchia
Aceocinidae
Acteocina canaliculata (Say, 1826)
Prosobranchia
Columbellidae
Astyris lunata (Say, 1826)
Astyris rosacea (Gould, 1840)
Cotonopsis lafresnayi (P. Fischer & Bernardi, 1856)

Federal Interagency Comment Form

Date: 7/22/2022
Project: NOAA Pier and Bulkhead installation at NUWC, Newport, RI
Appl No.: n/a
Commenting Agency: NOAA/NMFS/GARFO/HESD
Action Agency Project Manager: Mark George, NOAA
Waterway: Narragansett Bay, RI

Activity: Constructing a new pile-supported, 62 ft x 587 ft pier and a 28 ft x 5 ft long trestle for access. 120 steel pipe piles will be installed as part of this construction, and 201 steel pipe piles will be installed along the perimeter of the pier. A 20 ft x 66 ft concrete floating dock will be constructed to the northwest of the main pier and trestle structures. 728 feet of bulkhead will also be constructed at the Pier Landing Site to reinforce and stabilize the existing deteriorating bulkhead and support the new facilities. The new bulkhead would be topped with a concrete cap and concrete facade that would extend to just below mean high water.

ESSENTIAL FISH HABITAT (EFH)
Project may adversely affect EFH. Area is designated EFH for 23 federally managed species, including winter flounder, and HAPC for summer flounder and inshore juvenile cod.

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS: (Note: EFH CRs require a response from the federal action agency within 30 days of receipt or 10 days before a permit is issued if CRs are not included as a special condition of the permit. In addition, a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920 (j) if new information becomes available, or if the project is revised in such a manner that affects the basis for the above EFH determination or EFH conservation recommendations.)

1. The lowermost part of any floats should be ≥18 inches above the substrate at all times to avoid grounding and scour.
2. Appropriate soil erosion, sediment and turbidity controls should be used and maintained in effective operating condition during construction. Activities capable of producing greater than minimal turbidity or sedimentation should be done during periods of low-flow or no-flow, when the tide is waterward of the work, or when controls are used to obtain dry work conditions.
3. Utilize soft start methods for any pile driving activities.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

ENDANGERED SPECIES
Threatened or endangered species under the jurisdiction of NMFS may be present in the project area. The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930 or nmfs.gar.esa.section7@noaa.gov. If you have any questions regarding these comments, please contact Roosevelt Mesa at Roosevelt.Mesa@noaa.gov.
OTHER:
Provide a copy of the permit when issued.

Prepared by: _Sabrina Pereira_________________________________ date: __7/22/2022**_______**

August 15, 2022

Ms. Sabrina Pereira
Habitat Conservation Division, Fisheries Service
National Oceanic and Atmospheric Administration
55 Great Republic Drive
Gloucester, MA 01930

Dear Ms. Pereira:

SUBJECT: NOAA FISHERIES CONSERVATION RECOMMENDATIONS FOR THE PROPOSED RELOCATION OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESEARCH VESSELS AT NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

This letter responds to the July 22, 2022 National Marine Fisheries Service (NMFS) electronic mail received from Sabrina Pereira, NMFS, Greater Atlantic Regional Fisheries Office, Habitat Conservation Division, to Shannon Kam, Natural Resources Specialist, Environmental Protection Division, Naval Station Newport and Mark George, Project Manager for National Oceanic and Atmospheric Administration (NOAA), regarding the Magnuson-Stevens Fishery Conservation and Management Act (MSA) conservation recommendations for the subject project at Naval Station Newport, including the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove. Ms. Pereira provided comments on the Federal Interagency Comment Form.

Section 305 (b) (4) of the MSA requires that federal agencies provide NMFS with a detailed written response to these MSA conservation recommendations, including a description of measures adopted to avoid, mitigate, or offset the impact of the proposed project on Essential Fish Habitat (EFH).

NOAA responses to the conservation recommendations are as follows:

1. "The lowermost part of any floats should be ≥18 inches above the substrate at all times to avoid grounding and scour."

   This measure will be included. Except at isolated locations along the existing bulkhead and rock jetty, water depths at the project site range between 9' and 28' below mean lower low water (MLLW). We anticipate the draft of barges or floats used during construction will be 5' or less. We anticipate the draft of the floating dock constructed for the project will be less than 3'.

Based on these drafts, we do not anticipate any barges or floats will come within 18" of the cove bottom.

2. "Appropriate soil erosion, sediment and turbidity controls should be used and maintained in effective operating condition during construction."

   This measure will be included. Typical soil erosion, sediment, and turbidity control measures are included in the project plans and specifications. The use of turbidity curtains and turbidity monitoring is included in the project plans and specifications and are required from February 1 to May 31 each year for in-water turbidity producing work including pile driving, pile extraction, and bottom disturbing activities in an effort to minimize impacts to fish spawning and juvenile development.

3. "Activities capable of producing greater than minimal turbidity or sedimentation should be done during periods of low-flow or no-flow, when the tide is waterward of the work, or when controls are used to obtain dry work conditions."

   No work outboard of the bulkhead will be performed in the dry. For pile driving and pile extraction activities, it is impractical from both a cost and schedule perspective to limit these operations to periods of slack tide and; therefore, this measure is not included in the project plans or specifications.

   No activities producing greater than minimal turbidity or sedimentation are included in the project scope of work. Turbidity control and monitoring measures, as noted above, will be utilized during activities that may cause turbidity.

4. "Utilize soft start methods for any pile driving activities."

   This procedure for impact pile driving is included in the project plans and specifications. Impact pile driving activities would utilize a soft start procedure to allow sensitive species to move away from the noise source before the commencement of impact pile driving. Soft start requires contractors to provide an initial set of strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced energy strike sets. A soft start will be implemented at the start of each day's impact pile driving and any time following cessation of impact pile driving for a period of 30 minutes or longer.

The above constitutes our agency response to the EFH conservation recommendations. We appreciate your assistance. If you have any questions regarding this response, please contact Shannon Kam shannon.b.kam.civ@us.navy.mil or Mark George mark.george@noaa.gov.

Sincerely,

Mark George

Copy to:

Shannon Kam, Naval Station Newport

Sarah Bowman, NAVFAC Mid-Atlantic

From: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Sent: Monday, August 22, 2022 12:58 PM
To: Kam, Shannon B CIV USN NAVFAC MIDLANT NOR (USA) <shannon.b.kam.civ@us.navy.mil>
Cc: George, Mark S CIV (USA) <mark.george@noaa.gov>; Kathy Hall <kathy.hall@cardno-gs.com>; Melton, Jennifer CIV USN (USA) <jennifer.melton@noaa.gov>; Bowman, Sarah H CIV USN NAVFAC MIDLANT NOR (USA) <sarah.h.bowman.civ@us.navy.mil>
Subject: Re: [Non-DoD Source] Re: EFH Submission for NOAA Project on Navy Property in Newport RI

Good afternoon Shannon,

Thank you for sending NOAA's response to our CRs. We accept the response and look forward to receiving a copy of the permit once issued.

Thank you again for coordinating with us on this project.

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
NOAA/ National Marine Fisheries Service
Gloucester, MA
Pronouns: she/her/hers
(978)-675-2178
Sabrina.pereira@noaa.gov

On Wed, Aug 17, 2022 at 8:25 AM Kam, Shannon B CIV USN NAVFAC MIDLANT NOR (USA) <shannon.b.kam.civ@us.navy.mil> wrote:

> Good Morning Sabrina,
>
> Please find attached NOAA's response to the conservation recommendations you provided back on July 22. Let me know if you have any questions.
>
> Have a good day.
> Respectfully,
> Shannon Kam
>
> **From:** Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
> **Sent:** Friday, July 22, 2022 4:13 PM
> **To:** Kam, Shannon B CIV USN NAVFAC MIDLANT NOR (USA) <shannon.b.kam.civ@us.navy.mil>; George, Mark S CIV (USA) <mark.george@noaa.gov>
> **Subject:** Re: [Non-DoD Source] Re: EFH Submission for NOAA Project on Navy Property in Newport

Appendix E Marine Mammal Protection Act Documents

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From:	Bowman, Sarah H CIV USN NAVFAC MIDLANT NOR (USA)
To:	Kathy Hall
Subject:	FW: IHA request from NOAA (via the Navy) for ship relocation
Date:	Friday, May 6, 2022 1:24:09 PM
Attachments:	NOAA Newport Relocation IHA Application 5-6-2022.pdf

From: Bowman, Sarah H CIV USN NAVFAC MIDLANT NOR (USA)
Sent: Friday, May 6, 2022 12:17 PM
To: PR.ITP.applications@noaa.gov
Cc: Harrison, Julia M CIV (USA) <jolie.harrison@noaa.gov>
Subject: IHA request from NOAA (via the Navy) for ship relocation

Ms Harrison,

Pursuant to the Marine Mammal Protection Act Section 101(a)(5)(D), the United States Navy, on behalf of the National Oceanic and Atmospheric Administration (NOAA), is submitting to the National Marine Fisheries Service this request for an Incidental Harassment Authorization for the incidental taking of marine mammal species during construction activities associated with the proposed relocation of four NOAA research vessels at Naval Station Newport in Newport Rhode Island.

We look forward to working with you through the application process.

Sarah Bowman
NAVFAC MID-ATLANTIC
Environmental Planning
Bldg. Z-140, 1st Floor
9324 Virginia Ave.
Norfolk, VA 23511
757-341-1546

REQUEST FOR INCIDENTAL HARASSMENT AUTHORIZATION UNDER THE MARINE MAMMAL PROTECTION ACT FOR RELOCATION OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESEARCH VESSELS AT NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Submitted to:

Office of Protected Resources, National Marine Fisheries Service, National Oceanographic and Atmospheric Administration

Prepared by:

Naval Facilities Engineering Command Mid-Atlantic

Prepared for:

National Oceanic and Atmospheric Administration

July 2022

(Revised September 2022)

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EXECUTIVE SUMMARY

Pursuant to the Marine Mammal Protection Act (MMPA) Section 101(a)(5)(D), the National Oceanic and Atmospheric Administration (NOAA) and the United States Navy (Navy) are submitting to the National Marine Fisheries Service (NMFS) this request for an Incidental Harassment Authorization (IHA) for the incidental taking of marine mammal species during construction activities associated with the proposed relocation of four NOAA research vessels at Naval Station (NAVSTA) Newport in Newport Rhode Island As part of the Proposed Action, a new pier, trestle, small boat floating dock, and bulkhead would be constructed in Coddington Cove. The project would also include shoreside administrative, warehouse, and other support facilities. NOAA and the Navy have determined that noise from in-water construction activities has the potential to rise to the level of harassment under the MMPA.

This request is for an IHA for in-water construction activities estimated to occur from February 1, 2024 to January 31, 2025. In the event of project or funding delays, or if a portion of the in-water activities are unable to be completed within this timeframe, NOAA may choose to apply for a renewal IHA for that work.

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are located at Pier 2 at NAVSTA Newport. Pier 2 does not meet NOAA requirements for these vessels because it does not provide exclusive use of the pier or priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The other two vessels will be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, South Carolina, or Mississippi.

Because many NOAA research cruises are conducted in the Northeast, relocating four vessels to this area presents logistical advantages as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for the four NOAA research vessels (Cardno, 2016a), (Cardno, 2016b), (NOAA, 2010).

In this IHA request, NOAA and the Navy have used NMFS promulgated thresholds (NMFS 2018) to estimate the number of Level A (Permanent Threshold Shift [PTS] onset) and Level B (Behavioral) takes that would result from pile driving/extracting and drilling activities. Empirically measured source levels from impact and vibratory pile driving/extracting, drilling, and DTH excavation events, as reported in the literature, were used to estimate sound source levels for this project. Underwater sound transmission loss has been modeled using "practical spreading loss," which assumes a loss of 4.5 decibels (dB) with each doubling of distance.

NOAA and the Navy are seeking authorization for the potential Level A and Level B taking of Atlantic white-sided dolphins *(Legenorhynchus acutus)*, short-beaked common dolphins *(Delphinus delphis)*, harbor porpoises *(Phocoena phocoena)*, harbor seals *(Phoca vitulina)*, gray seals *(Halichoerus grypus atlantica)*, harp seals *(Pagophilus groenlandicus),* and hooded seals *(Crystphora cristata)* (Table ES-1).

Table ES-1 Total Underwater Exposure Estimates by Species

Species	*Individual Activities*		*Concurrent Activities*		*Total Take Estimates*
	Level A (PTS onset)	*Level B (Behavior)*	*Level A (PTS onset)*	*Level B (Behavior)*	
Atlantic white-sided dolphin	0	6	0	3	16[1]
Short-beaked common dolphin	0	26	0	13	39
Harbor porpoise	2	27	0	13	42
Harbor seal	55	1,478	1	589	2,123
Gray seal	11	312	0	125	448
Harp seal	4	117	0	47	168
Hooded seal[2]	0	5	0	5	10
Total	**72**	**1,971**	**1**	**795**	**2,846[1]**

Note: The take numbers requested in this application do not take mitigation measures into account and are therefore, a conservative estimate.
1. Requested take has been increased to mean group size. Mean group size was not used for those take estimates that exceeded the mean group size.
2. To guard against unauthorized take, NOAA is requesting 1 Level B (behavioral) take of hooded seal per month of construction when this species may occur (January through May).

The takes requested are expected to have a less than significant effect on individual animals and no effect on the populations of these species. Effects experienced by individual marine mammals are expected to be primarily limited to short-term disturbance of normal behavior or temporary displacement of animals near the source of the noise.

Other in-water construction activities such as barge repositioning do not have the potential to result in harassment under the MMPA. Only underwater sound associated with pile driving and drilling would have the potential to harass marine mammals. Turbidity created during pile installation and extraction would temporarily impact the water column. However, turbidity would return to ambient conditions within 24 hours. Therefore, construction is not anticipated to affect the prey base or significantly affect other habitat features of marine mammals that would meet the definition of take.

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ACRONYMS AND ABBREVIATIONS

BMPs	best management practices
Caltrans	California Department of Transportation
dB	decibels
dB peak/pk	instantaneous peak sound pressure level
dB re 1 µPa	dB referenced to a pressure of 1 micropascal
dB re 1 $µPa^2$-s	dB referenced to a pressure of 1 micropascal squared second
DTH	down-the-hole
ESA	Endangered Species Act
EX	*Okeanos Explorer*
°F	Degrees Fahrenheit
HB	*Henry B. Bigelow*
Hz	hertz
IHA	Incidental Harassment Authorization
kHz	kilohertz
km	kilometer
lb	pound
LMR	Living Marine Resources
µPa	micropascal
MMPA	Marine Mammal Protection Act
NA	not applicable
NAVFAC	Naval Facilities Engineering Command
NAVSTA Newport	Naval Station Newport
Navy	United States Navy
nmi	Nautical Miles
NMFS	National Marine Fisheries Service
NMSDD	Navy Marine Species Density Database
NOAA	National Oceanic and Atmospheric Administration
NUWC	Naval Underwater Warfare Center
Pa	Pascal(s)
PSO	Protected Species Observers
PTS	permanent threshold shift
RCRA	Resource Conservation and Recovery Act
re 1 $µPa^2$	referenced to a pressure of 1 micropascal square
re 20 µPa	referenced to 20 micropascals
R&D	Research and Development
RMS	root mean square
SEL	sound exposure level
SEL_{cum}	cumulative sound exposure level
SPL	sound pressure level
sq km	square kilometer
TL	transmission loss
TTS	temporary threshold shift
U.S.	United States
WFA	weighting factor adjustments

1 INTRODUCTION AND DESCRIPTION OF ACTIVITIES

A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals.

1.1 Introduction

Pursuant to the Marine Mammal Protection Act (MMPA) Section 101(a)(5)(D), the National Oceanic and Atmospheric Administration (NOAA) and the United States Navy (Navy) are submitting to the National Marine Fisheries Service (NMFS) this request for an Incidental Harassment Authorization (IHA) for the incidental taking of marine mammal species during construction activities associated with the proposed relocation of four NOAA research vessels at Naval Station (NAVSTA) Newport in Newport Rhode Island (Figure 1-1). Code of Federal Regulations 50 216.104 sets out 14 specific items that must be included in requests for take pursuant to Section 101(a)(5)(A) of the MMPA; those 14 items are represented by the first 14 chapters of this application.

NOAA is proposing to establish adequate pier, shoreside, and support facilities for four NOAA research vessels at the former site of Derecktor Shipyard in Coddington Cove, herein referred to as Waterfront and Pier Landing sites, at NAVSTA Newport. Additional parking would be constructed near Building 11 and would have no impacts to aquatic resources (Figure 1-2).

Currently, two of the four Rhode Island NOAA research vessels, the *Henry B. Bigelow* (HB) and *Okeanos Explorer* (EX), are located at Pier 2 at NAVSTA Newport. Pier 2 does not meet NOAA requirements for this vessel because it does not provide exclusive use of the pier or priority use berthing for NOAA vessels, and there is competing use of shoreside areas. The other two vessels are part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, South Carolina, or Mississippi.

Because many of NOAA research cruises are conducted in the Northeast, relocating four vessels to this area presents logistical advantages as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for the four NOAA research vessels (Cardno 2016a, 2016b; NOAA 2010).

This request is for an IHA for in-water construction activities estimated to occur from February 1, 2024 to January 31, 2025. In the event of project or funding delays, or if a portion of the in-water activities are unable to be completed within this timeframe, NOAA may choose to apply for a renewal IHA for that work. A detailed description of in-water activities is provided below and dates and durations of construction activities expected to result in incidental taking of marine mammals are described in detail in Chapter 2.

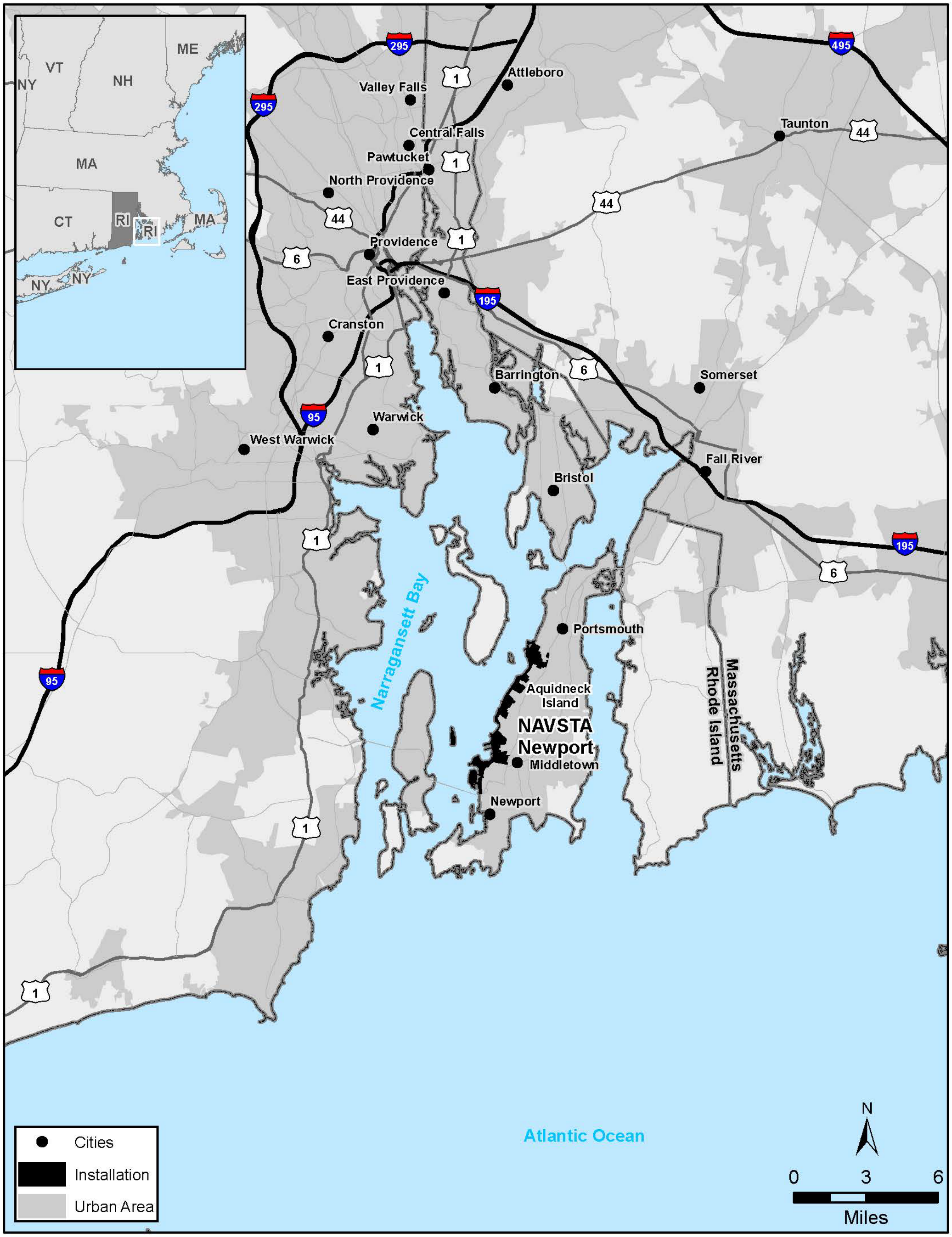

Figure 1-1 Location Map, Naval Station Newport

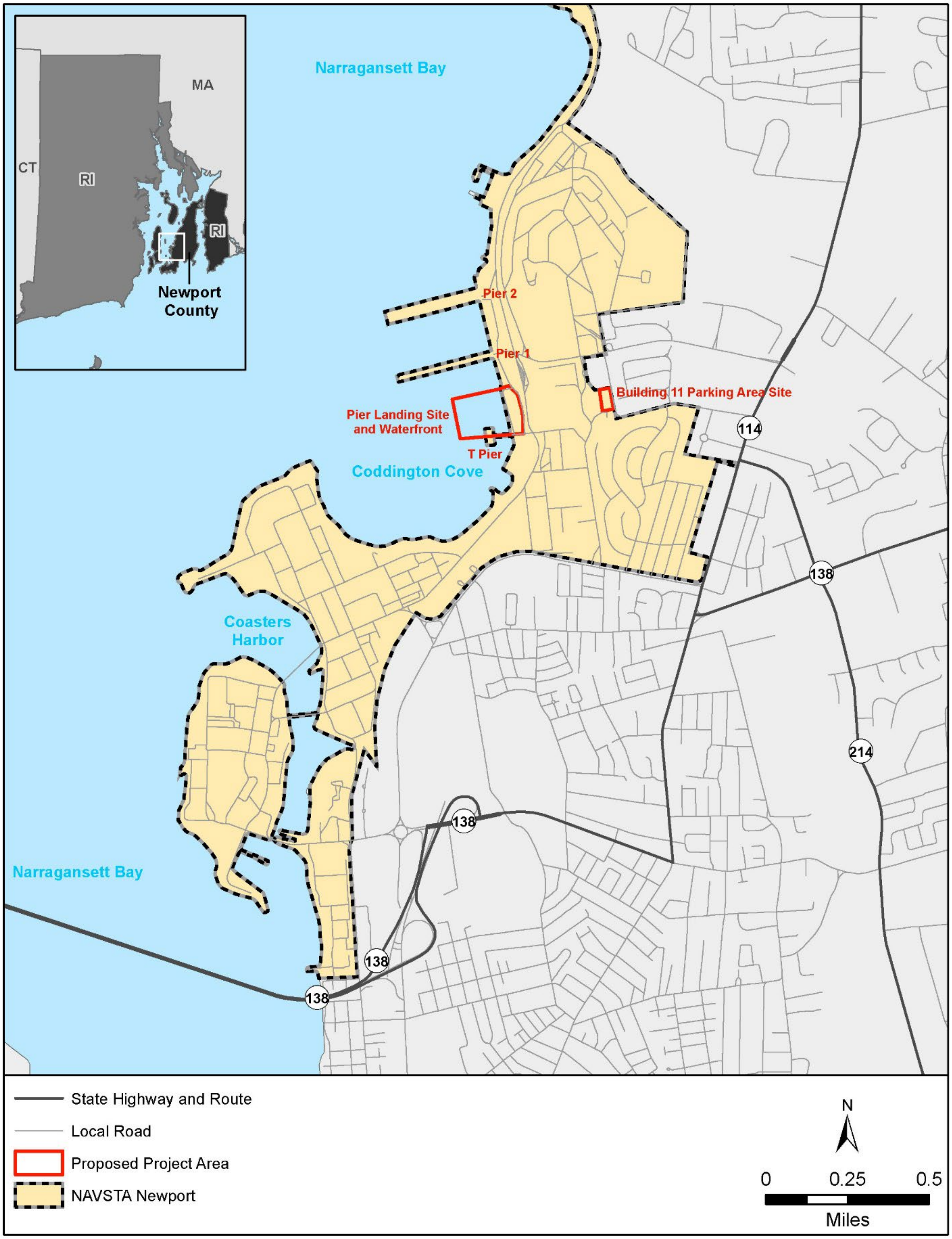

Figure 1-2 Project Site Map

1.2 Project Description

The Proposed Action would establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at NAVSTA Newport in Newport, RI. The Proposed Action includes the construction of a new pier, trestle, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove (Waterfront and Pier Landing) (see Figure 1-2). Upland construction at the Pier Landing and parking facilities near Building 11 would not involve any in-water work and are not discussed further in the IHA application.

1.2.1 Pier and Trestle

A new pile-supported concrete pier would be constructed approximately 450 feet north of the existing T-pier (Figure 1-3) in Coddington Cove for the berthing of the HB and EX and two additional, yet unidentified, NOAA Atlantic Fleet ships. The new pier would be approximately 62-feet wide and 587-feet long (approximately 36,400 square feet). A plan view of the pier is provided in Figure 1-4. Structural support piles for the new pier would consist of 120 steel pipe piles measuring 30 inches in diameter. The piles would be driven by vibratory and impact hammers to a depth required to achieve bearing capacity. If obstructions, such as glacial boulders, are encountered, a rotary drill may be used to clear the obstruction. Fender piles would be installed and would consist of 201, 16-inch diameter steel pipe piles. A typical cross section for a pier is shown in Figure 1-5.

The pier would be accessed by a 28-foot wide by 525-foot long pile-supported trestle (portion over water would be 506 feet long and approximately 14,200 square feet). The entrance to the trestle would be located upland and would span over two existing bulkheads (a U-pile wall with an internal wale that was noted as existing circa 1950, and a sheet pile bulkhead with an external double channel wale placed circa 1980) and extend over the new bulkhead to connect to the pier. Structural support piles for the trestle concrete deck would consist of 36 steel pipe piles measuring 18-inches in diameter and 2 steel pipe piles measuring 30-inches in diameter. The piles would be driven to depths required to achieve bearing capacity.

Trestle and pier piles would be installed using a template that would be secured by four, 16-inch pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of pier/trestle construction. The use of the template would require the driving and removal of the template piles approximately 19 times for the trestle and 30 times for the pier (196 total installation/extraction moves of pipe piles). It is estimated that the installation of the piles would occur within one calendar year. A typical trestle cross section is shown in Figure 1-6.

The new pier and trestle would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that would be connected to shore utilities. Fueling activities would be conducted using a tanker truck.

1.2.2 Small Boat Floating Dock

A 20-feet wide and 66-feet long small boat floating dock would be constructed northwest of the main pier and trestle structures (Figure 1-4). The floating dock would provide berthing on two sides. The floating system would consist of a single heavy duty 20-foot by 66-foot concrete float (approximately 1,300 square feet) and two 80-foot long and 5.5-foot wide gangway segments (approximately 440 square feet each). Access to the floating pier would be provided directly from land with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier.

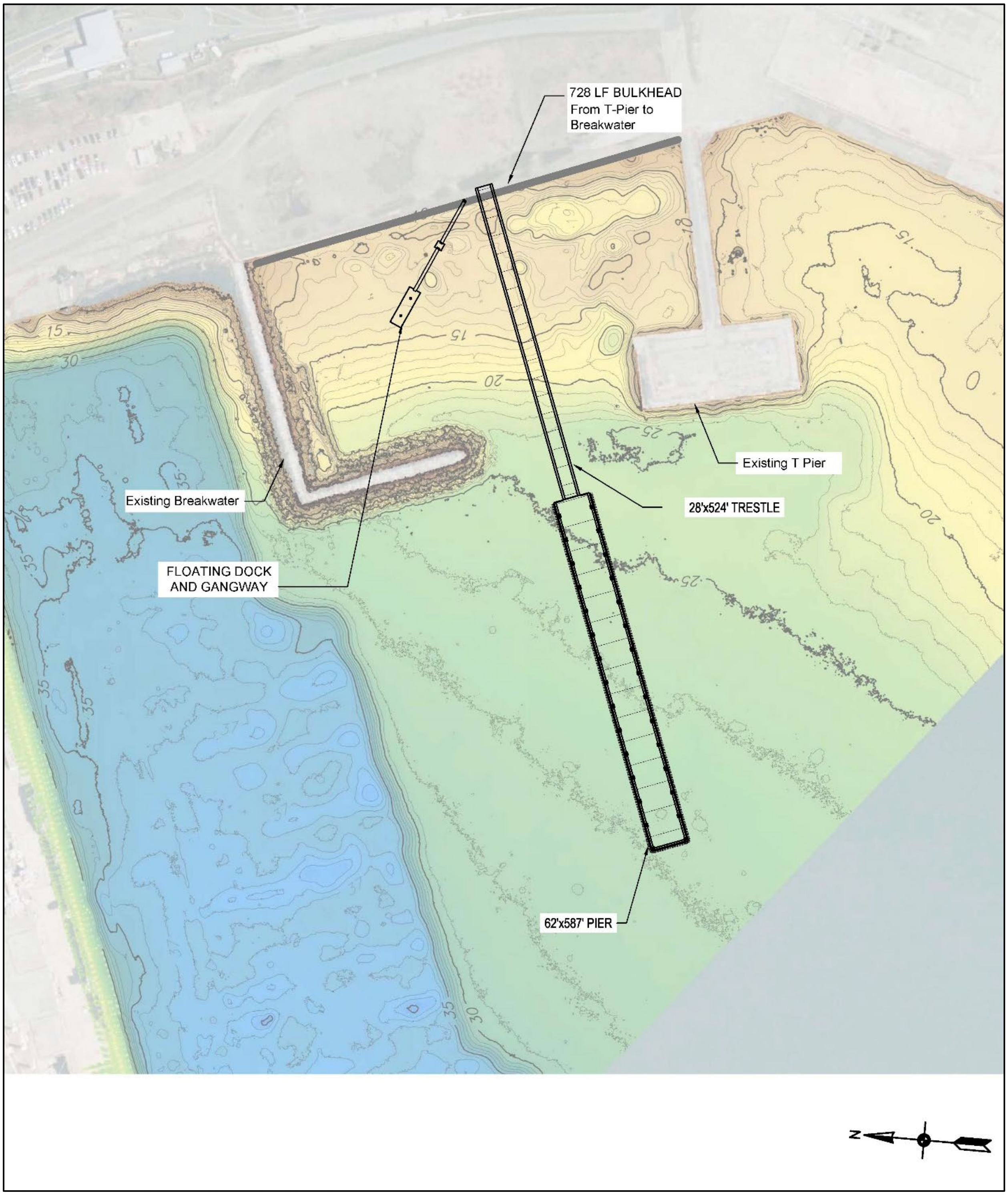

Figure 1-3 Plan View of the Proposed Action

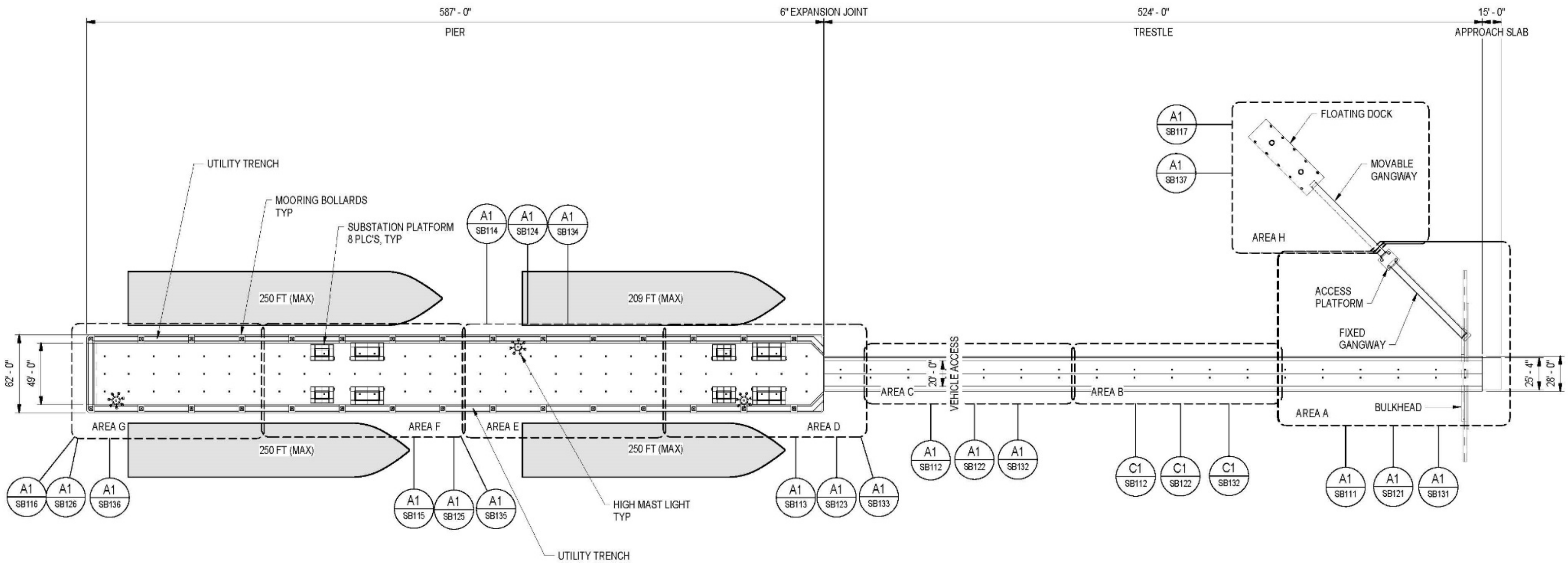

Figure 1-4 Plan View of Pier, Trestle and Floating Dock

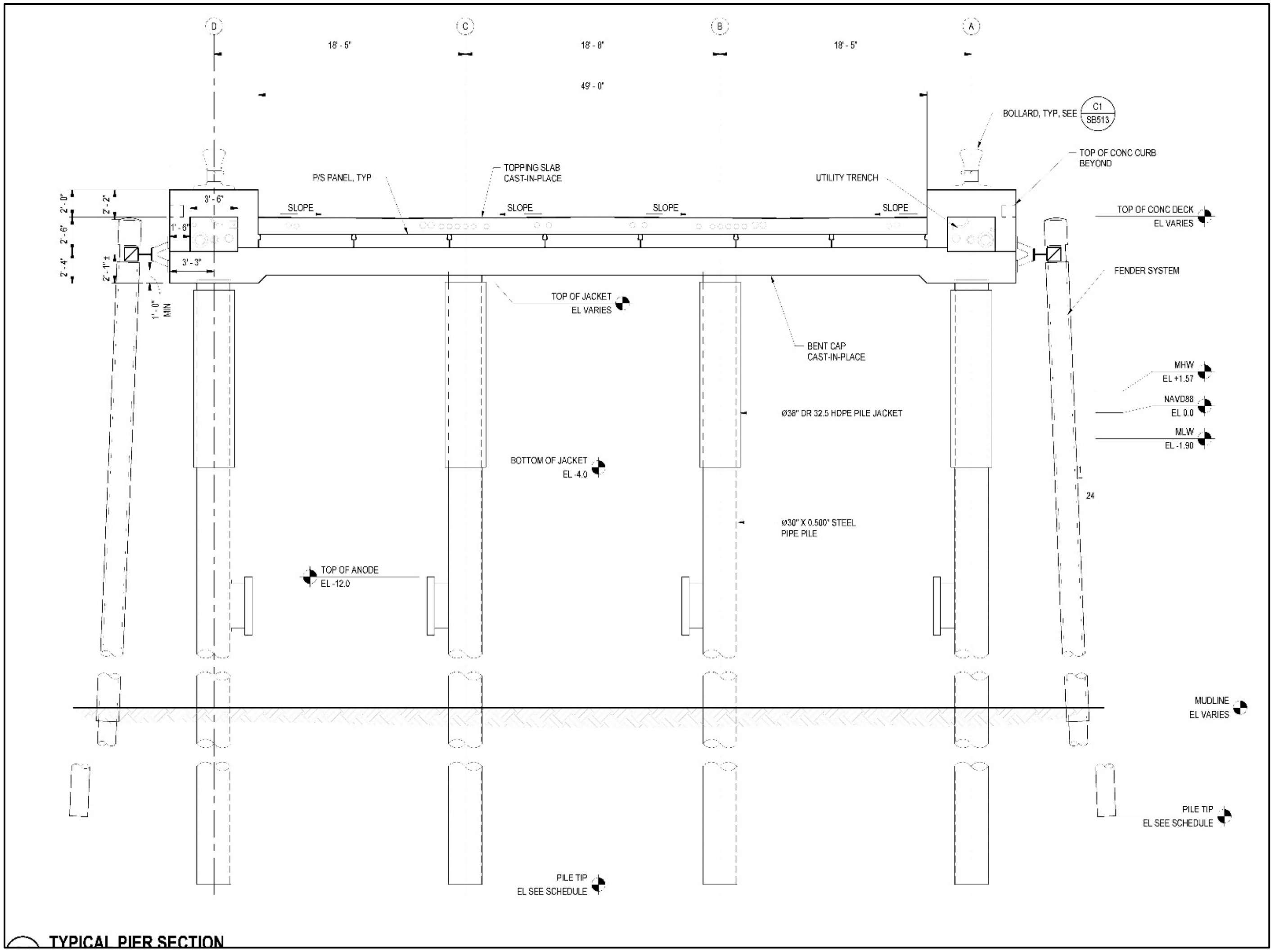

Figure 1-5 Cross Section of Pier (Typical)

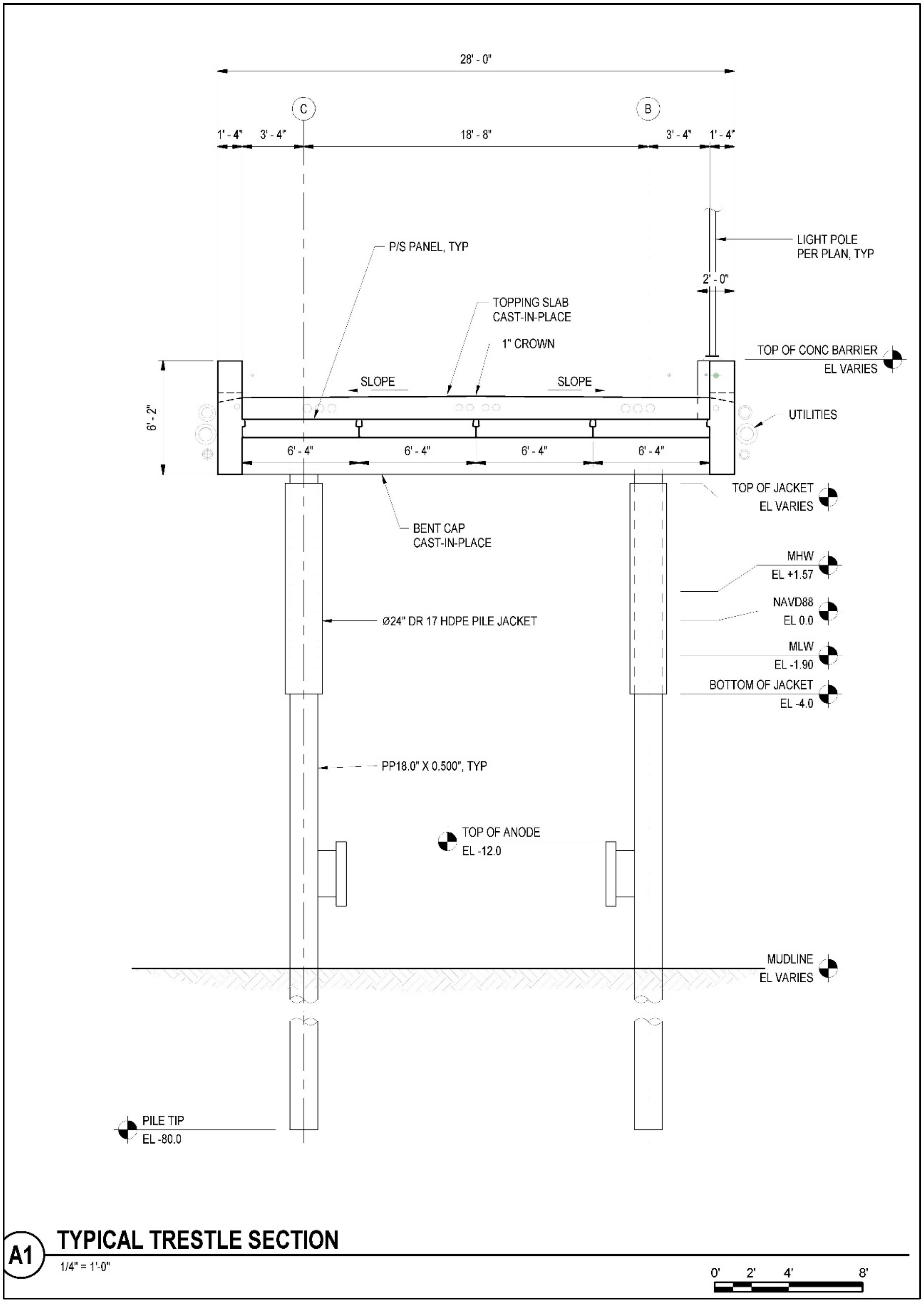

Figure 1-6 Trestle Cross Section (Typical)

The gangway would be supported by four, 18-inch diameter steel pipe piles and would be fully compliant with the Americans with Disabilities Act. Piles would be driven by vibratory installation followed by impact driving to required to achieve bearing capacity. Two 36-inch diameter, steel pipe guide piles would provide lateral support to the floating dock. The guide piles would be rock socketed into bedrock. Shafts would be installed using vibratory and impact driving methods, then set into rock socket anchors and filled with concrete. "Down-the-hole" (DTH) excavation using mono-hammers would be used to create the rock sockets. The small boat floating dock would be equipped with electrical shore power, lighting, communications, and potable water, but would not have fueling or sewage pump out capabilities.

Demolition would be required at the proposed site of the floating dock to remove an existing abandoned dock. Demolition would require vibratory extraction of three 12-inch diameter steel pipe piles and four 12-inch timber piles.

1.2.3 Bulkhead

Approximately 728 feet of bulkhead would be constructed near the proposed new pier location to reinforce and stabilize the existing deteriorating bulkhead. The deterioration includes corrosion of the steel sheet piles and sinkholes in the fill behind the concrete cap. The new bulkhead would be constructed 12 inches in front of the existing bulkhead from the T-pier to the existing breakwater (refer to Figure 1-4).

A combination of approximately 115, 18-inch diameter pipe piles and 230 steel Z-shaped sheet piles (each 55 inches long and 18 inches deep) would be installed along the face of the existing bulkhead. Piles would be installed using a template that would be secured by four, 16-inch pipe piles. The use of the template would require the driving and removal of the four template piles approximately 15 times (60 total installation/extraction moves of pipe template piles). The bulkhead piles would be driven into the cove bottom from the mudline to weathered bedrock and sheet piles would be driven into dense glacial till by vibratory and impact hammers. If obstructions, such as solid bedrock, boulders, or debris are encountered, pile installation may require use of DTH excavation methods to break up rock or may require moving the obstruction aside using mechanical means with incidental sediment disturbance. Debris would be pulled from the water and disposed of appropriately. Rock would be stockpiled during pile driving and then reset as close to the original position as possible.

The concrete cap along the existing bulkhead would be demolished after the new piles are installed. No demolition would occur in the water. Minimal demolition would be required along the existing bulkhead. No demolition would occur in the water.

1.3 In-water Construction Activities

In-water construction activities included in this IHA request are scheduled to take place during the timeframe covered by this IHA application.

1.3.1 Pile Driving

Pile installation/removal would occur using barge-mounted cranes and land-based cranes equipped with vibratory and impact hammers. Piles would be installed initially using vibratory means and then finished with impact hammers, as necessary. Impact hammers would also be used where obstructions or sediment conditions do not permit the efficient use of vibratory hammers.

Vibratory hammers are routinely used to install piles when permitted by the sediment type. Vibratory hammers typically produce lower source levels of noise than impact hammers, and they can be considered as an alternative to impact hammers in order to reduce underwater sound during construction activities (ICF Jones and Strokes and Illingworth and Rodkin, Inc., 2012). They are considered a non-impulsive noise source as the hammer continuously drives the pile into the substrate. A vibratory hammer operates by using counterweights that spin to create a vibration. The vibration of the hammer causes the pile to vibrate at a high speed. The vibrating pile then causes the soil underneath it to "liquefy" and allow the pile to move easily into or out of the sediment.

Impact hammers are the most common pile driving method used to install piles of various sizes (Caltrans, 2015). Impact hammers typically produce greater source levels of noise than vibratory hammers and are an impulsive noise source. Impact pile drivers are piston-type drivers that use various means to lift a piston (ignition, hydraulics, or steam) to a desired height and drop the piston (via gravity) against the head of the pile in order to drive it into the substrate. The size and type of impact driver used depends on the energy needed to drive a certain type of pile in various substrates to the necessary depth. The magnitude and characteristics of underwater noise generated by a pile strike depends on the energy of the strike and the pile size and composition. The impact hammers that may be used for this action are presented in Tables 1-1 and 1-2.

Table 1-1 Impact Hammers Anticipated for Installation of up to 18-inch Diameter Pile Sizes

Hammer	*Ram Wt (kip)*	*Max Energy (kip-ft)*	*Max Stroke (ft)*
Junttan HHK12S (base)	26.5	130.2	4.92
Delmag D55	11.8	125.0	10.54
ICE I-46v2	10.1	119.8	11.81

Notes: Wt = weight; kip = 1,000 pounds-force; kip-ft = 1,000 foot-pounds; ft = foot/feet.

Table 1-2 Impact Hammers Anticipated for Installation of 24-inch Diameter or Larger Pile Sizes

Hammer	*Ram Wt (kip)*	*Max Energy (kip-ft)*	*Max Stroke (ft)*
Junttan HHK16S (base)	35.2 kip	173.7	4.92
Delmag D62-22	13.6 kip	164.6	12.05
ICE I-62v2	14.6	164.9	11.3

Notes: Wt = weight; kip = 1,000 pounds-force; kip-ft = 1,000 foot-pounds; ft = foot/feet.

It is assumed that the piles installed for this project would be set with a vibratory hammer and then finished with an impact hammer to reach bearing depth or to have the required load-bearing capacity if installed using vibratory methods only. If obstructions, such as glacial boulders or bedrock are encountered, rotary drilling or DTH excavation may be required to drive the pile to depth.

Impact hammers would utilize soft-start techniques to minimize noise impacts in the water column. For purposes of this analysis, underwater noise was modeled without accounting for potential noise minimization measures.

1.3.2 Rotary Drilling

Rotary drilling is considered an intermittent, non-impulsive noise source, similar to vibratory pile driving. In rotary drilling, the drill bit rotates on the rock while the drill rig applies pressure. The bit rotates and grinds continuously to fracture the rock and create a hole.

During driving of 30-inch piles for the pier, if obstructions such as glacial boulders are encountered, a rotary drill may be used to clear the obstruction.

1.3.3 Down-the-Hole Excavation

In DTH excavation, both rotary drilling in conjunction with percussive hammering (approximately 13 strikes per second) are used to fracture rock. As the drill bit rotates under pressure from the drill rig, a hammer located within the bit is forced into the rock repeatedly. DTH excavation using mono-hammers would be used to excavate rock and create shafts for rock anchors.

Installation of 18-inch steel pipe piles for the bulkhead may require DTH excavation if obstructions such as solid bedrock, boulders, or debris are encountered.

For the floating boat dock, the two 36-inch steel shaft piles would be driven to bedrock (impact with initial vibratory set). Once the shaft reaches the top of bedrock, DTH excavation using mono-hammers would be used to set the piles in rock sockets. Once excavated, the shafts would be filled with concrete.

1.3.4 Concurrent Activities

Certain activities may occur at the same time, decreasing the total number of pile driving and/or drilling days. The contractor could be working in more than one area at a time. A summary of multiple equipment scenarios is provided in Chapter 2, and noise generation from multiple sources is provided in Chapter 6.

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2 DATES, DURATION, AND LOCATION OF ACTIVITIES

The dates and duration of such activity and the specific geographical region where it will occur.

2.1 Dates and Duration of Activities

In-water construction activities are currently expected to begin in February 1, 2024 and last until January 31, 2025. During this timeframe, construction activities are expected to result in incidental takes of marine mammals during 343 non-consecutive days of in-water work (Table 2-1). Other in-water construction activities such as barge repositioning and grouting would not result in “takes” of marine mammals. All work will be limited to daylight construction. The authorization request for incidental takes from individual and concurrent activities is presented in Chapter 5.

In order to analyze concurrent activities, Table 2-2 provides a summary of the possible equipment combinations by structure where the maximum of three in-water activities may occur simultaneously. An analysis of noise generation from concurrent activities from multiple sources is provided in Chapter 6.8-2.

2.2 Project Location Description

NAVSTA Newport, established during the Civil War era, encompasses 1,399 acres extending 6–7 miles along the western shore of Aquidneck Island in the towns of Portsmouth, Rhode Island, and Middletown, Rhode Island, and the City of Newport, Rhode Island (see Figure 1-1). The base footprint also includes the northern third of Gould Island in the town of Jamestown, Rhode Island. The base is located in the southern part of the state near where Narragansett Bay adjoins the Atlantic Ocean. The location of the proposed NOAA pier in Coddington Cove is depicted in Figure 1-2.

2.2.1 Bathymetric Setting

Coddington Cove is approximately 395 acres and is partially protected by the mass of Coddington Point to the south and east and by a breakwater to north. However, the northwestern section of the cove is exposed to the open water conditions of Narragansett Bay.

Narragansett Bay covers approximately 147 square miles and its watershed encompasses 1,705 square miles, of which over 60 percent is located in Massachusetts. Approximately 1.95 million people live within the watershed. Historically, population growth was the main factor affecting the condition of the Narragansett Bay watershed, as it led to severe pollution. Industrial operations released lead, chromium, and other contaminants; sewer systems discharged untreated sewage; and pavement and rooftops enabled rainwater to carry pollutants directly into waterways. In recent decades, government agencies and private-sector partners have sharply reduced some contaminants, nutrient pollution, and harmful bacteria by upgrading wastewater treatment facilities and stormwater systems. In the last 20 years, upper estuary water quality has improved and the acreage open for shellfishing has increased (Narragansett Bay Estuary Program, 2017). According to a 2015 bathymetric survey of Coddington Cove, water depths in the proposed project area are less than 34 feet MLLW (Figure 2-1). Water depths in the pier are artificially deep to accommodate the berthing of large ships (NAVFAC, 2015).

Table 2-1 Pile Installation/Extraction, Drilling, and Down-the-Hole Hammer Activity

Facility	***Construction Period***	***Pile Type***	***Pile Diameter (inch)***	***Number of Piles***	***Method of Pile Driving/Extraction***	***Daily Production Rate***	***Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)***	***Impact Pile Driving (Strikes)***	***Total Production Days*** (1)
Abandoned guide piles along bulkhead	February 2024	Steel Pipe	12.0	3	Vibratory Extraction	3 piles/day	30	n/a	1
Floating dock demolition (Timber Guide Piles)	February 2024	Timber	12.0	4	Vibratory Extraction	4 piles/day	30	n/a	1
Bulkhead construction (Combination Pipe/Z-pile)	February – May 2024*	Steel Pipe Pile	18.0	115	Vibratory / Impact	8 piles/day	30	1,000 strikes/pile	15
				12	Mono-hammer DTH (2, 3)	1 hole/day	300	13 strikes/second	12
		Steel Sheet pile Z26-700	18.0 deep	230 (115 pairs)	Vibratory	8 pair/day	30	n/a	15
		Template Steel Pipe Pile	16.0	60 (4 x 15 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	30
Trestle (Bents 1-18)	May – July 2024*	Steel Pipe Pile	18.0	36	Vibratory / Impact	2 piles/day	30	1,500 strikes/pile	18
				4	Rotary Drilling (4)	1 hole/day	300	n/a	4
		Template Steel Pipe pile	16.0	72 (4 x 18 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	36
Trestle (Bent 19)	July 2024	Steel Pipe Pile	30.0	2	Vibratory / Impact	2 piles/day	45	2,000 strikes per pile	1
		Template Steel Pipe pile	16.0	4 (4 x 1 move)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2
Pier	July 2024 – January 2025**	Steel Pipe Pile	30.0	120	Vibratory / Impact	4 piles/day	45	2,000 strikes/pile	30
				12	Rotary Drilling (4)	1 hole/day	300	n/a	12
		Template Steel Pipe Pile	16.0	120 (4 x 30 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	60

Table 2-1 Pile Installation/Extraction, Drilling, and Down-the-Hole Hammer Activity

Facility	Construction Period	Pile Type	Pile Diameter (inch)	Number of Piles	Method of Pile Driving/Extraction	Daily Production Rate	Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)	Impact Pile Driving (Strikes)	Total Production Days [(1)]
Fender Piles	October 2024 – January 2025**	Steel Pipe Pile	16.0	201	Vibratory	4 piles/day	20	n/a	50
		Template Steel Pipe Pile	16.0	96 (4 x 24 moves)	Vibratory Installation / Extraction	4 pile/day	30	n/a	48
Gangway support piles (small boat floating dock)	January 2025**	Steel Pipe Pile	18.0	4	Vibratory / Impact	2 piles/day	30	1,000 strikes/pile	2
Small Boat Floating Dock	January 2025**	Steel Casing/ Shaft w/ Rock Socket (Guide Pile)	36-inch shaft	2	Vibratory / Impact	1 pile/day	60	1,000 strikes/pile	2
				2	Mono-hammer DTH (2, 3, 5)	1 hole/day	300	13 strikes/second	2
		Template Steel Pipe Pile	16.0	4 (4 x 1 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2
								TOTAL Days	**343**

Notes: n/a=not applicable

*Pile installation at Bulkhead and Trestle may be concurrent

**Pile installation of Fender piles, Gangway, and Floating Dock may be concurrent

1. Total production days for template piles includes the time to install and the time to extract the piles.
2. "Down-the-hole hammer" (DTH) may be used to clear boulders and other hard driving conditions for pipe piling at the bulkhead. DTH will only be used when obstructions or refusal (hard driving) occurs that prevents the pile from being advanced to the required tip elevation using vibratory/impact driving. The DTH is placed inside of the steel pipe pile and operates at the bottom of the hole to clear through rock obstructions, hammer does not "drive" the pile but rather cleans the pile and removes obstructions such that the piles may be installed to "minimum" tip elevation.
3. DTH uses both impulsive (strikes/second) and continuous methods (minutes).
4. Rotary drilling may be used to clear boulders/obstructions for trestle and pier. Core barrel will be lowered through the pile and advanced using rotary methods to clear the obstruction. After the obstruction is cleared, the piling will be advanced to the required tip elevation using impact driving methods.
5. DTH will be used to create a rock socket at each of the 36-inch shafts for the floating dock.

Table 2-2 Summary of Concurrent Equipment Scenarios

Structure	*Activity*	*Total Equipment Quantity*	*Equipment (Quantity)*
Bulkhead	Template installation (16-inch steel) and steel pipe pile installation (18-inch)	2	Vibratory Hammer (2)
		2	Vibratory Hammer (1), Impact Hammer (1)
		3	Vibratory Hammer (2), Mono-hammer DTH (1)
Bulkhead and Trestle	Template extraction from Bulkhead (16-inch steel), Install sheet piles Bulkhead (Z26-700), Install steel pipe piles at Trestle (18-inch)	3	Vibratory Hammer (3)
		3	Vibratory Hammer (1), Impact Hammer (1), Rotary Drill (1)
		4	Vibratory Hammer (2), Impact Hammer (1), Rotary Drill (1)
Pier	Template Install (16-inch steel) and Install steel pipe piles (30-inch) at Pier	2	Vibratory Hammer (2)
		2	Vibratory Hammer (1), Impact Hammer (1)
		3	Vibratory Hammer (1), Impact Hammer (1), Rotary Drill (1)
Pier Fender Piles, Gangway, and Floating Dock	Install pipe piles (16-inch) at Pier and install steel pipe piles at Small Boat Floating Dock (18-Inch)	2	Vibratory Hammer (2)
		2	Vibratory Hammer (1), Impact Hammer (1)
	Template Extraction from Pier (16-inch steel) and install shafts (36-inch) at Small Boat Floating Dock	3	Vibratory Hammer (2), Impact Hammer (1)
		2	Vibratory Hammer (1), Impact Hammer (1)
		3	Vibratory (2), Mono-hammer DTH (1)

2.2.2 Tides, Circulation, Temperature, and Salinity

The tides in Coddington Cove are semi-diurnal, with two high tides and two low tides per day. The range of high to low tide varies from 1.9 to 1.1 meters (Pilson, 1985). Due to the presence of breakwaters and other shoreline structures, tidal circulation and current within Coddington Cove is generally weak.

Water temperatures recorded at the NOAA Gauging Station located at the southern extent of Coaster Harbor Island (Station 8452660 Newport) range from approximately 36 degrees Fahrenheit (°F) in winter and upwards of 68 °F in summer.

Salinity in the proposed project area is approximately 31 parts per thousand (Hicks, No date). In general, salinity in Narragansett Bay increases from the head to the entrances and from the surface to the bottom. The bottom water is essentially uniform in salinity from the middle of the Bay to the head, while the surface salinities progressively decrease over the same distance (Hicks, No date).

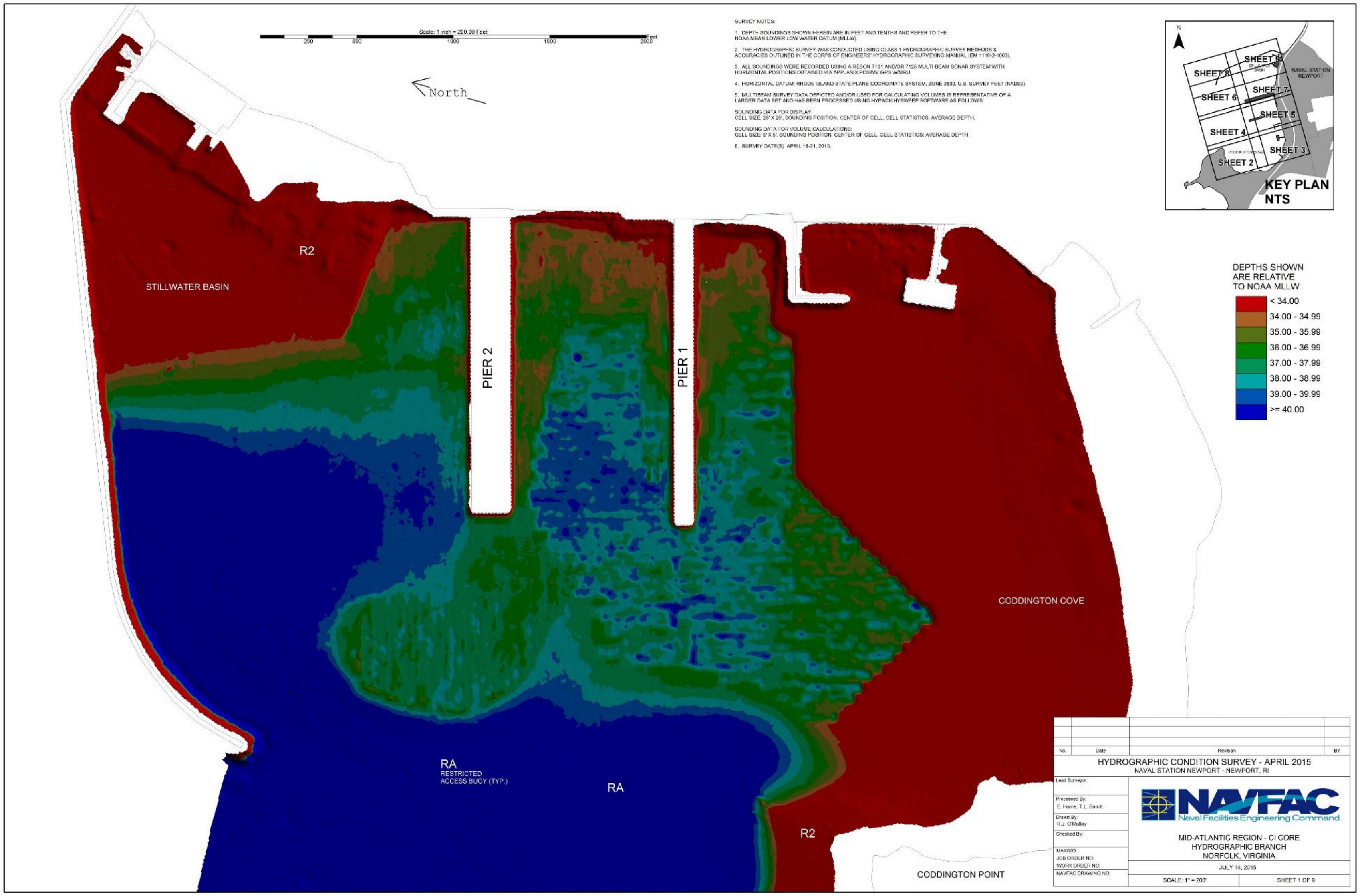

Figure 2-1 Bathymetry in the Proposed Project Area of Coddington Cove

2.2.3 Substrates and Habitats

According to a 2017 benthic survey, three habitat types are present in Coddington Cove: 1) silty sand/sandy silt areas where much of the bottom is visible, and macroalgae is sparse; 2) areas of narrow bands where the substrate is covered by shells and macroalgae is abundant; and, 3) large expanses of silt bottom with little to no macroalgae. The silt bottom habitat is the most prevalent habitat type in the cove (AECOM, 2017). No Submerged Aquatic Vegetation was observed in the proposed project areas.

2.2.4 Ambient Sound

2.2.4.1 Underwater Sound

The ambient underwater soundscape refers to noise that already exists in the environment prior to the introduction of another noise-generating activity. Ambient underwater sound can originate from a number of sources that are both natural and manmade. Natural sources of ambient sound include biological sources, such as various marine species, and physical sources, such as wind, waves, and rain (Richardson et al., 1995). Human-generated sound sources can include vessel noise (i.e., commercial shipping/container vessels), seismic air guns, and marine construction (i.e., pile driving or drilling).

Understanding the overall impact that the introduction of additional noise could have on the marine mammals present in the area requires knowing the background noise of an area. If background noise levels from vessels and other non-impulsive sources in the vicinity of the project exceed those of the NMFS threshold for Level B (Behavioral) harassment from non-impulsive sources, i.e., 120 dB or greater, then marine mammals would not be affected by any sound less than the existing dominant noise levels. In that case, the threshold for Level B (Behavioral) harassment is equal to the ambient sound level. For example, if the background ambient noise levels average 140 dB, then additional sounds less than 140 dB would not expose animals to harassing levels of noise, and the relevant threshold for Level B (Behavioral) harassment becomes 140 dB.

Narragansett Bay provides recreational opportunities to thousands of people who live, work and play within its waters. It welcomes more than 100,000 anglers each year, and over 32,000 recreational boaters (Save the Bay, 2017). Additionally, the Bay supports cargo vessel traffic to northern marine terminals in Providence.

Recent underwater noise data collected at the Naval Undersea Warfare Center (NUWC) during testing indicated that true ambient conditions of underwater noise are approximately 120-123 dB referenced to a pressure of 1 micropascal (dB re 1 μPa) root mean square (RMS). The test site was directly adjacent to the wharf at Stillwater and 1.5 meters below the surface. NUWC personnel indicated that a recording in the open water and at greater depth would likely be less (Iafrate, 2017). Because the proposed repairs would occur in shallow nearshore waters, for purposes of this analysis, ambient underwater noise in the project area is considered to be 120 dB RMS.

2.2.4.2 Airborne Sound

The existing noise environment in the vicinity of the project area is typical of an industrial area. Although no specific data is available for the project area, sound levels in and around the area are expected to be similar to those found on other mixed industrial/commercial areas, with an expected day night average sound level of approximately 60 dB (Navy, 2009).

3 MARINE MAMMAL SPECIES AND NUMBERS

The species and numbers of marine mammals likely to be found within the activity area.

Two types of marine mammals, pinnipeds and cetaceans, inhabit Rhode Island waters during at least a portion of the year. There are no marine mammal species that occur regularly in Narragansett Bay listed under the Endangered Species Act (ESA).

Several species of ESA listed whales occur seasonally in the waters off of Rhode Island including Humpback (*Megaptera novaeangliae*), Fin (*Balaenoptera physalus*), Sei (*Balaenoptera borealis*), Sperm (*Physeter macrocephalus*) and North Atlantic Right whales (*Eubaleana glacialis*). These whales are seasonally present in New England waters; however, due to the depths of Narragansett Bay and near shore location of the action area, listed marine mammals are unlikely to occur (NUWC Division, 2011). Therefore, these species are not discussed in this IHA application.

Table 3-1 lists seven species for which density and distribution indicate that take is reasonably foreseeable and therefore are included in this IHA application. Also included in the table is estimated density, season of occurrence, likelihood of occurrence within the project area and stock abundance for each species. Chapter 4 contains life history information for each species.

All species densities are from the United States (U.S.) Navy Marine Species Density Database (NMSDD) (Navy, 2017a) for which data of monthly densities of species were evaluated in terms of minimum, maximum, and average annual densities within Narragansett Bay. Average densities were used for all cetaceans evaluated in this application. The average densities were calculated using all data records provided for each cetacean where density survey data was available over a 12-month survey period. The NMSDD models densities for harbor and gray seals as a guild due to difficulty in distinguishing these species at sea. Harbor seal is expected to be the most common pinniped in Narragansett Bay with year-round occurrence (Kenney and Vigness-Raposa, 2010). Therefore, the maximum density for the harbor-gray seal guild was used for harbor seal. Gray seals are the second most likely seal, next to harbor seals, to be observed in Rhode Island waters and, based on stranding records, are commonly observed during the spring to early summer and occasionally observed during other months of the year (Kenney, 2020). Therefore, the average density for the harbor-gray seal guild was used for gray seal occurrence in Narragansett Bay. Minimum densities were used for harp seal and hooded seals as they are considered occasional visitors in Narragansett Bay but much rarer than harbor and gray seals (Kenney, 2015). The species density for hooded seal was too low to result in any calculated takes. Therefore, to guard against unauthorized take, the Navy is requesting 1 Level B (behavioral) take of hooded seal per month of construction when this species may occur (January through May).

Table 3-1 Marine Mammals with the Potential to Occur in the Proposed Project Area

Species and Stock	*Stock Abundance*	*Relative Occurrence in Narragansett Bay*	*Season(s) of Occurrence in Western North Atlantic*	*Density in the Project Area (species/sq km)*
Atlantic white-sided dolphin (*Lagenorhyncus acutus)* *Western North Atlantic Stock*	93,233 (CV = 0.71)[1]	Occasional	Year-round low densities	0.003[3]
Common dolphin/Short-beaked (*Delphinus delphis*) *Western North Atlantic Stock*	172,974 (CV = 0.21)[1]	Occasional	Summer and Fall (June – November)	0.011[3]
Harbor porpoise (*Phocoena phocoena*) *Gulf of Maine/Bay of Fundy*	95,543 (CV = 0.31)[1]	Occasional	Spring (October – June)	0.012[3]
Harbor seal (*Phoca vitulina*) *Western North Atlantic Stock*	61,336 (CV = 0.08)[2]	Common	Year-round	0.623[3]
Gray seal (*Halichoerus grypus atlantica*) *Western North Atlantic Stock*	27,300 (CV = 0.22)[2]	Occasional	Spring to Summer (March – June)	0.131[3]
Harp seal (*Pagophilus groenlandicus*) Western North Atlantic stock	7,600,000[2] (CV = Unknown)	Rare	Winter to Spring (January – May)	0.050[3]
Hooded seal (*Crystphora cristata*) Western North Atlantic Stock	Unknown (CV = Unknown)[2]	Rare	Winter to Spring (January-May)	0.001[3,4]

Key: CV = coefficient of variation; CI = confidence interval; sq km = square kilometer.

1. Hayes et al., 2021;
2. NMFS, 2022a
3. Navy, 2017a
4. To guard against unauthorized take, the Navy and NOAA are requesting 1 Level B (behavioral) take of hooded seal per month of construction when this species may occur (January through May).

4 AFFECTED SPECIES STATUS AND DISTRIBUTION

A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities.

4.1 Atlantic White-Sided Dolphin

4.1.1 Status and Management

The Atlantic white-sided dolphin is a member of the family Delphinidae. They can measure up to 9 feet in length and reach a weight of 400 to 500 pounds (lbs). Atlantic white-sided dolphins have a lifespan of approximately 25 years and are named after their distinctive yellowish-tan streak on their sides (NOAA Fisheries, 2020a).

Based on the distribution of sightings, strandings, and incidental takes, there are possibly three population units of Atlantic white-sided dolphin: Gulf of Maine, Gulf of St. Lawrence, and Labrador Sea populations (Palka et al., 1997). Until further research is conducted, the western North Atlantic stock of white-sided dolphins may contain multiple demographically independent populations. The animals in U.S. waters are part of the Gulf of Maine population (Hayes et al., 2021). The Atlantic white-sided dolphin is protected under the MMPA, but not listed under the ESA.

4.1.2 Distribution

Atlantic white-sided dolphins are found in the temperate waters of the North Atlantic and specifically off the coast of North Carolina to Maine in U.S. waters (NOAA Fisheries, 2020a). The Gulf of Maine population of white-sided dolphin primarily occurs in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. From January to May they occur in low numbers from Georges Bank to Jeffreys Ledge (off New Hampshire). They are most common from June through September from Georges Bank to lower Bay of Fundy, with densities declining from October through December (Hayes et al., 2021).

4.1.3 Site-Specific Occurrence

Since stranding recordings for the Atlantic white-sided dolphin began in Rhode Island in the late 1960s, this species has become the third most frequently recorded small cetacean. There are occasional unconfirmed opportunistic reports of white-sided dolphins in Narragansett Bay, typically in fall and winter. Atlantic white-sided dolphins in Rhode Island are inhabitants of the continental shelf, with a slight tendency to occur in shallower water in the spring when they are most common (approximately 64 percent of records). Seasonal occurrence of Atlantic white-sided dolphins decrease significantly following spring with 21 percent of records in summer, 10 percent in winter, and 7.6 percent in fall (Kenny and Vigness-Raposa, 2010).

4.2 Short-Beaked Common Dolphin

4.2.1 Status and Management

The short-beaked common dolphin is a member of the family Delphinidae and is one of the most abundant and familiar dolphins in the world. They occur primarily in areas of abundant prey in association with underwater ridges, seamounts, and continental shelves. Short-beaked common dolphins have a distinctive color pattern or “hourglass” dark gray cape that extends along the back from the head to just below the dorsal fin where a "V" is visible on either side of the body, creating an hourglass. They are small, measuring under 6 feet long and weighing approximately 170 lbs (NOAA Fisheries, 2020b). The short-beaked common dolphin is protected under the MMPA, but not listed under the ESA.

4.2.2 Distribution

The short-beaked common dolphin is one of the most widely distributed species of cetaceans, found world-wide in temperate and subtropical seas. In the North Atlantic, they are common along the shoreline of Massachusetts and at-sea sightings have been concentrated over the continental shelf between the 100-meter and 2000-meter isobaths over prominent underwater topography and east to the mid-Atlantic Ridge. The short-beaked common dolphin can be found from Cape Hatteras northeast to Georges Bank from mid-January to May and in Gulf of Maine from mid-summer to autumn (Hayes et al., 2021).

4.2.3 Site-Specific Distribution

Short-beaked common dolphins occur in the Rhode Island waters (encompassing Narragansett Bay, Block Island Sound, Rhode Island Sound, and nearby coastal and continental shelf areas) year-round. They occur across much of the shelf but most commonly in waters deeper than approximately 60 meter. Seasonality is not particularly strong, but sightings are more common in spring at approximately 35 percent of records followed by 26 percent in summer, 18 percent in fall, and 22 percent in winter (Kenny and Vigness-Raposa, 2010).

Strandings occur year-round. In the stranding record for Rhode Island, common dolphins are the second most frequently stranded cetacean (exceeded only by harbor porpoises) and the most common delphinid. There were 23 strandings in Rhode Island between 1972 and 2005 (Kenny and Vigness-Raposa, 2010). A short-beaked common dolphin was most recently recorded in Narragansett Bay in October of 2016 (Hayes et al., 2021). There are no recent records of common dolphins far up rivers, however such occurrences would only show up in the stranding database if the stranding network responded, and there is no centralized clearinghouse for opportunistic sightings of that type. In Rhode Island, there are occasional opportunistic reports of common dolphins in Narragansett Bay up as far as the Providence River, usually in winter.

4.3 Harbor Porpoise

4.3.1 Status and Management

The harbor porpoise is a member of the family Phocoenidae. Adult harbor porpoises range from 5 to 5.5 feet in length and can weigh up to 170 lbs. They are a toothed whale species and can be recognized by their small, robust, dark gray body with grayish-white sides, triangular dorsal fin, and short rostrum. Harbor porpoises are considered sexually dimorphic, with females being slightly larger than males (NOAA Fisheries, 2020c).

Based on genetic analysis, it is assumed that harbor porpoises in the U.S. and Canadian waters are divided into four populations, as follows: 1) Gulf of St. Lawrence; 2) Newfoundland; 3) Greenland; and 4) Gulf of Maine/Bay of Fundy (Hayes et al., 2021). The Gulf of Maine/Bay of Fundy Stock is likely to occur in the proposed project area. Harbor porpoises are protected under the MMPA, but not listed under the ESA.

4.3.2 Distribution

Harbor porpoises are found in northern temperate and subarctic coastal and offshore waters in both the Atlantic and Pacific Oceans. In the western North Atlantic, harbor porpoises are found in the northern Gulf of Maine and southern Bay of Fundy region in waters generally less than 150 meters deep, primarily during the summer (July to September). During fall (October to December) and spring (April to June), harbor porpoises are widely dispersed between New Jersey and Maine. Lower densities of harbor porpoise occur during the winter (January to March) in waters off New York to New Brunswick, Canada (Hayes et al., 2021).

4.3.3 Site-Specific Occurrence

Harbor porpoises are the most stranded cetacean in Rhode Island. Their occurrence is strongly seasonal and the highest occurrence is in spring at approximately 70 percent of all records. Their occurrence is the least common during the fall at approximately 3 percent with increases of approximately 8 percent and 20 percent in summer and winter, respectively (Kenny and Vigness-Raposa, 2010). It is possible harbor porpoise occur in Narragansett Bay during the winter but reports are second- and third-hand anecdotal reports (Kenny, 2013).

4.4 Harbor Seal

4.4.1 Status and Management

Harbor seals are members of the true seal family Phocidae. Adults are sexually dimorphic and males are generally larger than females. Adult harbor seals can reach up to 6.3 feet in length and weigh up to 245 lbs. As with other phocids, harbor seals lack external ear flaps, and their rear flippers do not rotate. Harbor seals are commonly a blue-gray color on their back with a speckling of both light and darker colors; however, their coloration may vary. Their concave, dog-like snout and their “banana-like” position while hauled-out aids in their identification (NOAA Fisheries, 2020d). Harbor seals are protected under the MMPA, but not listed under the ESA.

4.4.2 Distribution

Harbor seals occur in all nearshore waters of the North Atlantic and North Pacific Oceans and adjoining seas above approximately 30°N (Burns, 2009). They are year-round residents in the coastal waters of eastern Canada and Maine, occurring seasonally from southern New England to New Jersey from September through late May. Harbor seals northern movement occurs prior to pupping season that takes place beginning in May through June along the Maine coast. In autumn to early winter, harbor seals move southward from the Bay of Fundy to southern New England (Hayes et al., 2021). Overall, there are five recognized subspecies of harbor seal, two of which occur in the Atlantic Ocean. The western Atlantic harbor seal is the subspecies likely to occur in the proposed project area. There is some uncertainly about the overall population stock structure of harbor seals in the western North Atlantic Ocean. However, it is theorized that harbor seals along the eastern U.S. and Canada are all from a single population (Temte et al., 1991).

4.4.3 Site-Specific Occurrence

Harbor seals are regularly observed around all coastal areas throughout Rhode Island, and occasionally well inland up bays, rivers, and streams. In general, rough estimates indicate that approximately 100,000 harbor seals can be found in New England waters (DeAngelis, 2020). It should be noted for all the seals that the available data are strongly dominated by stranding records, which comprised 446 out of 507 total records for harbor seals (88 percent) (Kenny and Vigness-Raposa, 2010). Seals are very difficult to detect during surveys, since they tend to be solitary and the usual sighting cue is only the seal’s head above the surface. Of the available records, 52.5 percent are in spring, 31.2 percent in winter, 9.5 percent in summer, and 6.9 percent in fall. In Rhode Island, there are no records offshore of the 90-meter isobath. Based on seasonal monitoring in Rhode Island, seals begin to arrive in Narragansett Bay in September, with numbers slowly increasing in March before dropping off sharply in April. By May, seals have left the Bay (DeAngelis, 2020).

Seasonal nearshore marine mammal surveys were conducted at NAVSTA Newport between May 2016 and February 2017. The surveys were conducted along the western shoreline of Coasters Harbor Island northward to Coggeshall Point and eastward to include Gould Island. The only species that was sighted during the survey was harbor seal. During the spring survey, one harbor seal was sighted on 12 May 2016. The seal was observed near the surface of the water and engaged in several small dives during the encounter. A group of three harbor seals was sighted on 1 February 2017, during the winter survey. All three of the harbor seals were at the surface and watched the vessel pass. One dead harbor seal carcass was observed in the 12 May 2016 survey and reported to the Mystic Aquarium Stranding Network (Moll, et al., 2016, 2017; Navy, 2017b).

In Rhode Island waters, harbor seals prefer to haul-out on well-isolated intertidal rock ledges and outcrops. Numerous NAVSTA Newport employees have reported seals hauled out on an intertidal rock ledge north-northwest of Coddington Point and approximately 3,500 feet from the proposed project area named “The Sisters” (Figure 4-1) (NUWC Division, 2011). This haul-out has been studied by the NUWC Division Newport since 2011 and has demonstrated a steady increase in use during winter months when harbor seals are present in the Bay. Harbor seals are rarely observed at The Sisters haul-out in the early fall (September – October) but consistent numbers in mid-November (0-10 animals) are regularly observed with a gradual increase of 20+ animals until peak numbers in the upper 40s occur during March, typically at low tide. The number of harbor seals begin to drop off in April and by mid-May are not observed hauled out at all (DeAngelis, 2020). Haul-out spaces at The Sisters haul-out site is primarily influenced by tide level, swell, and wind direction (splashing the haul-out) (Moll et al., 2017; DeAngelis, 2020).

Including The Sisters haul-out, there are 22 haul-out sites in Narragansett Bay (Figure 4-1). During a one day Narragansett Bay-wide count in 2018, there were at least 423 seals observed, all 22 haul-out sites were represented. Preliminary results from the Bay-wide count for 2019 recorded 572 harbor seals which also included counts from Block Island (DeAngelis, 2020).

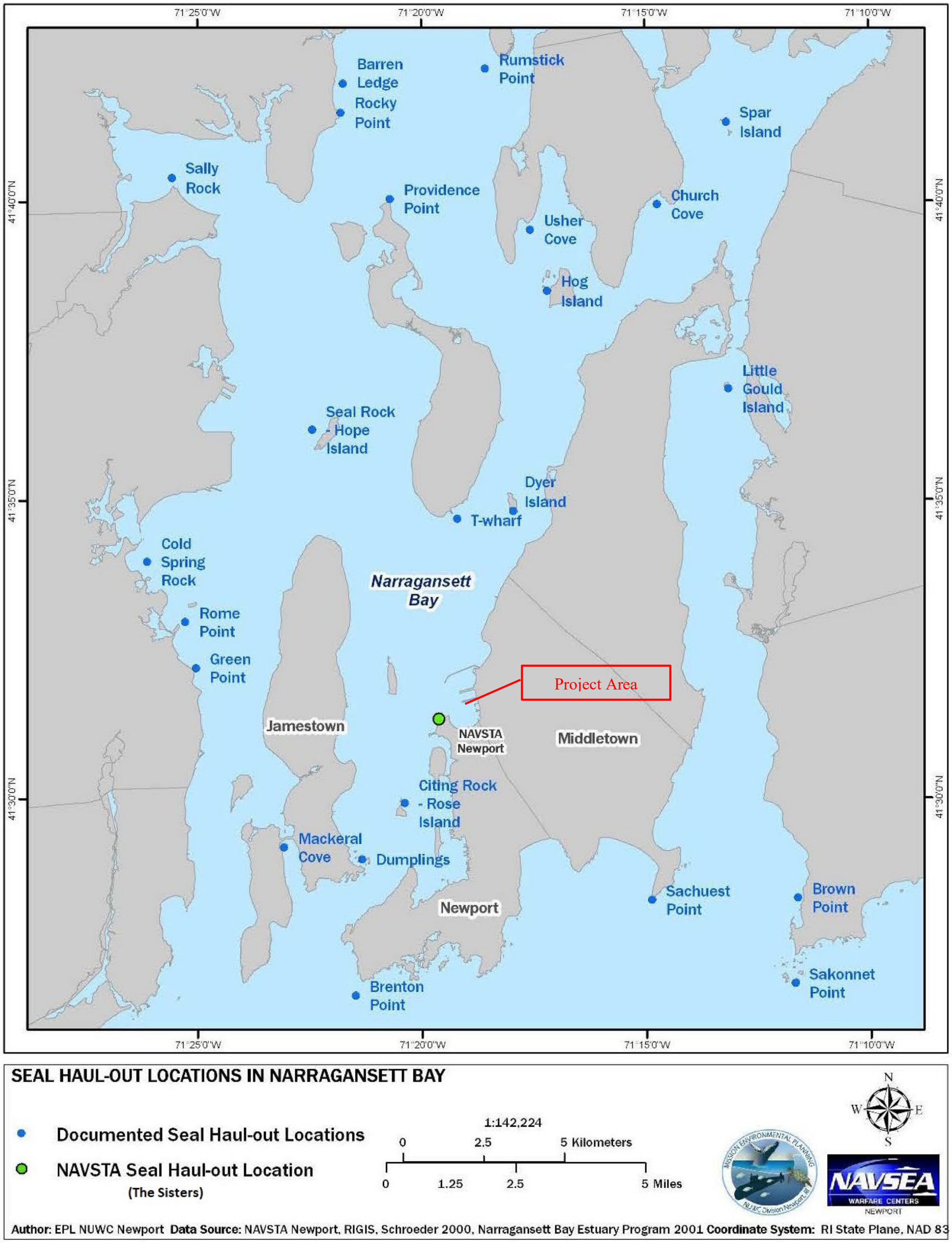

Figure 4-1 Seal Haul-outs in Narragansett Bay

4.5 Gray Seal

4.5.1 Status and Management

Gray seals, which are also members of the "true seal" family (Phocidae), are a coastal species that generally remains within the continental shelf region. However, they do venture into deeper water, as they have been known to dive up to 1,560 feet to capture prey during feeding. Gray seals primarily feed on fish, squid, various crustacean species, and octopus. Adult gray seals are sexually dimorphic, with males generally being larger than females. Adult males can reach up to 10 feet in length and weigh up to 880 lbs. Adult females can reach up to 7.5 feet in length and can weigh up to 550 lb. As a true seal, this species lacks external ear flaps, and its rear flippers do not rotate. Depending on its geographic location and sex, gray seal appearance and coloration varies. Adult females have a silver-gray coat with darker spots scattered over their body, and while males generally have similar color patterns, they have a prominent, long-arched nose (NOAA Fisheries, 2020e).

Gray seals can be found on both sides of the North Atlantic. Within western North Atlantic, Gray seals are split into three primary populations: 1) eastern Canada, 2) northwestern Europe, and 3) the Baltic Sea (Katona, Rough, & Richardson, 1993). Gray seals are protected under the MMPA but are not listed under the ESA.

4.5.2 Distribution

Gray seals within U.S. waters are considered the western North Atlantic stock and are expected to be part of the eastern Canadian population. In U.S. waters, year-round breeding of approximately 400 animals has been documented on areas of outer Cape Cod and Muskeget Island in Massachusetts. In general, this species can be found year-round in the coastal waters of the Gulf of Maine (Hayes et al., 2019).

4.5.3 Site-Specific Occurrence

Gray seal occurrences in Rhode Island are mostly represented by stranding records—155 of 193 total records (80 percent). Gray seal records in the region are primarily from the spring (approximately 87 percent), with much smaller numbers in all other seasons (5.7 percent in winter, 5.2 percent in summer, and 2.1 percent in fall). Strandings were broadly distributed along ocean-facing beaches in Long Island and Rhode Island, with a few spring records in Connecticut (Kenny and Vigness-Raposa, 2010). As with other seals, habitat use by gray seals in Rhode Island is poorly known. They are seen mainly when stranded or hauled out and infrequently at sea. There are very few observations of gray seals in Rhode Island other than strandings. The annual numbers of gray seal strandings in the Rhode Island study area since 1993 have fluctuated markedly, from a low of 1 in 1999 to a high of 24 in 2011 (Kenney, 2020). The very strong seasonality observed in gray seal occurrence in Rhode Island between March and June is clearly related to the timing of pupping in January–February. Most stranded individuals encountered in Rhode Island area appear to be post-weaning juveniles and starved or starving juveniles (Nawojchik, 2002; Kenney, 2005). Annual informal surveys conducted since 1994 observed a small number of gray seals in Narragansett Bay in 2016 (ecoRI News, 2016).

4.6 Harp Seal

4.6.1 Status and Management

Harp seals are also members of the true seal family. Unlike the gray seal and harbor seal, harp seals exhibit little sexual dimorphism. Males are generally only slightly larger than females, reaching up to 6 feet in length and weighing approximately 300 lb. Females generally reach up to 5 feet in length and weigh up to 290 lb. Adult harp seals are a light-gray color with black faces and a horseshoe-shaped black saddle on their back. They also have a distinctive block-shaped head. As with other true seal species, harp seals lack external ear flaps, and their rear flippers do not rotate (NOAA Fisheries, 2020f).

Harp seals are classified into three stocks, which coincide with specific pupping sites on pack ice. These pupping sites are as follows: 1) Eastern Canada, including the areas off the coast of Newfoundland and Labrador and the area near the Magdalen Islands in the Gulf of St. Lawrence; 2) the West Ice off eastern Greenland, and 3) the ice in the White Sea off the coast of Russia (Hayes et al., 2019). Harp seals are protected under the MMPA but are not listed under the ESA.

4.6.2 Distribution

The harp seal is a highly migratory species, and its range can extend from the Canadian Arctic to New Jersey. In U.S. waters, the species has an increasing presence in the coastal waters between Maine and New Jersey and are considered members of the western North Atlantic stock with general presence from January through May (Hayes et al., 2019).

4.6.3 Site-Specific Occurrence

Harp seals in Rhode Island are known almost exclusively from strandings (approximately 98 percent). Strandings are widespread on ocean-facing beaches throughout Long Island and Rhode Island and the records are almost entirely from spring (approximately 68 percent) and winter (approximately 30 percent). Harp seals are nearly absent in summer and fall. Harp seals also make occasional appearances well inland up rivers (Kenny and Vigness-Raposa, 2010). During late winter of 2020, a healthy harp seal was observed hauled out and resting near The Sisters haul-out site (DeAngelis, 2020).

4.7 Hooded Seal

4.7.1 Status and Management

Hooded seals are also members of the true seal family (Phocidae) and are generally found in deeper waters or on drifting pack ice. Like both the gray seal and harbor seal, hooded seals are also sexually dimorphic. Males are generally much larger than females, reaching up to 8.5 feet in length and weighing approximately 776 lbs. Females generally reach up to 7 feet in length and weigh up to 440 lbs. Hooded seals are a silver-gray color with dark marks in varying sizes and shapes on their coats. Adult males have a stretchy cavity, or hood, in their nose that can inflate to look like a bright red balloon. They also have another inflatable nasal cavity in the form of a black bladder on their head (NOAA Fisheries, 2020g).

The world population of hooded seals has been divided into three stocks, which coincide with specific breeding areas, as follows: 1) Northwest Atlantic, 2) Greenland Sea, and 3) White Sea (Hayes et al., 2019). Hooded seals are protected under the MMPA but are not listed under the ESA.

4.7.2 Distribution

The hooded seal is a highly migratory species, and its range can extend from the Canadian Arctic to as far south as Puerto Rico (Mignucci-Giannoni and Odell, 2001 as cited in Hayes et al., 2019). In U.S. waters, the species has an increasing presence in the coastal waters between Maine and Florida. Hooded seals in the U.S. are considered members of the western North Atlantic stock and generally occur in New England waters from January through May and further south off the southeast U.S. coast and in the Caribbean in the summer and fall seasons (McAlpine et al. 1999; Harris et al. 2001; and Mignucci-Giannoni and Odell, 2001 as cited in Hayes et al., 2019).

4.7.3 Site-Specific Occurrence

Hooded seal occurrences in Rhode Island are predominately from stranding records (approximately 99 percent). They are rare in summer and fall but most common in the area during spring and winter (45 percent and 36 percent of all records, respectively) (Kenney, 2005; Kenny and Vigness-Raposa, 2010). Hooded seal strandings are broadly distributed across ocean-facing beaches in Rhode Island and they occasionally occur well up rivers, but less often than harp seals. Hooded seals have been recorded in Narragansett Bay but are considered occasional visitors and are expected to be the least encountered seal species in the Bay (RICRMC, 2010).

5 TYPE OF INCIDENTAL TAKE AUTHORIZATION REQUESTED

The type of incidental taking authorization that is being requested (i.e., takes by harassment only, takes by harassment, injury, and/or death), and the method of incidental taking.

5.1 Take Authorization Request

Under the MMPA (16 U.S. Code Section 1371 (a) (5) (D)), NOAA and the Navy request an IHA for the incidental take of marine mammals by harassment as described within this application during proposed pier, trestle, floating dock, and bulkhead construction at NAVSTA Newport in Newport, Rhode Island. As described in detail in Chapter 6, this IHA request is for the incidental take of marine mammals as listed in Table 5-1, from February 1, 2024 through January 31, 2025. The take numbers requested in this application do not take mitigation measures into account and are therefore a conservative estimate.

Table 5-1 Total Underwater Incidental Take Estimates by Species

Species	*Individual Activities*		*Concurrent Activities*		*Total Take Estimates*
	Level A (PTS onset)	*Level B (Behavior)*	*Level A (PTS onset)*	*Level B (Behavior)*	
Atlantic white-sided dolphin	0	6	0	3	16[1]
Short-beaked common dolphin	0	26	0	13	39
Harbor porpoise	2	27	0	13	42
Harbor seal	55	1,478	1	589	2,123
Gray seal	11	312	0	125	448
Harp seal	4	117	0	47	168
Hooded seal[2]	0	5	0	5	10
Total	**72**	**1,971**	**1**	**795**	**2,846[1]**

1. Requested take has been increased to mean group size. Mean group size was not used for those take estimates that exceeded the mean group size[1].
2. To guard against unauthorized take, NOAA is requesting 1 Level B (behavioral) take of hooded seal per month of construction when this species may occur (January through May).

Except with respect to certain activities not pertinent here, the MMPA defines ‘‘harassment’’ as:

"any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment] (50 Code of Federal Regulations, Part 216, Subpart A, Section 216.3-Definitions)."

5.2 Method of Incidental Taking

This authorization request considers noise from impact and vibratory pile installation/extraction, mono-hammer DTH, and rotary drilling as outlined in Chapters 1 and 2 that have the potential to disturb or displace marine mammals or produce a temporary shift in their hearing ability (temporary threshold shift [TTS]) resulting in Level B (Behavioral) harassment as defined above. Impact pile drivers and DTH mono-hammers have the potential to produce a permanent threshold shift (PTS) in the ability of seals to hear, resulting in Level A harassment. Level A (PTS onset) harassment will be minimized to the extent practicable given the methods of installation and measures designed to minimize the possibility of injury to marine mammals that are presented below.

- Piles will primarily be installed with a vibratory pile driver. Vibratory pile drivers have relatively low sound levels (<180 dB re 1 µPa at 10 meters) and are not expected to cause injury to marine mammals.
- Rotary drilling may be required to clear boulders/obstructions for the trestle and pier piles. Sound from rotary drilling activities is consistent with the low levels created by vibratory pile drivers and is also not expected to cause injury to marine mammals.
- All pile driving/extracting, drilling, and DTH mono-hammering will either not start or be halted if marine mammals approach the “shutdown zone” for the activity being performed. Where appropriate, the shutdown zone corresponds to the Level A (PTS onset) harassment zone. Where the Level A (PTS onset) harassment zone is too large to effectively monitor, the shutdown zone would be limited to 200 meters from the point of noise generation to ensure adequate monitoring. This limit was suggested by NMFS for previous Navy projects in New England (NMFS, 2022b) and was included for a Letter of Authorization for construction at Naval Station Newport (NMFS, 2021a). The remaining area would be considered part of the disturbance zone.
- A “take” would be recorded if a marine mammal enters the “disturbance zone” defined by the Level B (behavioral) harassment zone and, where present, the Level A (PTS onset) harassment zone beyond 200 meters from the point of noise generation, which excludes the shutdown zone. Work would be allowed to proceed without cessation while marine mammals are in the disturbance zone and marine mammal behavior within the disturbance zone would be monitored and documented. The largest Level B (Behavioral) harassment zone and the Level A (PTS onset) harassment zone beyond 200 meters would be monitored for each construction activity to be protective of marine mammals regardless of what activity is occurring.
- Impact pile driving activities would utilize a “soft-start” to allow sensitive species to move away from the noise source before the commencement of pile driving.
- All in-water construction activities capable of producing noise harmful to marine mammals would occur during daylight hours.

Pier construction is not anticipated to affect the prey base or significantly affect other habitat features of marine mammals that would meet the definition of take. See Chapter 11 for more details on the impact reduction and mitigation measures proposed.

Based on estimates of sound source levels and underwater acoustic transmission loss, NOAA and the Navy have identified the areas surrounding sound producing activities within which sound levels would result in Level A (PTS onset) harassment and Level B (Behavioral) harassment (Refer to Chapter 6). NOAA and the Navy propose to monitor these areas during activities that produce sound levels that could result in marine mammal harassment. If a marine mammal enters the Level B (Behavioral) harassment zone (i.e. ensonified area), it would be noted as a take authorized in the IHA. Sound producing activities would cease when a marine mammal enters the shutdown zone to prevent a prolonged exposure to sound that could reach the threshold for the onset of PTS. While NOAA and the Navy believe this procedure will minimize the likelihood of Level A (PTS onset) acoustic exposures, it is possible that an animal could be present undetected within the Level A (PTS onset) harassment zone during impact pile driving or DTH excavation. Therefore, NOAA and the Navy request authorization for potential Level A

(PTS onset) takes associated with these activities. A standard shutdown zone of 10 meters (33 feet) will also be applied to prevent non-acoustic injury to marine mammals from all potentially hazardous in-water activities occurring in the project area.

For most vibratory pile driving and rotary drilling activities, the potential for Level A harassment by acoustic injury for seals extends less than 10 meters from the source, and for these activities, the shutdown zone automatically mitigates/minimizes Level A (PTS onset) acoustic harassment. Table 5-2 summarizes the shutdown zone distances for each proposed activity under each potential construction scenario.

Table 5-2 Shutdown Zone Distances by Activity

Pile type, Size, and Driving method, Location	***Shutdown Distance***	
	Porpoise and Dolphin	**Seals**
Vibratory Extract 12-inch steel pipe piles	10 meters	10 meters
Vibratory Extract 12-inch timber pile	15 meters	10 meters
Vibratory Install/Extract 16-inch steel pipe	20 meters	10 meters
Impact Install 18-inch steel pipe piles	200 meters[1]	200[1] meters
Vibratory Install 18-inch steel pipe piles	30 meters	15 meters
Mono-hammer DTH 18-inch steel	200 meters[1]	200[1] meters
Rotary drilling 18-inch holes	10 meters	10 meters
Vibratory Install Z26-700 steel sheets	15 meters	10 meters
Impact Install 30-inch steel pipe piles	200 meters[1]	200[1] meters
Vibratory Install 30-inch steel pipe piles	55 meters	25 meters
Rotary Drill for 30-inch steel	10 meters	10 meters
Impact Install 36-inch steel pipe piles	200 meters[1]	200[1] meters
Vibratory Install 36-inch steel pipe piles	90 meters	40 meters
Mono-hammer DTH 36-inch shafts	200 meters[1]	200[1] meters

1. Distance to shutdown zone distances implemented for other similar projects in the region (Navy 2019)

The presence of porpoise and dolphin in the proposed project area is highly seasonal and these species are not likely to be encountered in the summer. Therefore, the monitoring of the Level A (PTS onset) shutdown zone could be limited to seals during the summertime.

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6 NUMBERS AND SPECIES TAKEN

By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in Chapter 5, and the number of times such takings by each type of taking are likely to occur.

6.1 Introduction

The NMFS application for a IHA requires applicants to determine the number of marine mammals that are expected to be incidentally harassed by an action and the nature of the harassment (Level A [PTS onset] or Level B [Behavioral]). Chapter 5 defines MMPA Level A (PTS onset) and Level B (Behavioral) harassment. This section presents how these definitions informed the quantitative acoustic analysis methodologies used to assess the potential for the Proposed Action to affect marine mammals.

The Proposed Action has the potential to take marine mammals by harassment as a result of noise produced by in-water pile driving and drilling. The potential of physical injury would be minimized with the implementation of marine mammal monitoring and shutdown procedures (see Chapter 11). Other construction activities (i.e. upland construction, stormwater improvements) are not expected to result in takes as defined under the MMPA. These activities would occur throughout the project duration.

In-water construction activities will temporarily increase the local underwater and airborne noise environment near the proposed project area. Research suggests that increased noise may impact marine mammals in several ways and depends on many factors. This is discussed in more detail in Chapter 7. Assessing whether a sound may disturb or injure a marine mammal involves understanding the characteristics of the acoustic source and the potential effects that sound may have on the physiology and behavior of that marine mammal. Although it is known that sound is important for marine mammal communication, navigation, and foraging (National Research Council, 2003, 2005), there are many unknowns in assessing impacts, such as the potential interaction of different effects and the significance of responses by marine mammals to sound exposures (Nowacek et al., 2007; Southall et al., 2007, 2019). Furthermore, many other factors besides the received level of sound may affect an animal's reaction, such as the animal's physical condition, prior experience with the sound, and proximity to the source of the sound.

Vibratory pile driving and rotary drilling described in Chapter 1 of this application is not expected to result in Level A (PTS onset) exposure of marine mammals as defined under the MMPA but the noise-related impacts discussed in this application may result in Level B (Behavioral) harassment. Impact pile driving and DTH excavation could result in Level A (PTS onset) and Level B (Behavioral) exposure of marine mammals as defined under the MMPA. The methods for estimating the number and types of exposure are summarized below.

Exposure of each species was determined by:

- Estimating the area of impact where noise levels exceed acoustic thresholds ((Level A [PTS Onset] and Level B [Behavioral Disturbance]))for marine mammals (Chapters 6.7 and 6.8);
- Evaluating potential presence of each species at NAVSTA Newport is based on site-specific surveys and monitoring as outlined in Chapter 3 and 4; and

- Estimating potential harassment exposures by multiplying the density or site-specific abundance, as applicable, of each marine mammal species calculated in the area of impact by their probable duration during construction (Chapter 6.12).

Each of the three items above is discussed in the following sections.

6.2 Description of Noise Sources

In-water construction activities associated with the Proposed Action includes impact and vibratory pile driving/extracting, rotary drilling, and DTH mono-hammering. The sounds produced by these activities fall into two sound types: impulsive and non-impulsive (defined below). Impact pile driving produces impulsive sounds, while vibratory pile driving/extracting and rotary drilling produce non-impulsive sounds. DTH mono-hammers produce both impulsive and non-impulsive sounds. The distinction between these two general sound types is important because they have differing potential to cause physical effects, particularly with regard to hearing (Ward, 1997).

Impulsive sounds (e.g., explosions, seismic airgun pulses, and impact pile driving), which are referred to as pulsed sounds in Southall et al. (2007, 2019), are brief, broadband, atonal transients (Harris, 1998) and occur either as isolated events or repeated in some succession (Southall et al., 2007, 2019). Impulsive sounds are characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a decay period that may include a period of diminishing, oscillating maximal and minimal pressures (Southall et al., 2007). Impulsive sounds generally have a greater capacity to induce physical injury compared with sounds that lack these features (Southall et al., 2007, 2019).

Non-impulsive sounds (referred to as non-pulsed in Southall et al., 2007) can be tonal, broadband, or both. They lack the rapid rise time and can have longer durations than impulsive sounds. Non-impulsive sounds can be either intermittent or continuous. Examples of non-impulsive sounds include vessels, aircraft, and machinery operations such as drilling and vibratory pile driving (Southall et al., 2007). In some environments, the duration of both impulsive and non-impulsive sounds can be extended due to reverberations.

6.3 Vocalizations and Hearing of Marine Mammals

All marine mammals that have been studied can produce sounds and use sounds to forage, orient, detect, respond to predators, and facilitate social interactions (Richardson et al., 1995). Measurements of marine mammal sound production and hearing capabilities provide some basis for assessing whether exposure to a particular sound source may affect a marine mammal behaviorally or physiologically. Marine mammal hearing abilities are quantified using live animals via either behavioral audiometry or electrophysiology (see Schusterman, 1981; Au, 1993; Wartzok and Ketten, 1999; Nachtigall et al., 2007). Behavioral audiograms, which are plots of animals' exhibited hearing threshold versus frequency, are obtained from captive, trained live animals using standard testing procedures with appropriate controls and are considered to be a more accurate representation of a subject's hearing abilities. Behavioral audiograms of marine mammals are difficult to obtain because many species are too large, too rare, and too difficult to acquire and maintain for experiments in captivity. Consequently, our understanding of a species' hearing ability may be based on the behavioral audiogram of a single individual or small group of animals. In addition, captive animals may be exposed to local ambient sounds and other environmental factors that may impact their hearing abilities and may not accurately reflect the hearing abilities of free-swimming animals.

For animals not available in captive or stranded settings (including large whales and rare species), estimates of hearing capabilities are based on anatomical and physiological structures, the frequency range of the species' vocalizations, and extrapolations from related species.

Electrophysiological audiometry measures small electrical voltages produced by neural activity when the auditory system is stimulated by sound. The technique is relatively fast, does not require a conscious response, and is routinely used to assess the hearing of newborn humans. It has recently been adapted for use on non-humans, including marine mammals (Dolphin, 2000). For both methods of evaluating hearing ability, hearing response in relation to frequency is a generalized U-shaped curve or audiogram showing the frequency range of best sensitivity (lowest hearing threshold) and frequencies above and below with higher threshold values.

The NMFS reviewed studies of hearing sensitivity of marine mammals and developed thresholds for use as guidance when assessing the effects of anthropogenic sound on marine mammals based on measured or estimated hearing ranges (NMFS, 2018). The guidance places marine mammals into the following functional hearing groups based on their generalized hearing sensitivities: high-frequency cetaceans, mid-frequency cetaceans, low-frequency cetaceans (mysticetes), otariid pinnipeds (sea lions and fur seals), and phocid pinnipeds (true seals). Research is underway to subdivide these hearing groups in the future (Southall et al., 2019). Table 6-1 provides sound production and hearing capabilities for marine mammal species that are assessed in this application. There are no low-frequency species or otariid pinnipeds included in this application (refer to Chapter 3).

Table 6-1 Hearing and Vocalization Ranges for Marine Mammal Functional Hearing Groups and Species in Narragansett Bay

Functional Hearing Group	*Species*	*Functional Hearing Range*[1]
Mid-frequency cetaceans	Atlantic white-sided dolphin, short-beaked common dolphin	150 Hz to 160 kHz
High-frequency cetaceans	Harbor porpoise	275 Hz to 160 kHz
Phocidae	Harbor seal, gray seal, harp seal, hooded seal	In-water: 50 Hz to 86 kHz In-air: 75 Hz to 30 kHz

Key: Hz = Hertz; kHz = kilohertz

Note: 1. In-water hearing data from NMFS, 2018; in-air data from Schusterman, 1981; Hemilä et al., 2006; Southall et al., 2007, 2019.

6.4 Sound Exposure Criteria and Thresholds

The NMFS uses underwater sound exposure thresholds to determine when an activity could result in impacts to a marine mammal defined as Level A (PTS onset) (NMFS, 2018) or Level B (Behavioral) harassment (NMFS, 2005) (Table 6-2). The NMFS (2018) has recently developed acoustic threshold levels for determining the onset of PTS in marine mammals in response to underwater impulsive and non-impulsive sound sources. The criteria use a cumulative sound exposure level (SEL_{cum}) in units of dB referenced at 1 micropascal squared second (re 1 $\mu Pa^2 sec$) and peak sound pressure level (SPL) in dB (dB peak) referenced at 1 micropascal (re 1 µPa). The NMFS equates the onset of PTS, which is a form of auditory injury, with Level A harassment under the MMPA. Level B (Behavioral) harassment occurs when marine mammals are exposed to impulsive/intermittent underwater sounds above 160 dB RMS re 1 µPa, such as from impact pile driving, and to non-impulsive/continuous underwater sounds above 120 dB RMS re 1 µPa, such as from vibratory pile driving (NMFS, 2005). The onset of TTS is a form of Level B

(Behavioral) harassment under the MMPA. All forms of harassment, either auditory or behavioral, constitute "incidental take" under these statutes.

Because DTH mono-hammer excavation involves both drilling (non-impulsive sound) and hammering (impulsive sound) to penetrate rocky substrates, it is treated as both an impulsive and non-impulsive noise source in this IHA application. In order to determine Level A harassment zones, DTH excavation is evaluated according to the impulsive criteria identified for each species. Level B harassment zones are determined by using the 120 dB RMS threshold which is used for vibratory driving. This approach ensures that the largest ranges to effect for both Level A and Level B harassment are accounted for in the take estimation process (NMFS, 2021b).

For airborne noise. the NMFS uses generic sound exposure thresholds to determine when an activity that produces airborne sound might result in impacts to a marine mammal (NMFS, 2005). Construction-generated airborne noise would have little impact to cetaceans because noise from airborne sources would not transmit as well underwater (Richardson et al., 1995); thus, noise would primarily affect hauled-out pinnipeds near the project location. NMFS has identified behavioral harassment threshold criteria for airborne noise generated by pile driving for pinnipeds regulated under the MMPA. Level A (PTS onset) threshold criteria for airborne noise have not been established. The Level B (Behavioral) harassment threshold for harbor seals is 90 dB RMS referenced to 20 micro pascals (re 20 µPa) (unweighted) and for other pinnipeds except harbor seals is 100 dB RMS re 20 µPa (unweighted).

Table 6-2 Injury and Disturbance Threshold Criteria for Underwater and Airborne Noise

Marine Mammals	*Airborne Noise (impact and vibratory pile driving)* [1]	*Non-impulsive Sounds (Vibratory Pile driving, Rotary Drilling)*		*Impulsive Sounds (Impact Pile driving, DTH Excavation)*	
	Disturbance Guideline (haul-out) [2]	*Level A (PTS onset) Threshold*	*Level B (Behavior) Threshold*	*Level A (PTS onset) Threshold* [3]	*Level B (Behavior) Threshold*
Mid-Frequency Cetaceans	Not applicable	198 dB SEL_{CUM}[4]	120 dB RMS	230 dB Peak[5] 185 dB SEL_{CUM}[4]	160 dB RMS (120 dB RMS for DTH)
High-Frequency Cetaceans	Not applicable	173 dB SEL_{CUM}[4]	120 dB RMS	202 dB Peak[5] 155 dB SEL_{CUM}[4]	160 dB RMS (120 dB RMS for DTH)
Phocidae (true seals)	90 dB RMS (harbor seals) 100 dB RMS (gray seals, harp seals, hooded) (unweighted)	201 dB SEL_{CUM}[4]	120 dB RMS	218 dB Peak[5] 185 dB SEL_{CUM}[4]	160 dB RMS (120 dB RMS for DTH)

Legend: DTH = down-the-hole; µPa = micropascal; dB = decibel; PTS = permanent threshold shift; RMS = root mean square; SEL = sound exposure level.

Notes: [1]Airborne disturbance thresholds not specific to pile driver type.
[2]Sound level at which pinniped haul-out disturbance has been documented. This is not considered an official threshold but is used as a guideline.
[3]Dual metric acoustic thresholds for impulsive sounds. Whichever results in the largest isopleth for calculating PTS onset is used in the analysis.
[4]Cumulative SEL over 24 hours.
[5]Flat weighted or unweighted peak sound pressure within the generalized hearing range.

6.5 Limitations of Existing Noise Criteria

The application of the 120 dB RMS re 1 µPa behavioral threshold can sometimes be problematic because this threshold level can be either at or below the ambient noise level of certain locations. The 120 dB RMS re 1 µPa threshold level for non-impulsive noise originated from research conducted by Malme et al. (1984, 1988) for California gray whale response to continuous industrial sounds such as drilling operations.

To date, there is little research or data supporting a response by pinnipeds or odontocetes to non-impulsive sounds from vibratory pile driving as low as the 120 dB threshold. The threshold is based on indirect evidence from studies of gray whale responses to playbacks of industrial noise conducted in the 1980s (NMFS, 2018). Southall et al. (2007) reviewed studies conducted to document behavioral responses of harbor seals and northern elephant seals to non-impulsive sounds under various conditions and concluded that those limited studies suggest that exposures between 90 dB and 140 dB RMS re 1 µPa generally do not appear to induce strong behavioral responses. A more recent observational study found evidence of weak but statistically significant avoidance behavior of bottlenose dolphins (*Tursiops truncatus*) and harbor porpoises in response to estimated received levels of 99-132 dB re 1µPa^{2}s during vibratory pile driving (Graham et al., 2017). Branstetter et al. (2018) tested for the effects of vibratory pile driver noise on bottlenose dolphin echolocation by exposing penned dolphins to playback recordings at source levels of 110, 120, 130, and 140 dB re 1µPa, respectively. They found evidence of altered behavior (an almost complete cessation of echolocation clicks) only at the highest source level, for which the received level was roughly estimated as 128 dB re 1µPa. The effect on behavior diminished significantly, indicating acclimation, as the animals resumed echolocation during subsequent replications.

6.6 Auditory Masking

Natural and artificial sounds can disrupt behavior through auditory masking or interference with a marine mammal's ability to detect and interpret other relevant sounds, such as communication and echolocation signals (Wartzok et al., 2004). Masking occurs when both the signal and masking sound have similar frequencies and either overlap or occur very close to each other in time. A signal is very likely to be masked if the noise is within a certain "critical bandwidth" around the signal's frequency and its energy level is similar or higher (Holt, 2008). Noise within the critical band of a marine mammal signal will show increased interference with detection of the signal as the level of the noise increases (Wartzok et al., 2004). For example, in delphinid subjects, relevant signals needed to be 17 to 20 dB louder than masking noise at frequencies below 1 kilohertz (kHz) to be detected and 40 dB greater at approximately 100 kHz (Richardson et al., 1995). Noise at frequencies outside of a signal's critical bandwidth will have little to no effect on the detection of that signal (Wartzok et al., 2004).

Additional factors influencing masking are the temporal structure of the noise and the behavioral and environmental context in which the signal is produced. Continuous noise is more likely to mask signals than is intermittent noise of the same amplitude; quiet "gaps" in the intermittent noise allow detection of signals that would not be heard during continuous noise (Brumm and Slabbekoorn, 2005). The behavioral function of a vocalization (e.g., contact call, group cohesion vocalization, echolocation click, etc.) and the acoustic environment at the time of signaling may both influence call source level (Holt et al., 2011), which directly affects the chances that a signal will be masked (Nemeth and Brumm, 2010). Miksis-Olds and Tyack (2009) showed that during increased noise, manatees modified vocalizations differently depending on whether or not a calf was present.

Masking noise from anthropogenic sources could cause behavioral changes if it disrupts communication, echolocation, or other hearing-dependent behaviors. As noted above, noise frequency and amplitude both contribute to the potential for vocalization masking. Noise from pile driving typically covers a frequency range with most of the acoustic energy below 2 kHz (Dahl et al., 2015), which is likely to overlap the frequencies of vocalizations produced by species that may occur in the proposed project area. Amplitude of noise from both impact and vibratory pile driving methods is variable and may exceed that of marine mammal vocalizations within an unknown range of each incident pile. Depending on the animal's location and vocalization source level, this range may vary over time.

Although SPLs from impulsive sources (impact pile driving) are greater, the zone of potential masking effects from non-impulsive continuous sources (vibratory pile driving/extracting and rotary drilling) may be as large or larger due to the duration and continuous nature of the sound. The potential for masking differs between species, depending on the overlap between noise sources and the animals' hearing and vocalization frequencies. In this respect, harbor porpoises, which use high-frequency sound, and dolphins (Atlantic white-sided and short-beaked) which use mid-frequency sound, are probably less vulnerable to masking from pile driving than are seals. In addition, harbor porpoise or dolphin species that may be subject to masking are transitory within the vicinity of the proposed project area. The animals most likely to be at risk for vocalization masking are resident pinnipeds (harbor seals around local haul-out areas and occasional presence of gray, harp, and hooded seals). Possible behavioral reactions to vocalization masking include changes to vocal behavior (including cessation of calling), habitat abandonment (long- or short-term), and modifications to the acoustic structure of vocalizations (i.e., amplitude, frequency, duration, or repetition rate) which may help signalers compensate for masking (Brumm and Slabbekoorn, 2005; Brumm and Zollinger, 2011). The extent to which the animals' behaviors would mitigate the potential for masking is uncertain, and, accordingly, NOAA and the Navy have estimated that masking as well as compensatory behavioral responses are likely within the Level B (Behavioral) harassment zones estimated for in-water construction noise.

6.7 Modeling Potential Noise Impacts from Pile Driving

6.7.1 Underwater Sound Propagation

In-water construction activities will generate underwater noise that potentially could result in harassment to marine mammals swimming by the proposed project area. Transmission loss (TL) underwater is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source until the pressure wave becomes indistinguishable from ambient sound. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. A "practical spreading" value of 15 (referred to as "practical spreading loss") is widely used for intermediate or spatially varying conditions when actual values for transmission loss are unknown (NMFS, 2005). This value was used to model the estimated range from in-water construction activities to various expected SPLs at potential project structures. This model follows a geometric propagation loss based on the distance from the noise-generating activity, resulting in an approximate 4.5 dB reduction in level for each doubling of distance from the source. In this model, the SPL at some distance away from the source (e.g., driven pile) is governed by a measured source level, minus the TL of the energy as it dissipates with distance. The TL equation is:

$$TL = 15\log_{10}\left(\frac{R_1}{R_2}\right)$$

Where:

TL is the transmission loss in dB,

R_1 is the distance of the modeled SPL from the driven pile, and

R_2 is the distance (usually 10 meters) from the driven pile of the initial measurement.

The TL model described above was used to calculate the expected noise propagation from vibratory pile driving/extracting, impact pile driving, rotary drilling, and DTH Mono-hammer excavation using representative source levels to estimate the harassment zones or area exceeding the noise criteria. The extent of representative harassment zones for Level A (PTS onset) and Level B (Behavioral) takes for the pier, trestle, and floating dock are based on a notional source pile location at the end of the proposed pier, furthest from the shore, illustrating the maximum harassment zone that would be produced during a specific in-water construction activity. The notional source pile for the bulkhead is centrally located on the bulkhead. This TL model simplifies the estimation of harassment zones, but it should be recognized that noise propagation away from the source will be influenced by a variety of factors, especially bathymetry and the presence or absence of reflective or absorptive conditions, including the sea surface and sediment type.

6.7.2 Underwater Noise from Pile Driving and Drilling

The intensity of underwater sound is greatly influenced by factors such as the size and type of piles, type of driver or drill, and the physical environment in which the activity takes place. To estimate sound source levels for the proposed construction activities, acoustic monitoring results and associated monitoring reports from past projects conducted at NAVSTA Newport and other Navy installations were reviewed. Projects reviewed were those most similar to the Proposed Action in terms of construction activities, type and size of piles installed, method of pile installation, and substrate conditions. The representative SPLs used in the analysis are presented in Table 6-3.

For the analyses that follow, the TL model described above was used to calculate the expected noise propagation from pile driving and drilling. For vibratory and impact behavioral zones and peak injury zones, a representative source level (Table 6-3) was used to estimate the area exceeding the noise criteria. The Technical Guidance (NMFS, 2018) provides Level A (PTS onset) thresholds and auditory weighting functions for each marine mammal hearing group, whereas the NMFS Optional User Spreadsheet contains default weighting factor adjustments (WFAs) for different types of broadband sources (NMFS, 2020). The WFAs assign a single frequency to represent the sound spectrum of the source, approximating what the animal is exposed to. The WFA frequency, when applied to the auditory weighting function of the group, determines what adjustment is made to the source level prior to calculating the threshold distance. To calculate the maximum distances to Level A (PTS onset) thresholds associated with each particular source, the 2018 Technical Guidance was followed and the Optional User Spreadsheet (NMFS, 2020) was used. See Appendix A for acoustic calculations using the NMFS Optional User Spreadsheets.

Table 6-3 Underwater Noise Source Levels for Impact and Vibratory Pile Driving/Extracting, Drilling, and DTH Mono-Hammer

Pile Type	*Installation/Extraction Method*	*Pile Diameter*	*Peak (dB re 1 µPa)*	*RMS (dB re 1 µPa)*	*SEL (dB re 1 µPa $^{2\text{-sec}}$ sec)*	*Reference*
Steel pipe	Vibratory Extraction	12-inch[1]	171	155	155	Caltrans 2020, Table 1.2-1d
Timber	Vibratory Extraction	12-inch	NA	152	NA	NMFS 2022c
Steel pipe	Vibratory Install	18-inch[2]	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4
Steel pipe	Impact Install	18-inch[2]	208	187	176	Caltrans 2020, Table 1.2-1a
Sheet pile	Vibratory Install	Z26-700[3]	NA	156	NA	NMFS 2019, p.37846
Steel pipe	Vibratory Installation/Extraction	16-inch	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4
Steel pipe	DTH mono-hammer	18-inch	172	167	146	Egger 2021; Guan and Miner 2020
Steel pipe	Rotary Drilling	18-inch and 30-inch	NA	154	NA	Dazey et al. 2012
Steel Pipe	Vibratory Install	30-inch	NA	167	167	Navy 2015, p.14
Steel Pipe	Impact Install	30-inch	211	196	181	NAVFAC Southwest 2020, p.A-4
Steel Pipe	DTH mono-hammer	30-inch[4]	194	167	164	Egger 2021; Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019
Casing/Shaft for Steel pipe	Vibratory Install	36-inch	NA	175	175	NAVFAC Mid-Atlantic 2019, Table 6-4
Casing/Shaft for Steel pipe	Impact install	36-inch	209	198	183	NAVFAC Mid-Atlantic 2019, Table 6-4
Casing/Shaft for Steel pipe	DTH mono-hammer	36-inch[4]	194	167	164	Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019

Sources:

1. 13-inch steel pipe used as proxy because data were not available for vibratory install/extract of 12-inch steel pipe.
2. Impact install of 20-inch steel pipe used as proxy because data were not available for 18-inch.
3. 30-inch steel pipe pile used as the proxy source for vibratory driving of steel sheet piles because data were not available for Z26-700 (Navy 2015 [p. 14]).
4. Guidance from NMFS states: combination of (whichever higher for given metric) (Reyff & Heyvaert, 2019); (Reyff J. , 2020); (Denes, Vallarta, & Zeddies, 2019).

Notes: All SPLs are unattenuated and referenced to 10 meters from the source; dB=decibels; NA = Not applicable/Not available; RMS = root mean square; SEL = sound exposure level; Caltrans = California Department of Transportation; NA = Not Applicable; NAVFAC = Naval Facilities Engineering Systems Command;. dB re 1 µPa = dB referenced to a pressure of 1 microPascal, measures underwater SPL. dB re 1 µPa^2-sec = dB referenced to a pressure of 1 microPascal squared per second, measures underwater SEL.

Single strike SEL are the proxy source levels presented for impact pile driving and were used to calculate distances to PTS. All recordings at 10 meters unless noted otherwise.

6.8 Distance to Underwater Sound Thresholds

6.8.1 Individual Activities

Calculated distances to the underwater marine mammal auditory (PTS onset) SEL thresholds and behavioral thresholds for the three hearing groups used the NMFS user spreadsheet (NMFS, 2020) and are provided in Tables 6-4 and 6-5 for individual (non-concurrent) in-water construction activities. Calculated distances to Level A (PTS onset) and Level B (Behavioral) thresholds are large but do not take into account attenuation from intersecting land masses or structures, which would reduce the overall area of potential impact.

Maximum distances to Level A (PTS onset) and Level B (Behavioral) thresholds, excluding areas truncated to account for attenuation by land masses or structures, are shown in Figures 6-1 through 6-20. Areas encompassed within the threshold (harassment zones), presented in Figures 6-1 through 6-20, were calculated using a Geographic Information System. Sound source locations were chosen to model the greatest possible affected areas from a representative notional pile location.

The maximum distance to Level A (PTS onset) would be during the impact driving of 30-inch steel pipe piles at the proposed pier (Table 6-4; Figure 6-4) and would be approximately 3,500 meters for harbor porpoise, 105 meters for Atlantic white-sided and short-beaked common dolphins, and 1,573 meters for seals. However, this distance will be truncated due to the presence of intersecting land masses.

The furthest extent to Level B (Behavioral) harassment threshold would be a distance of 46,416 meters resulting from the vibratory installation of 36-inch pipe piles (Table 6-5; Figure 6-19). As explained above, this harassment zone will be truncated due to the presence of intersecting land masses and would encompass a maximum area of 3.31 sq km. The number and species of marine mammals anticipated to be “taken” by in-water construction activities is presented in Chapter 6.13.

Table 6-4 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Impulsive Sound (Impact Pile driving and DTH Mono-Hammer)

Structure	*Figure*	*Pile Size and Type*	*Activity*	*Total Production Days*	*Level A (PTS onset) Harassment*			*Level B (Behavioral) Harassment*
					MF Cetacean	*HF Cetacean*	*Phocid*	*All Marine Mammals*
					Maximum Distance to 185 dB SEL_{cum} Threshold (m)/Area of Harassment Zone (sq km)	*Maximum Distance to 155 dB SEL_{cum} Threshold (m)/Area of Harassment Zone (sq km)*	*Maximum Distance to 185 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)*	*Maximum Distance 160 dB RMS SPL (120 dB DTH) Threshold (m)/ Area of Harassment Zone (sq km)*
Bulkhead construction (Combination Pipe/Z-pile)	6-1	18-inch steel pipe	Impact Install	15	48.5/0.0037	1,624.7/0.66	729.9/0.21	631/0.16
	6-2	18-inch	DTH Mono-Hammer	12	4.6/0.000033	154.2/0.028	69.3/0.0075	13,594/3.31
Trestle (Bents 1-18)	6-3	18-inch steel pipe	Impact Install	18	25.2/0.0020	844.9/1.21	379.6/0.38	631/0.82
Trestle (Bent 19)	6-4	30-inch steel pipe	Impact Install	1	65.8/0.014	2,205.0/3.72	990.7/1.47	2,512/4.44
Pier	6-5	30-inch steel pipe	Impact Install	30	104.5/0.034	3,500.3/6.49	1,572.6/2.50	2,512/4.44
Gangway support piles (small boat floating dock)	6-6	18-inch steel pipe	Impact Install	2	19.3/0.00058	644.8/0.17	289.7/0.049	631/0.16
Small Boat Floating Dock	6-7	36-inch Steel Casing/Shaft with Rock Socket (Guide Pile)	Impact Install	2	35.5/0.002	1,189.5/0.45	534.4/0.12	3,415/2.14
	6-8		DTH Mono-Hammer	2	73/0.0084	2,444.5/1.21	1,098.2/0.42	13,594/3.31

Notes: dB = decibel; DTH = down-the-hole; dB RMS SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; sq km = square kilometer

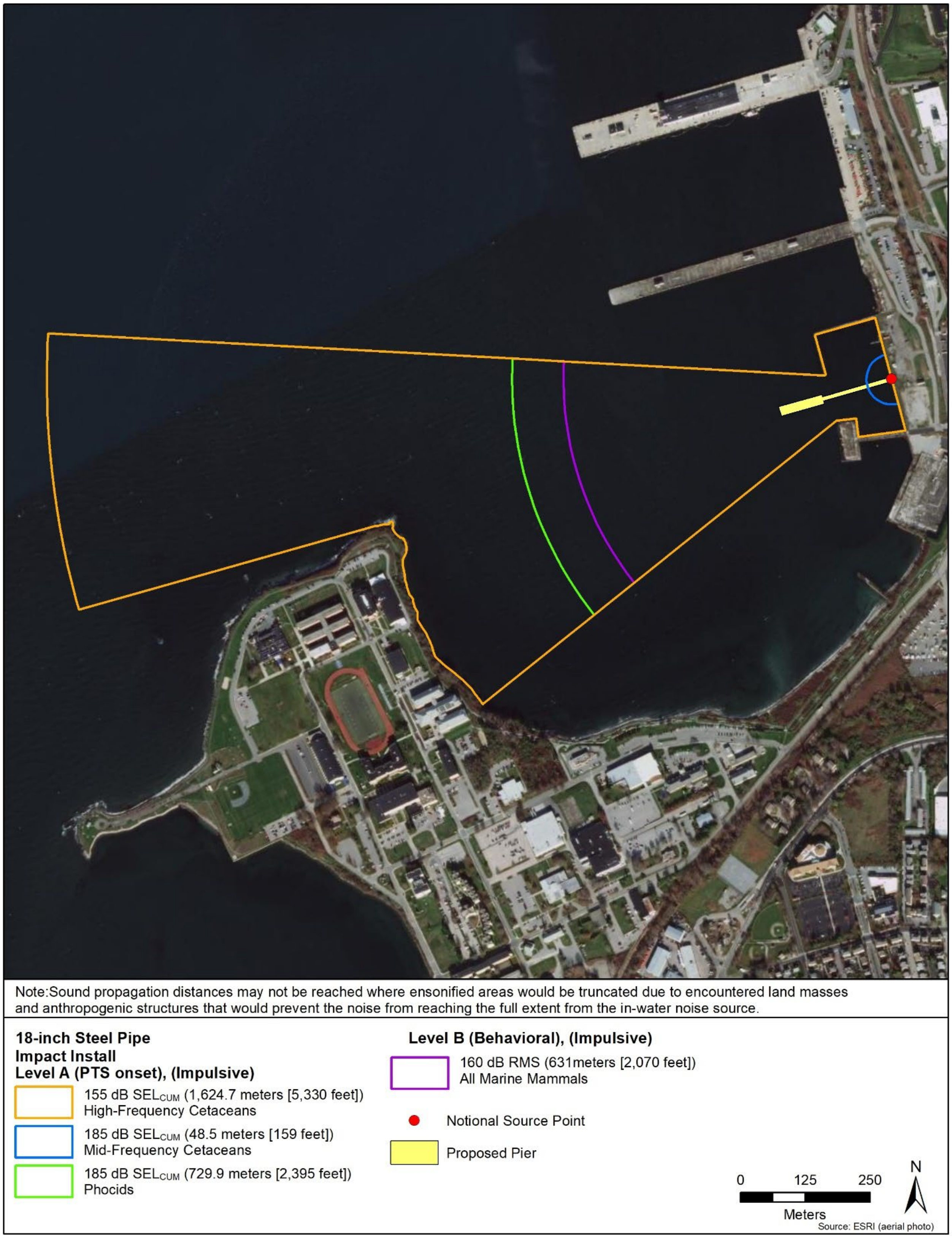


Figure 6-1 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at the Bulkhead – 18-inch Steel Pipe

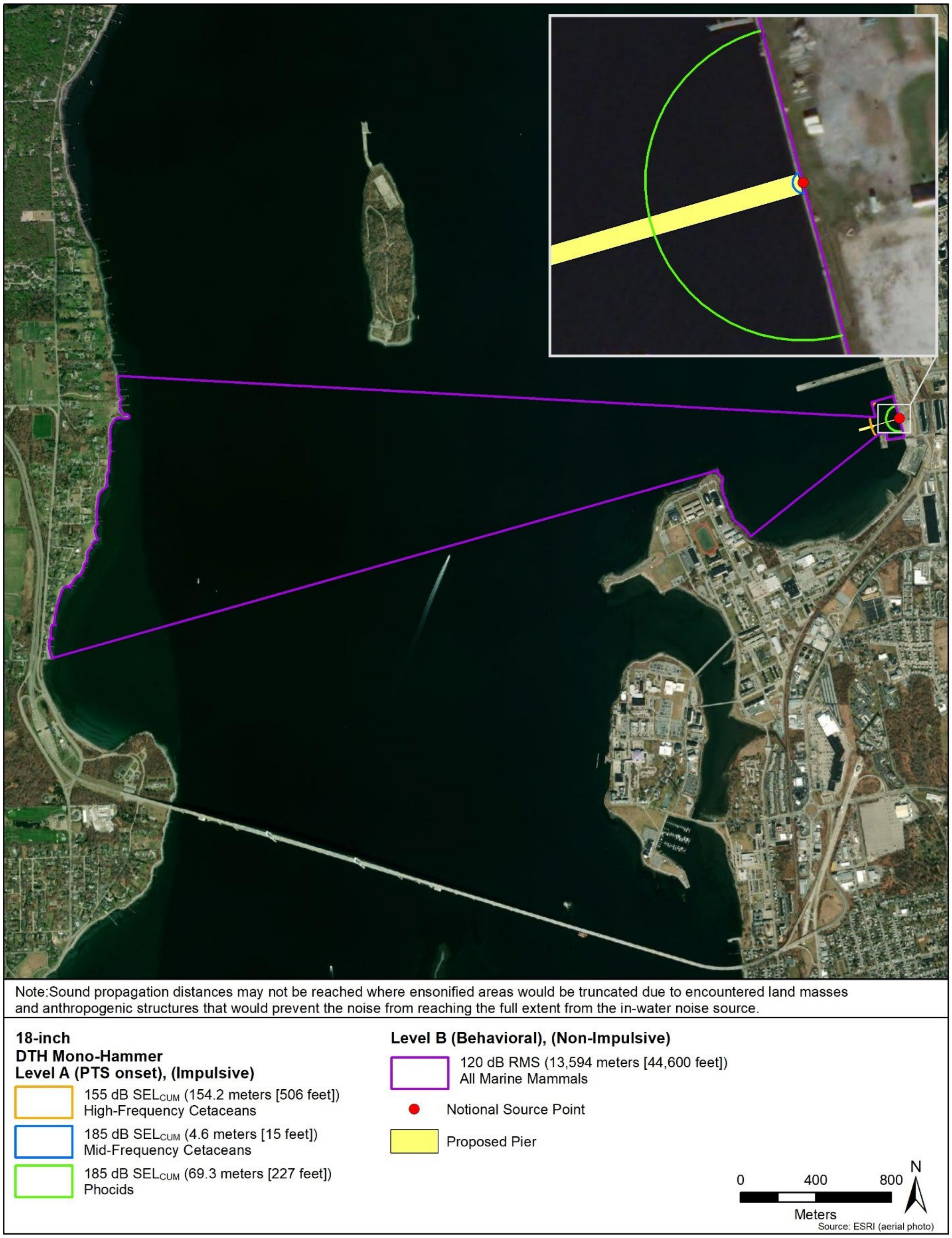


Figure 6-2 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from DTH Mono-hammer Activity at the Bulkhead – 18-inch Steel Pipe

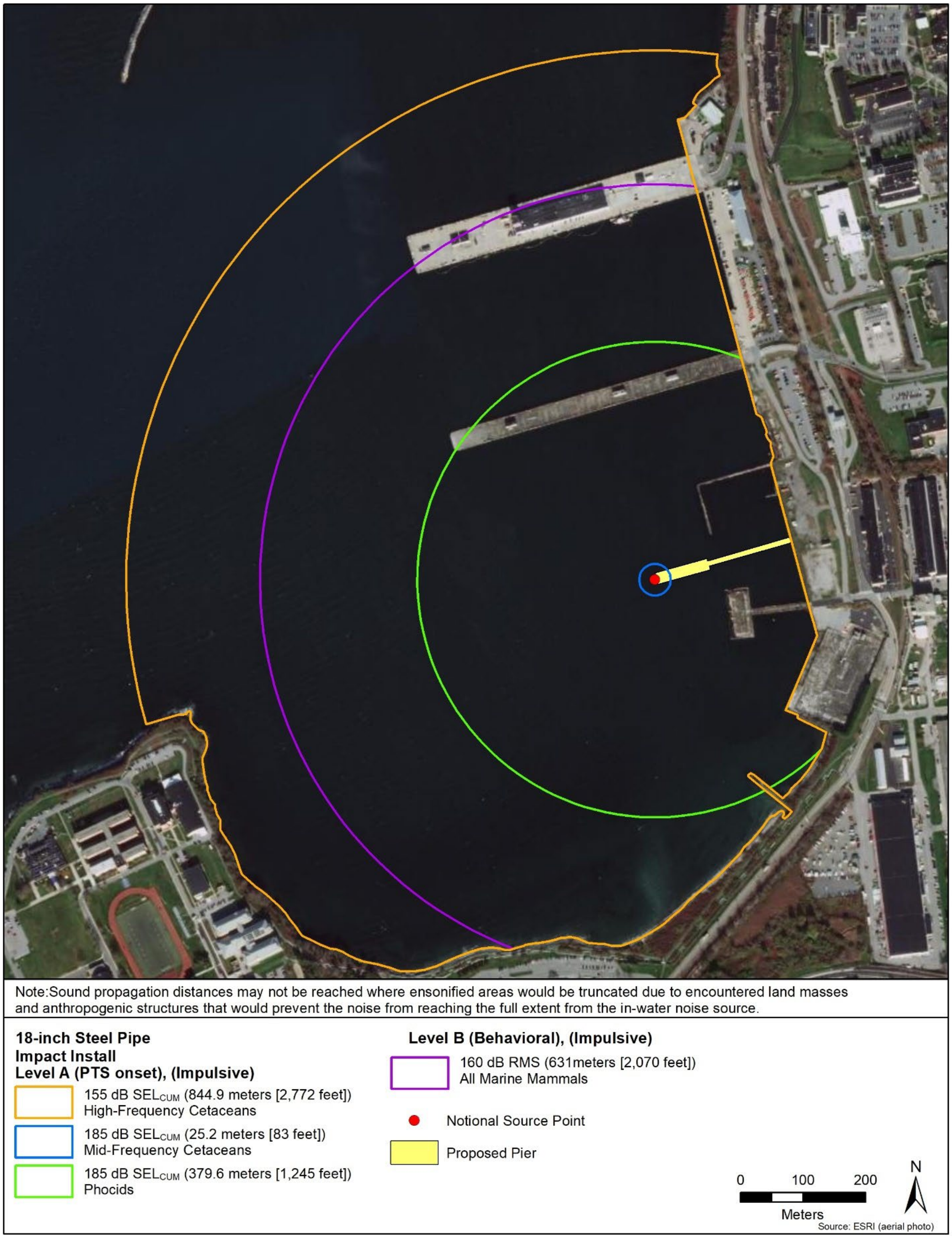


Figure 6-3 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at the Trestle (Bents 1-18) and the Small Boat Floating Dock – 18-inch Steel Pipe

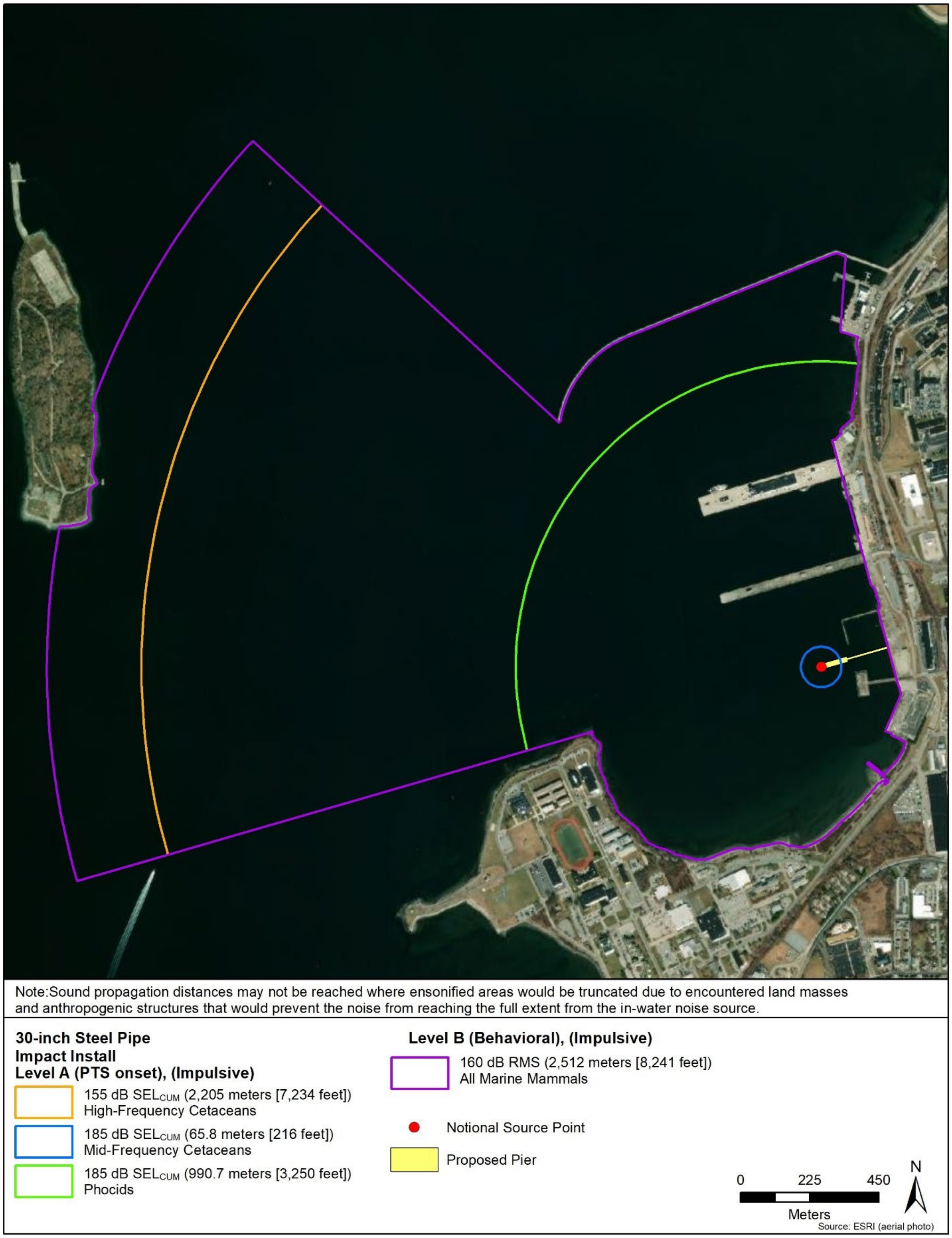


Figure 6-4 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at Trestle (Bent 19) and Pier – 30-inch Steel Pipe

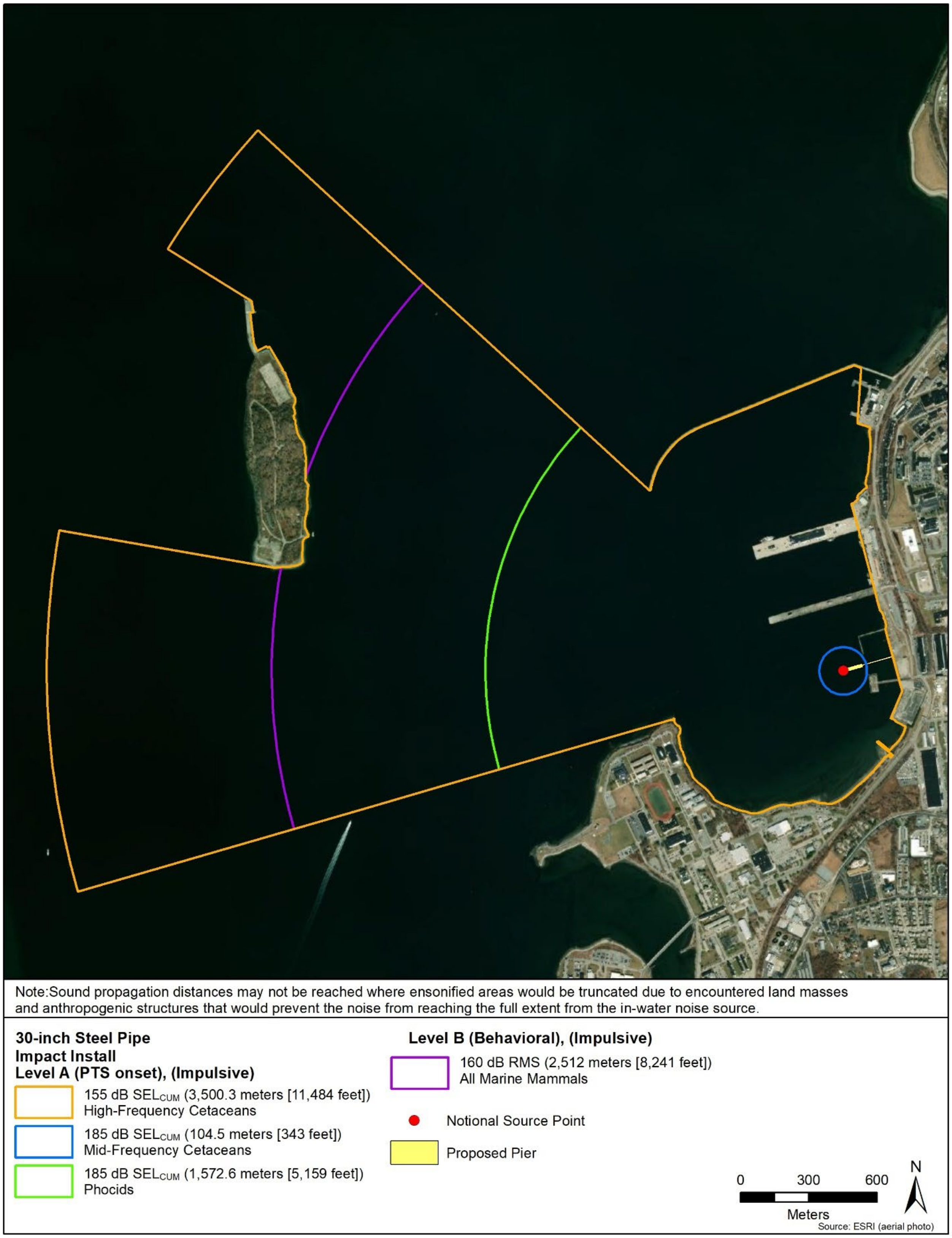


Figure 6-5 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving of Piles at the Pier – 30-inch Steel Pipe

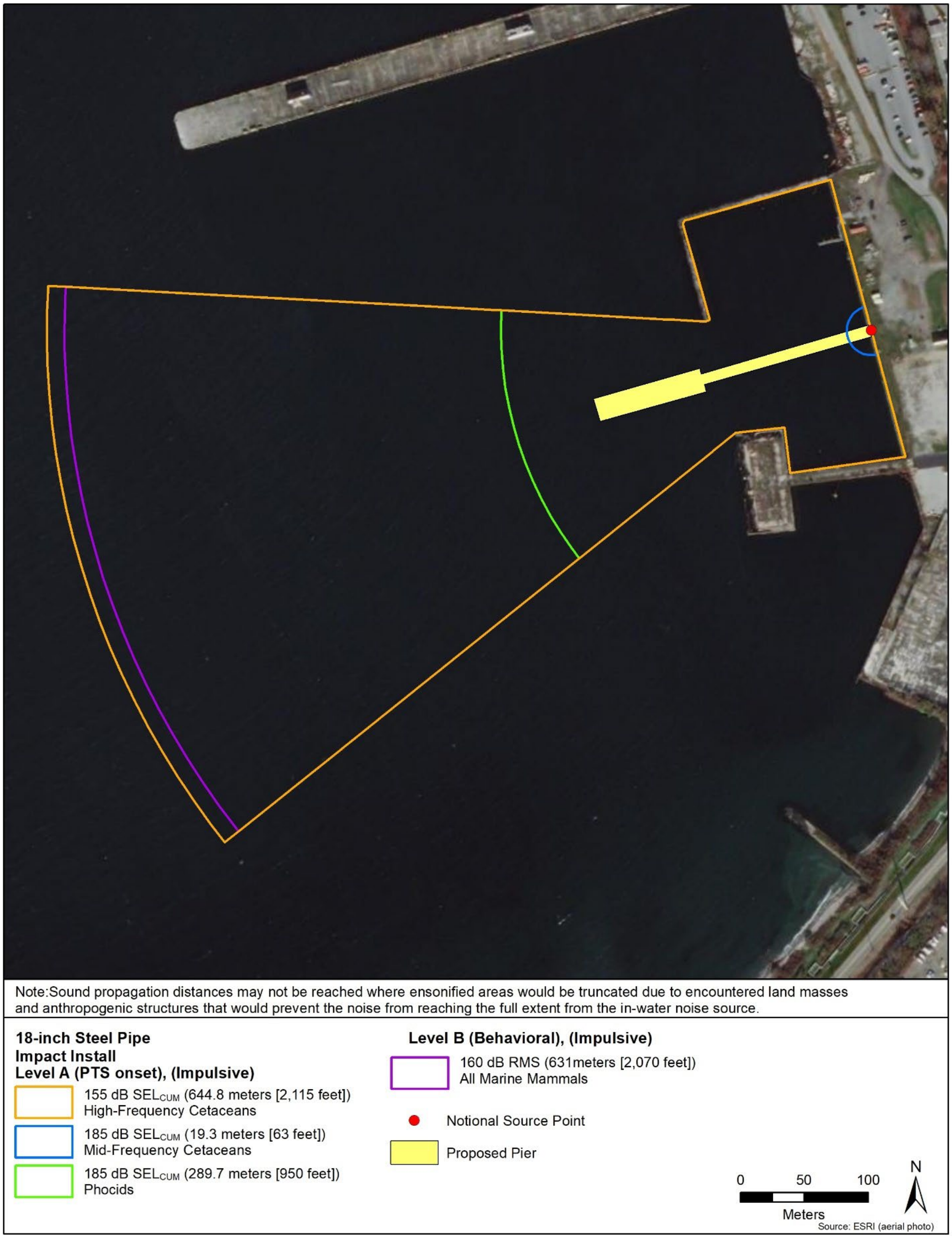


Figure 6-6 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving Gangway Support Piles at the Small Boat Floating Dock – 18-inch Steel Pipe

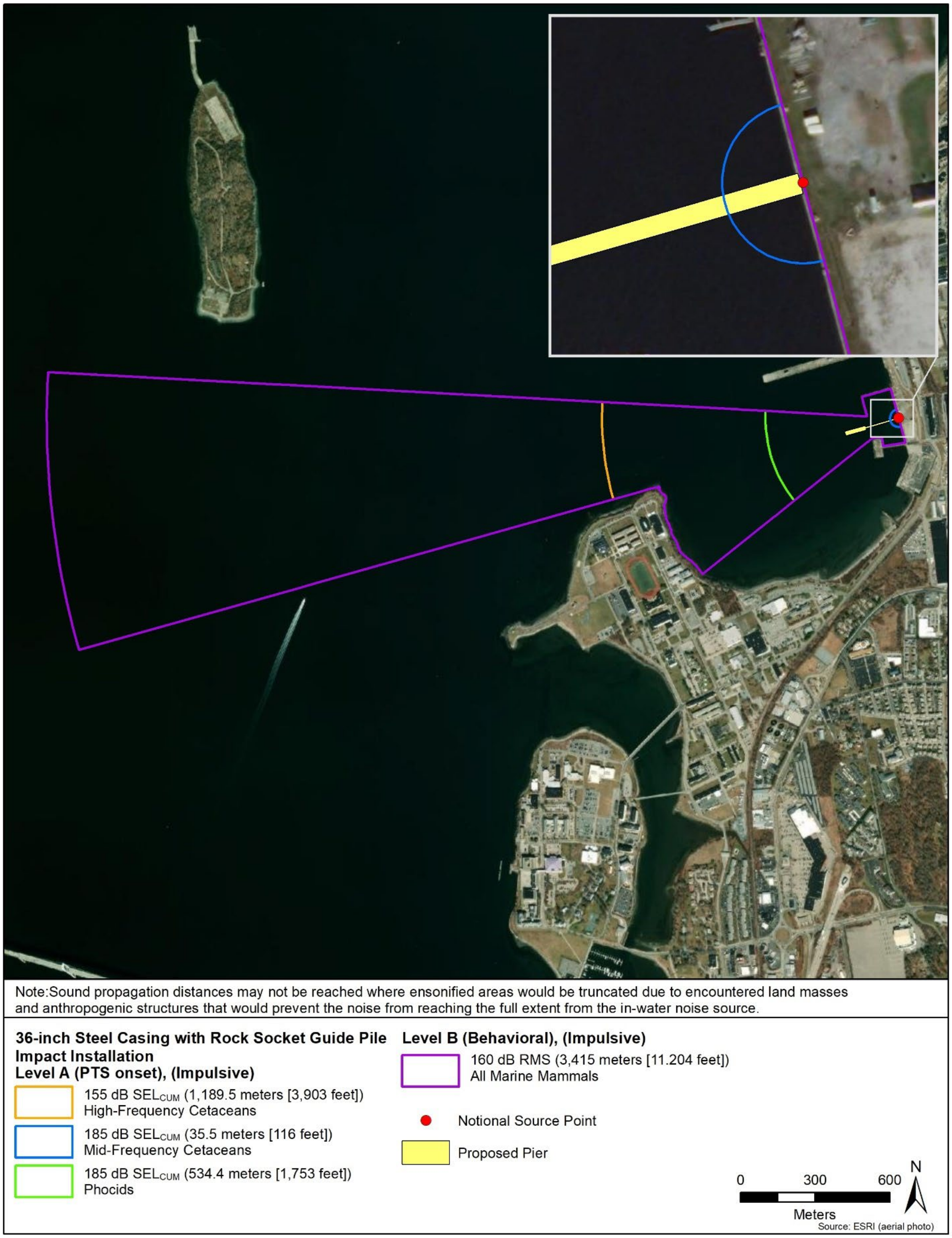


Figure 6-7 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at the Small Boat Floating Dock – 36-inch Rock Socket Guide Pile

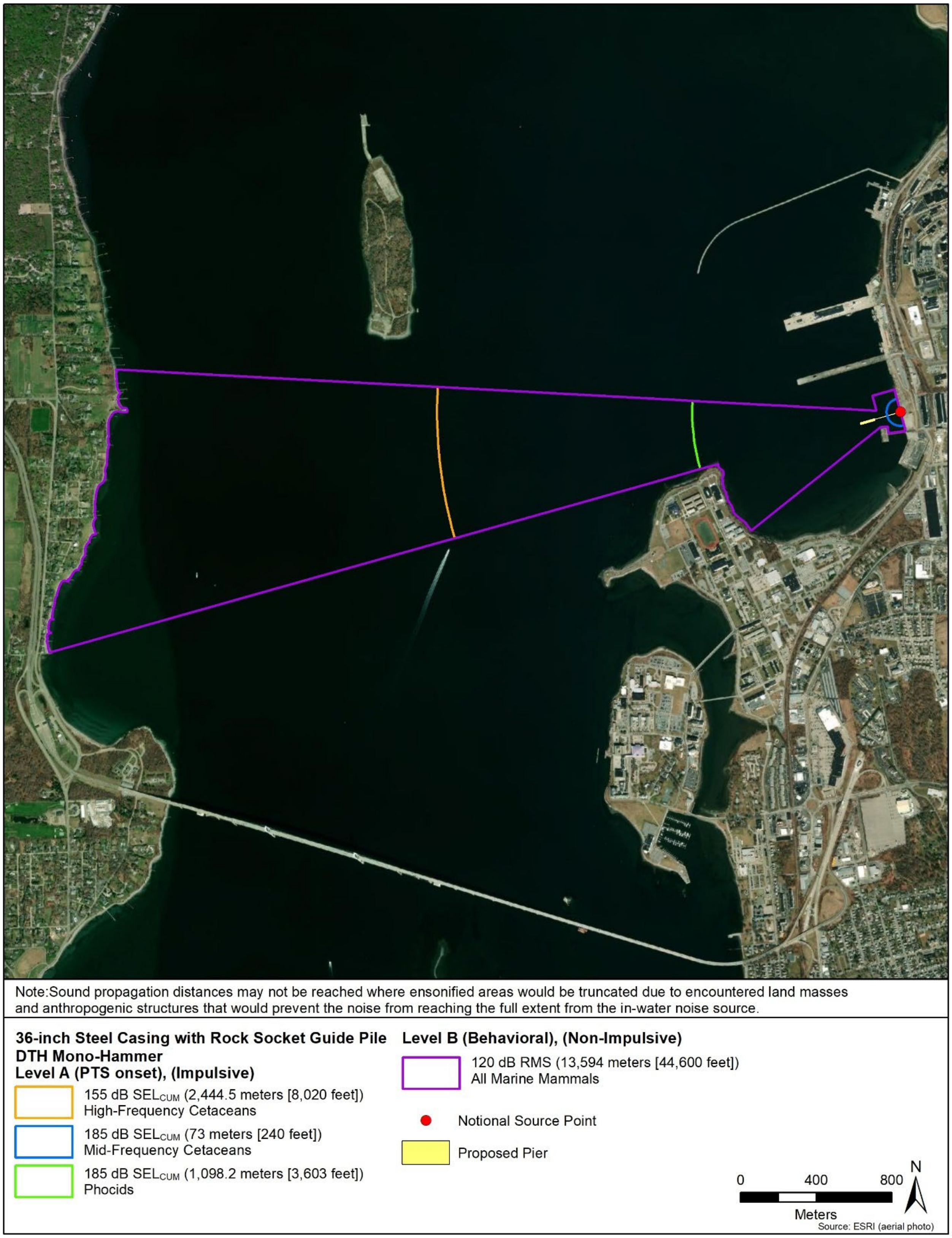


Figure 6-8 Level A (PTS onset) and Level B (Behavioral) Harassment Zones from DTH Mono-Hammer Activity at the Small Boat Floating Dock – for 36-inch Rock Socket Guide Pile

Table 6-5 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Non-Impulsive Noise (Vibratory Pile Driving/Extracting or Rotary Drilling)

Structure	Figure	Pile Size and Type	Activity	Total Production Days	Level A (PTS onset) Harassment			Level B (Behavioral) Harassment
					MF Cetacean	HF Cetacean	Phocid	All Marine Mammals
					Maximum Distance to 198 dB SEL_{cum} Threshold (m)/ Area of Harassment Zone (sq km)	Maximum Distance to 173 dB SEL_{cum} Threshold(m)/ Area of Harassment Zone (sq km)	Maximum Distance to 201 dB SEL_{cum} Threshold(m)/ Area of Harassment Zone (sq km)	Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (sq km)
Abandoned guide piles along bulkhead	6-9	12-inch steel pipe	Vibratory Extract	1	0.3/0	5.3/0.000044	2.2/0.000008	2,514/1.26
Floating dock demolition (Timber Guide Piles)	6-10	12-inch timber	Vibratory Extract	1	0.2/0	4.0/0.000025	1.7/0.000005	1,359/0.53
Bulkhead construction (Combination Pipe/Z-pile)	6-11	18-inch steel pipe	Vibratory Install	15	1.8/0.000005	29.7/0.0014	12.2/0.00023	6,310/3.31
	6-12	Steel sheet Z26-700	Vibratory Install	15	0.7/0.000001	11.8/0.00022	4.9/0.000038	2,512/1.26
	6-13	16-inch steel pipe template piles	Vibratory Install/Extract	30	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31
Trestle (Bents 1-18)	6-14	18-inch steel pipe	Vibratory Install	18	0.7/0.000002	11.8/0.00044	4.8/0.000072	6,310/8.53
	6-15	18-inch steel pipe hole	Rotary Drill	4	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	6-16	16-inch steel pipe template piles	Vibratory Install/Extract	36	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53

Table 6-5 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Non-Impulsive Noise (Vibratory Pile Driving/Extracting or Rotary Drilling)

Structure	Figure	Pile Size and Type	Activity	Total Production Days	Level A (PTS onset) Harassment			Level B (Behavioral) Harassment
					MF Cetacean	HF Cetacean	Phocid	All Marine Mammals
					Maximum Distance to 198 dB SEL_{cum} Threshold (m)/ Area of Harassment Zone (sq km)	Maximum Distance to 173 dB SEL_{cum} Threshold(m)/ Area of Harassment Zone (sq km)	Maximum Distance to 201 dB SEL_{cum} Threshold(m)/ Area of Harassment Zone (sq km)	Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (sq km)
Trestle (Bent 19)	6-17	30-inch steel pipe	Vibratory Install	1	2.0/0.000013	33.2/0.0034	13.7/0.00059	13,594/8.53
	6-18	16-inch steel pipe template piles	Vibratory Install/Extract	2	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Pier	6-19	30-inch steel pipe	Vibratory Install	30	3.2/0.000032	52.8/0.0087	21.7/0.0015	13,594/8.53
	6-20	30-inch hole	Rotary Drill	12	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	6-21	16-inch steel pipe template piles	Vibratory Install/Extract	60	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Fender Piles	6-22	16-inch steel pipe	Vibratory Install	50	0.9/0.000003	14.3/0.00064	5.9/0.00011	6,310/8.53
	6-23	16-inch steel pipe template piles	Vibratory Install/Extract	48	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.53
Gangway support piles (small boat floating dock)	6-24	18-inch steel pipe	Vibratory Install	2	0.7/0.000001	11.8/0.00022	4.8/0.000036	6,310/3.31
Small Boat Floating Dock	6-25	36-inch Steel Casing/Shaft	Vibratory Install	2	5.2/0.000042	86.6/0.012	35.6/0.002	46,416/3.31

Table 6-5 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Non-Impulsive Noise (Vibratory Pile Driving/Extracting or Rotary Drilling)

Structure	Figure	Pile Size and Type	Activity	Total Production Days	Level A (PTS onset) Harassment			Level B (Behavioral) Harassment
					MF Cetacean	HF Cetacean	Phocid	All Marine Mammals
					Maximum Distance to 198 dB SEL_{cum} Threshold (m)/ Area of Harassment Zone (sq km)	Maximum Distance to 173 dB SEL_{cum} Threshold(m)/ Area of Harassment Zone (sq km)	Maximum Distance to 201 dB SEL_{cum} Threshold(m)/ Area of Harassment Zone (sq km)	Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (sq km)
		Guide Piles with Rock Socket						
	6-26	16-inch steel pipe template piles	Vibratory Install/Extract	2	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31

Notes: dB = decibel; dB RMS SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; sq km = square kilometer

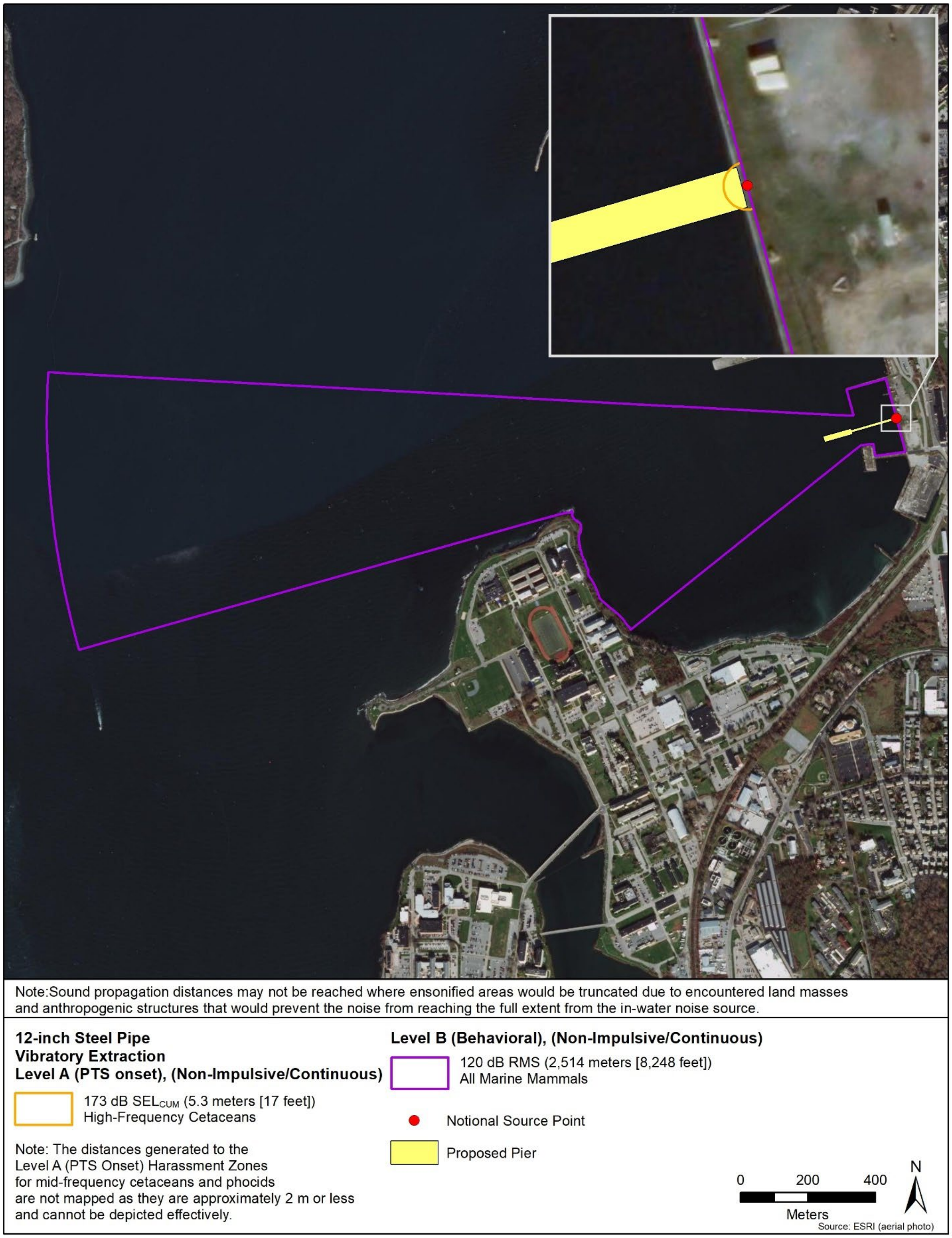


Figure 6-9 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Extraction Activity at the Existing Bulkhead – 12-inch Steel Pipe

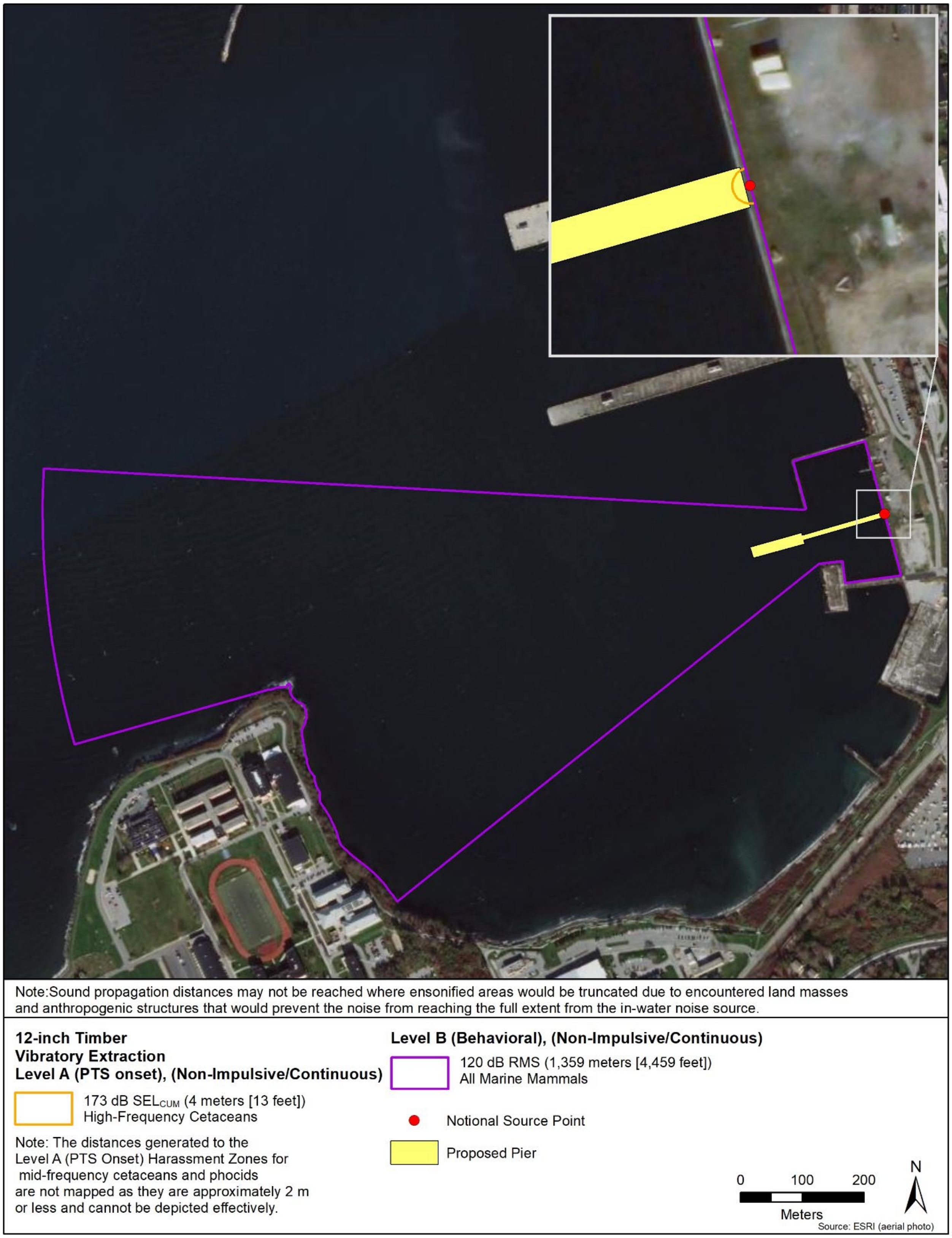


Figure 6-10 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Extraction Activity for Floating Dock Demolition – 12-inch Timber Guide Piles

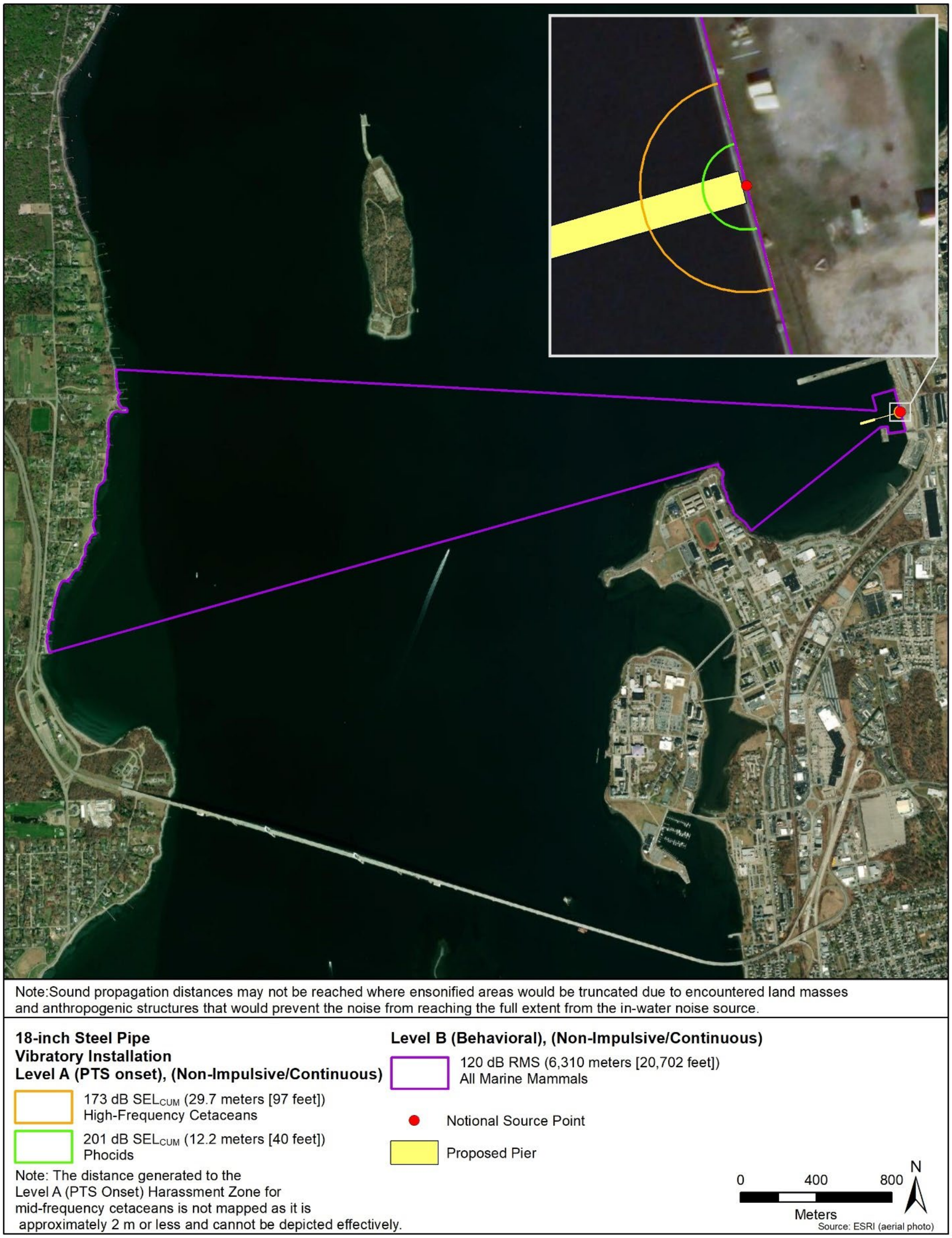


Figure 6-11 Level B (Behavioral) Harassment Zone from Vibratory Installation Activity at the Bulkhead – 18-inch Steel Pipe

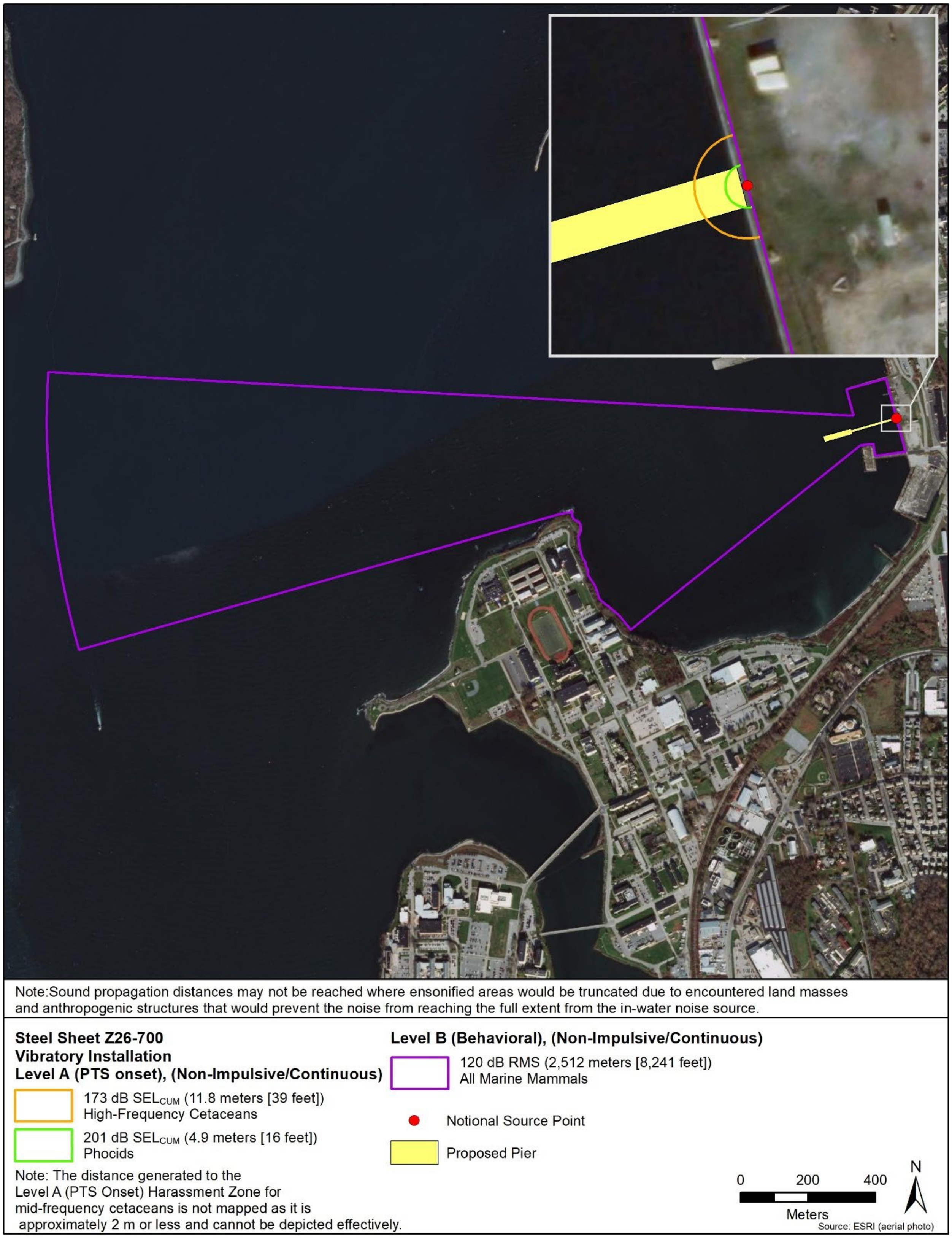


Figure 6-12 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at the Bulkhead – Z26-700 Steel Sheets

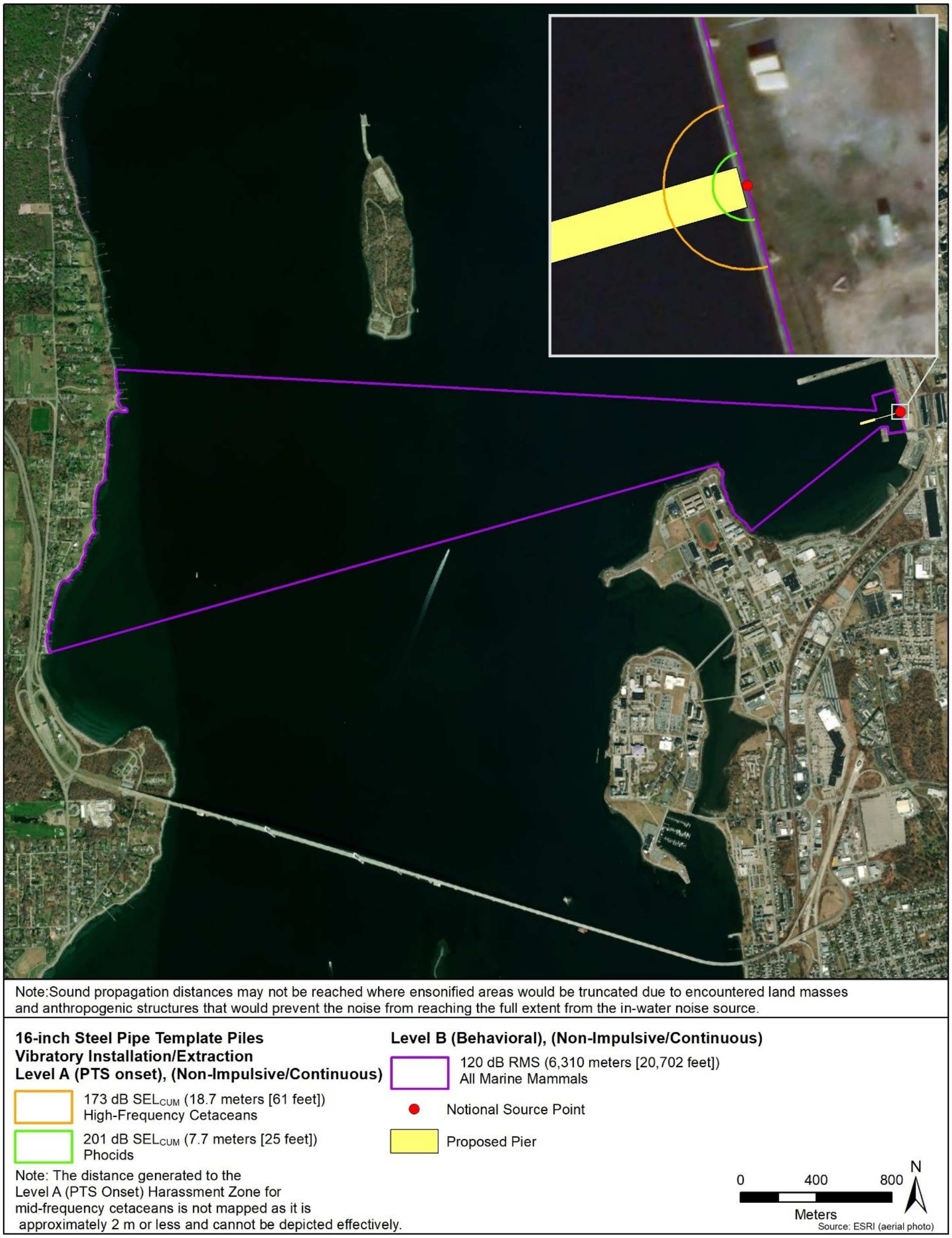


Figure 6-13 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation/Extraction Activity at the Bulkhead – 16-inch Steel Pipe Template Piles

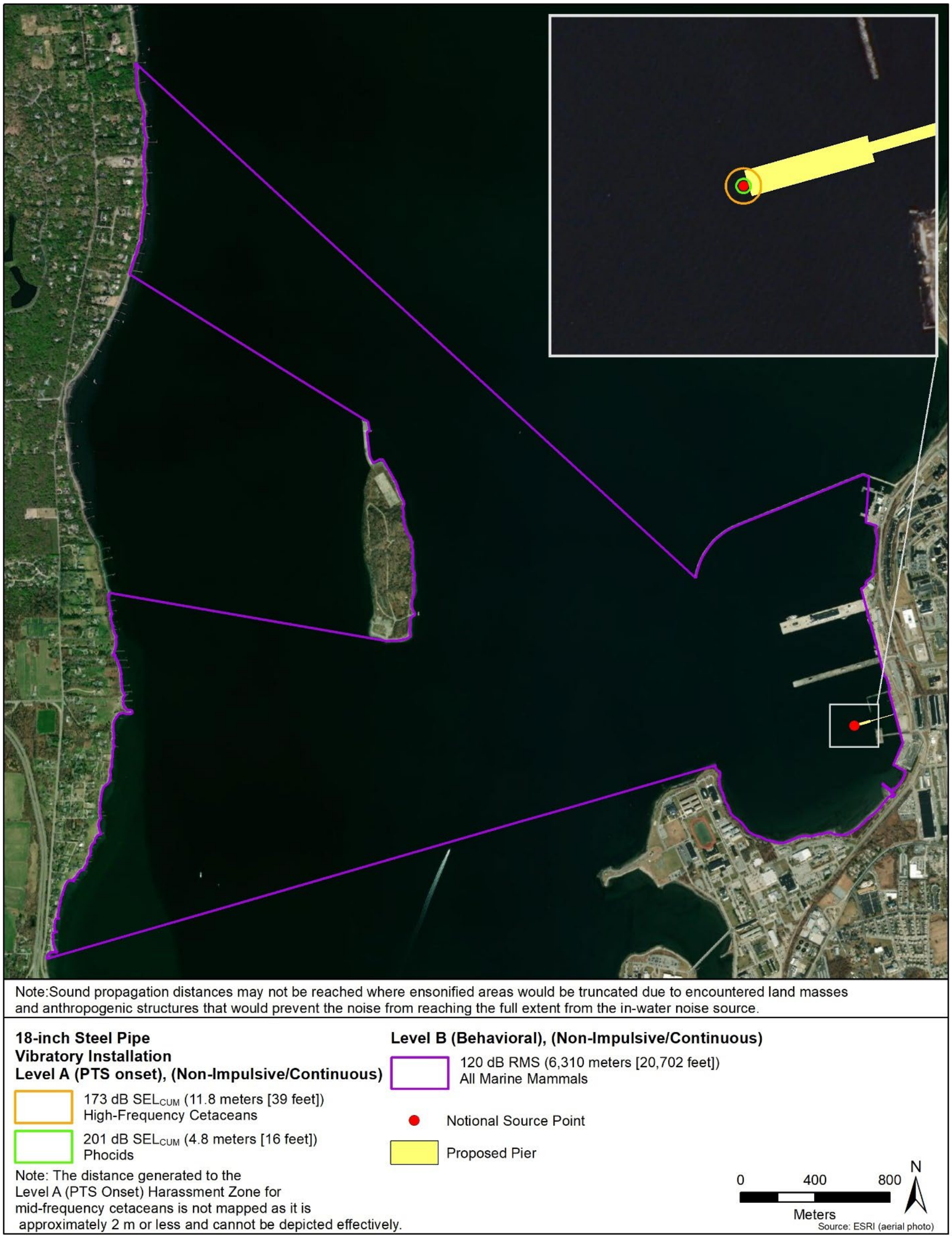


Figure 6-14 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at the Trestle (Bents 1-18) – 18-inch Steel Pipe

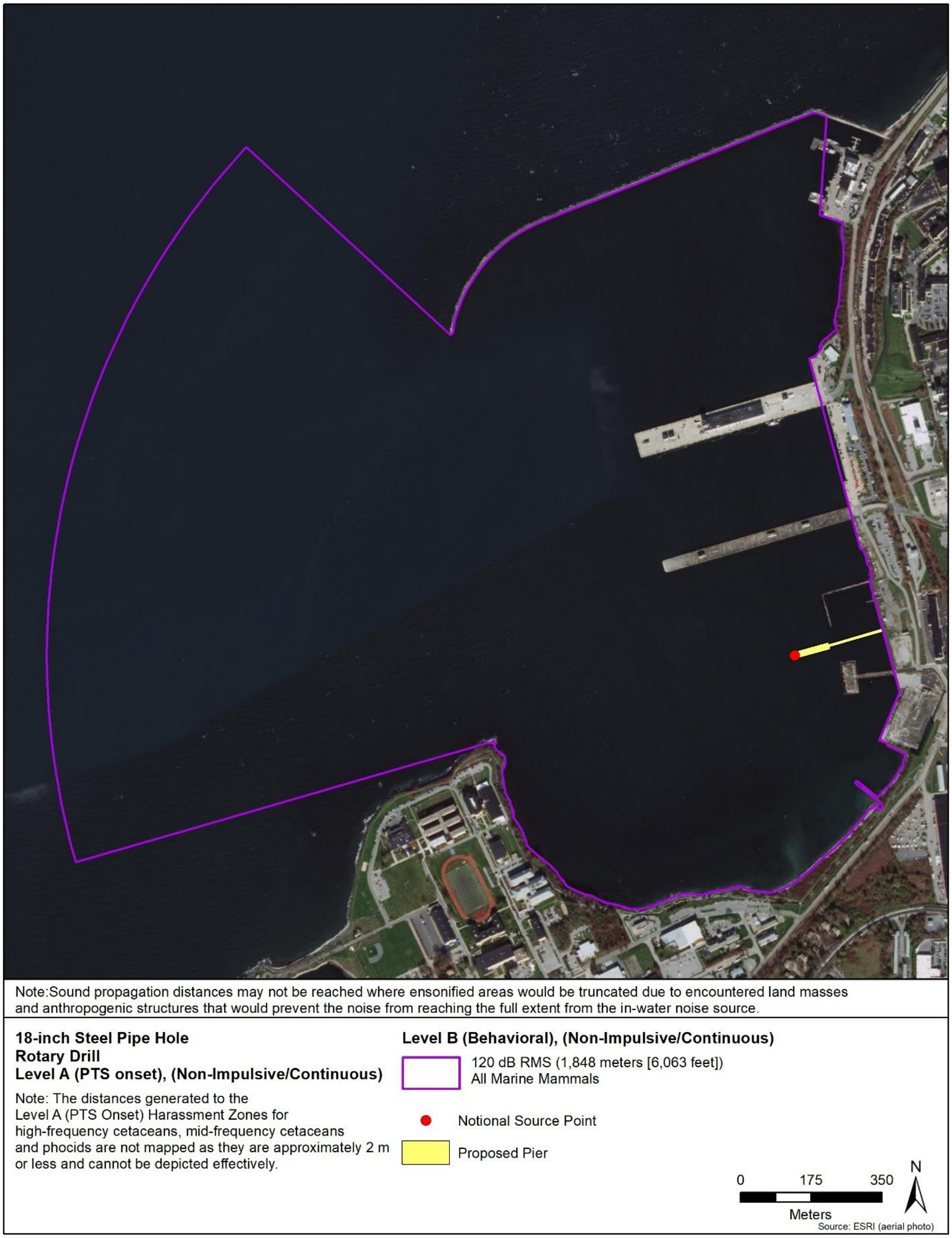


Figure 6-15 Level B (Behavioral) Harassment Zone from Rotary Drilling Activity at the Trestle (Bents 1-18) – Hole for 18-inch Steel Pipe

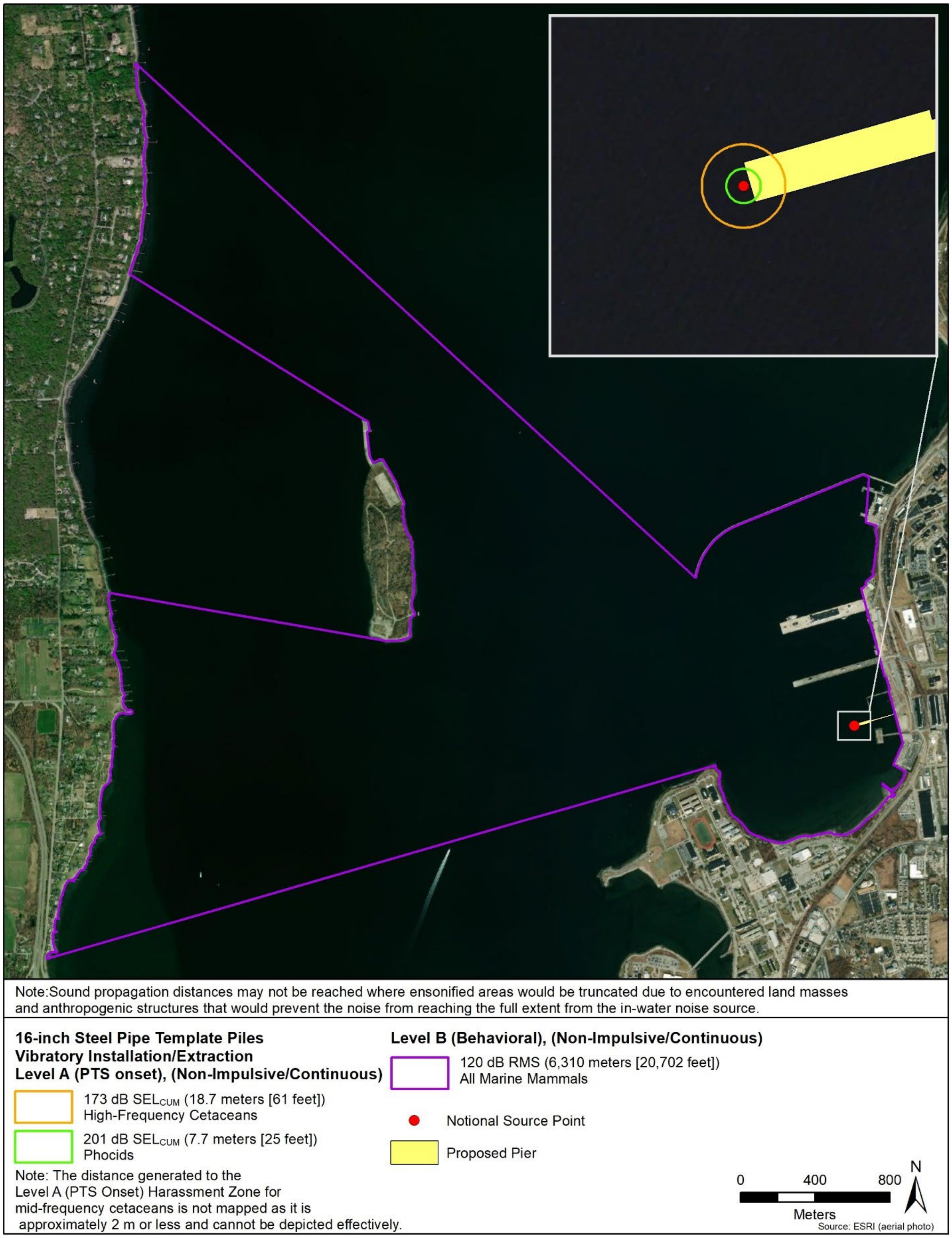


Figure 6-16 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity/Extraction Activity at Trestle (Bent 19) – 16-inch Steel Pipe Template Piles

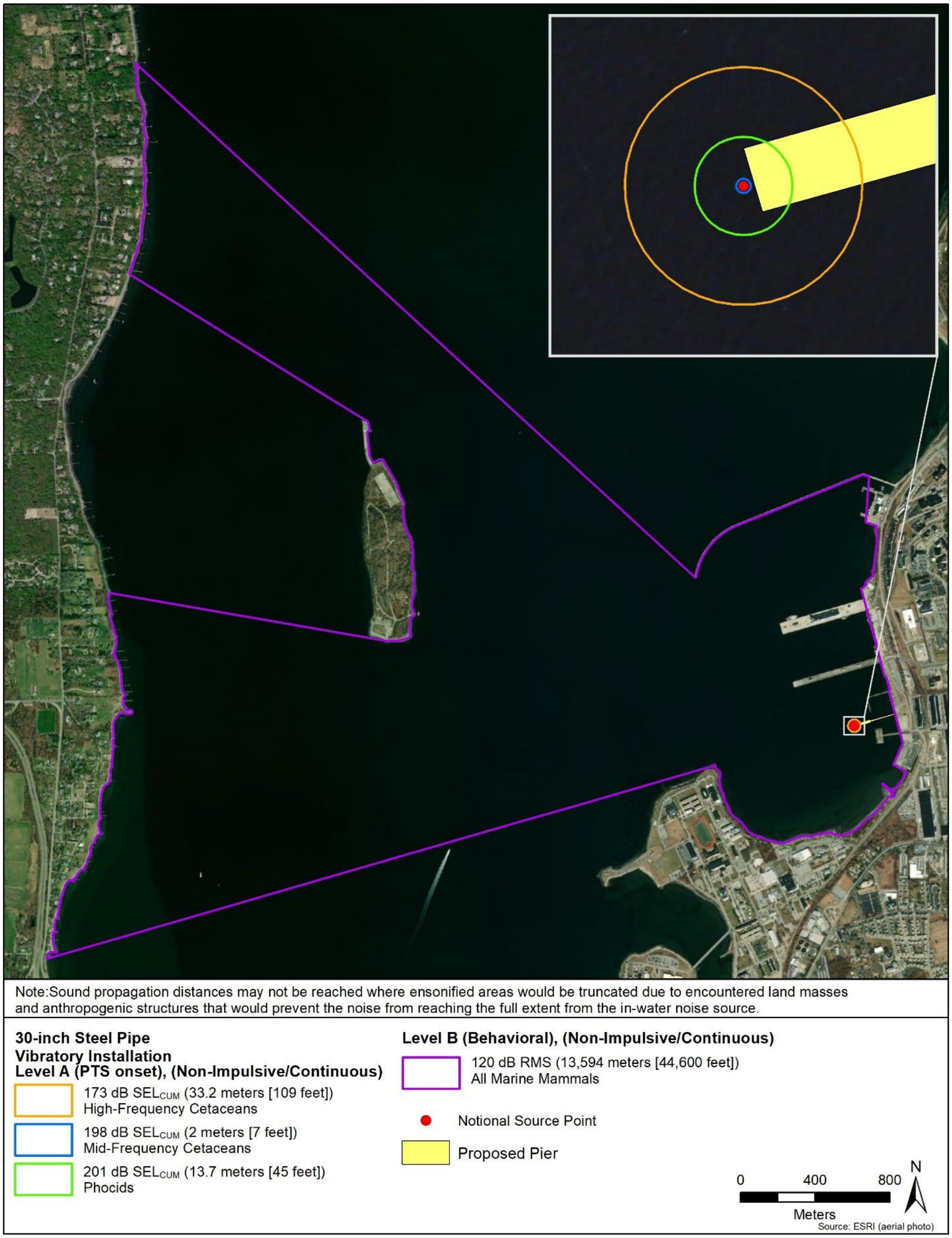


Figure 6-17 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at Trestle (Bent 19) –30-inch Steel Pipe

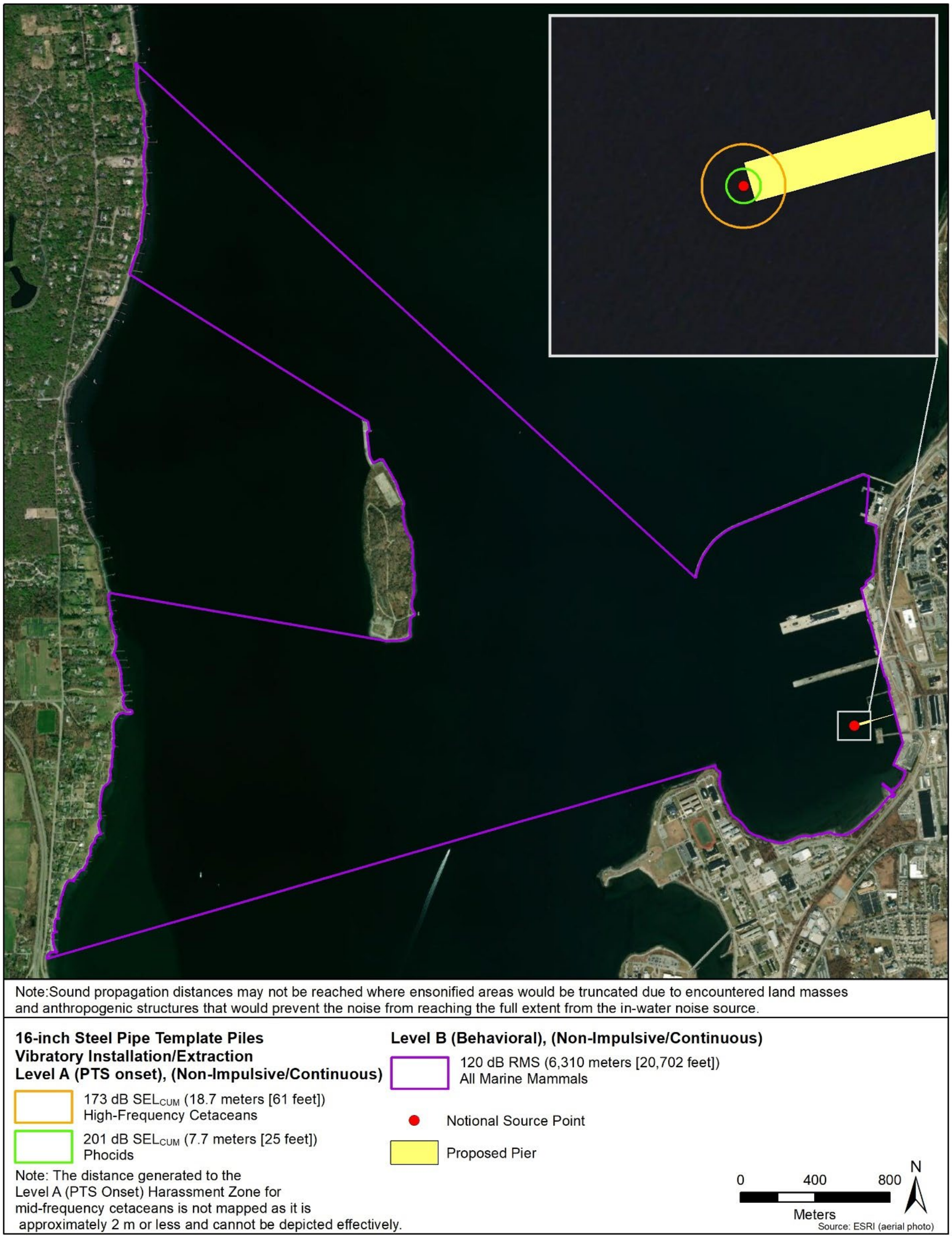


Figure 6-18 Level A (PTS Onset) and Level B (Behavioral) Harassment Zone from Vibratory Installation/Extraction Activity at Trestle (Bent 19) – 16-inch Steel Pipe Template Piles

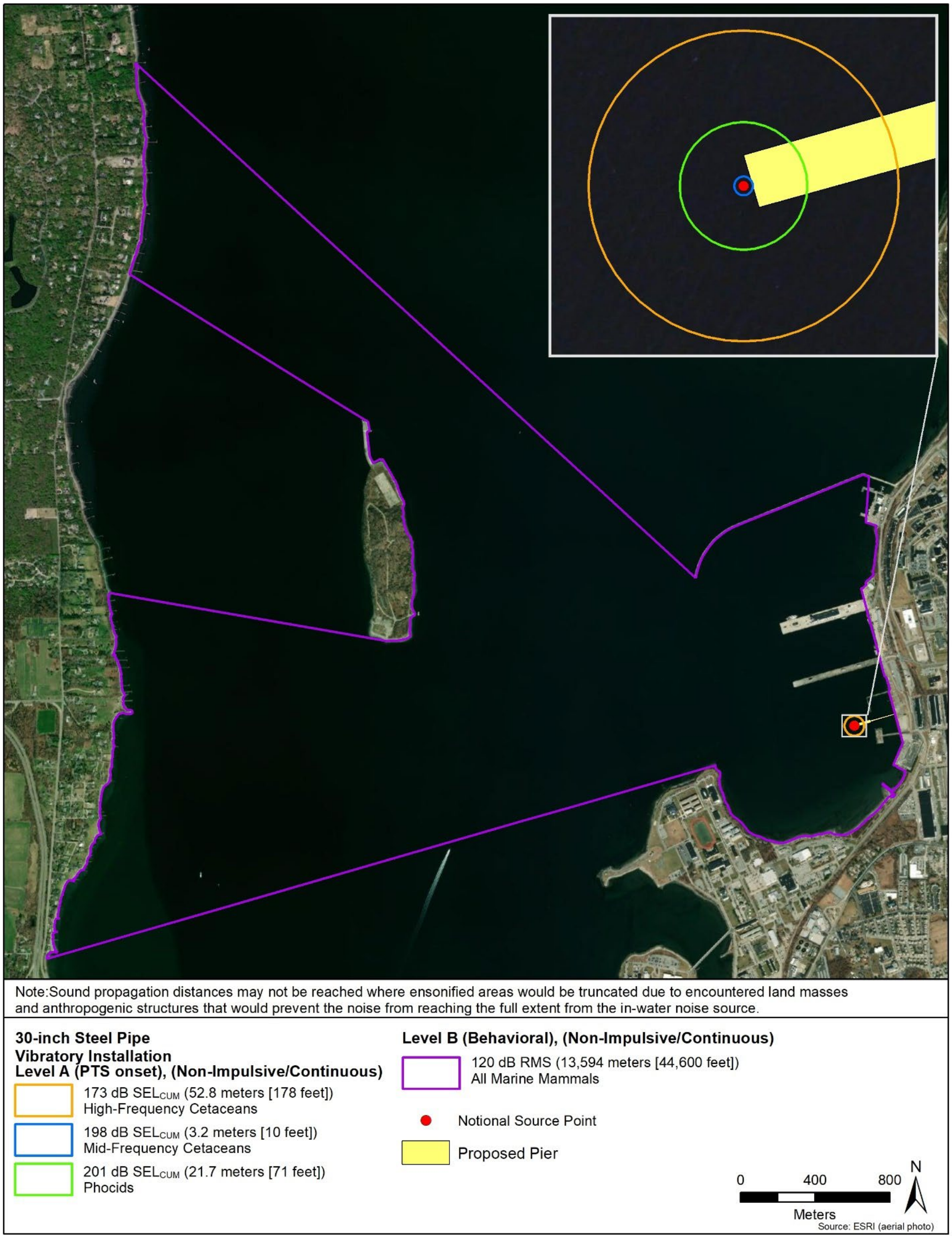


Figure 6-19 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at the Pier – 30-inch Steel Pipe

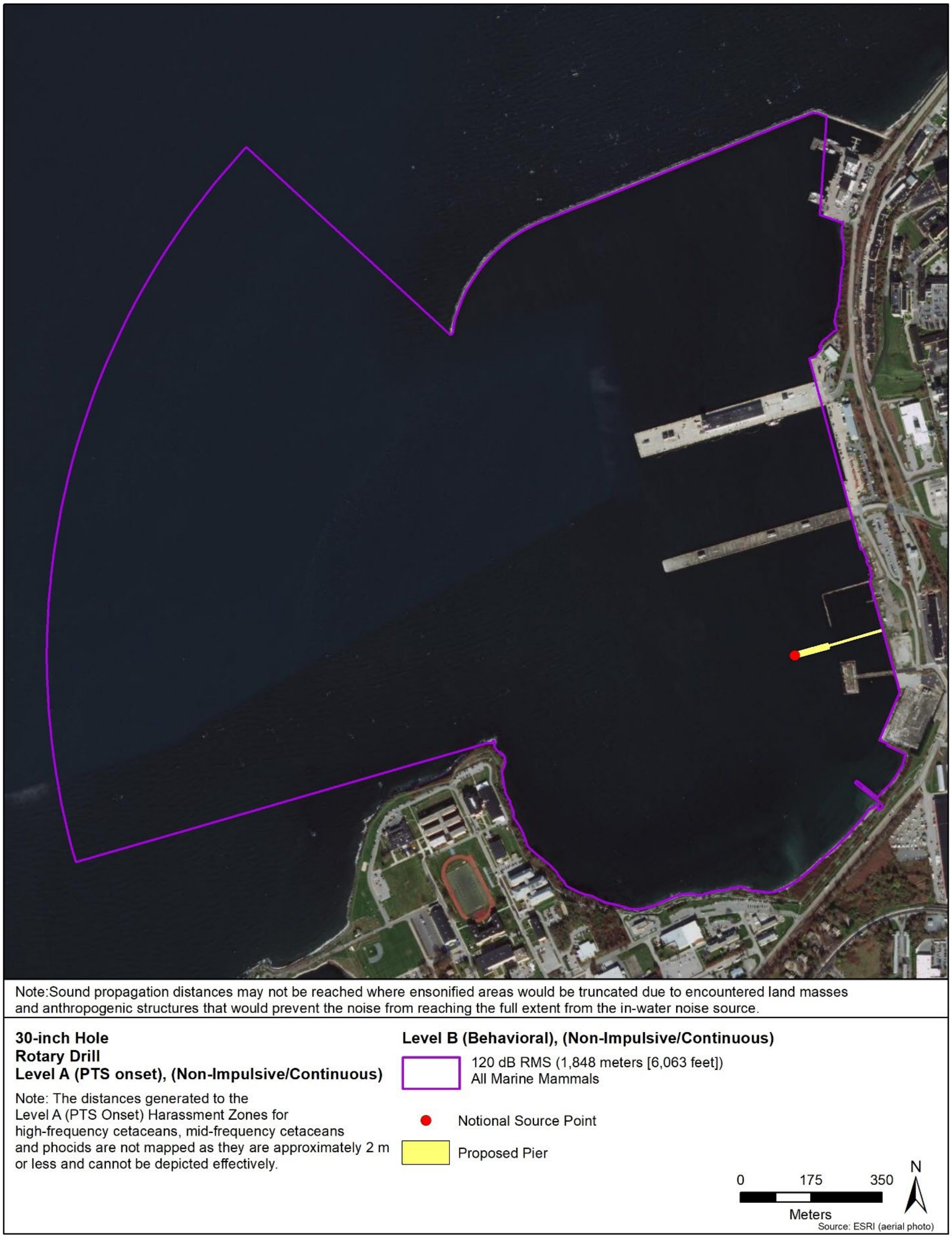


Figure 6-20 Level B (Behavioral) Harassment Zone from Rotary Drilling at the Pier – Hole for 30-inch Steel Pipe

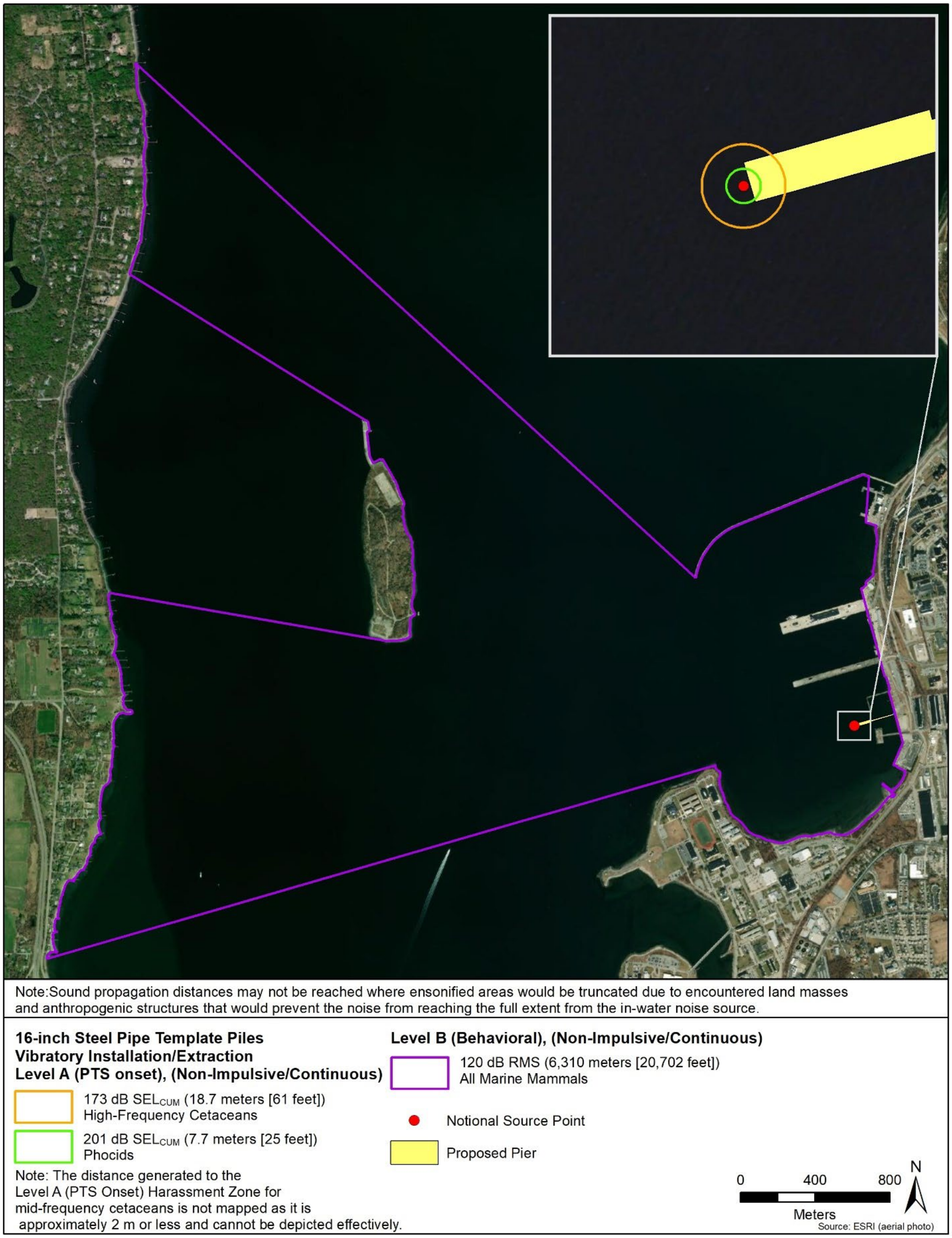
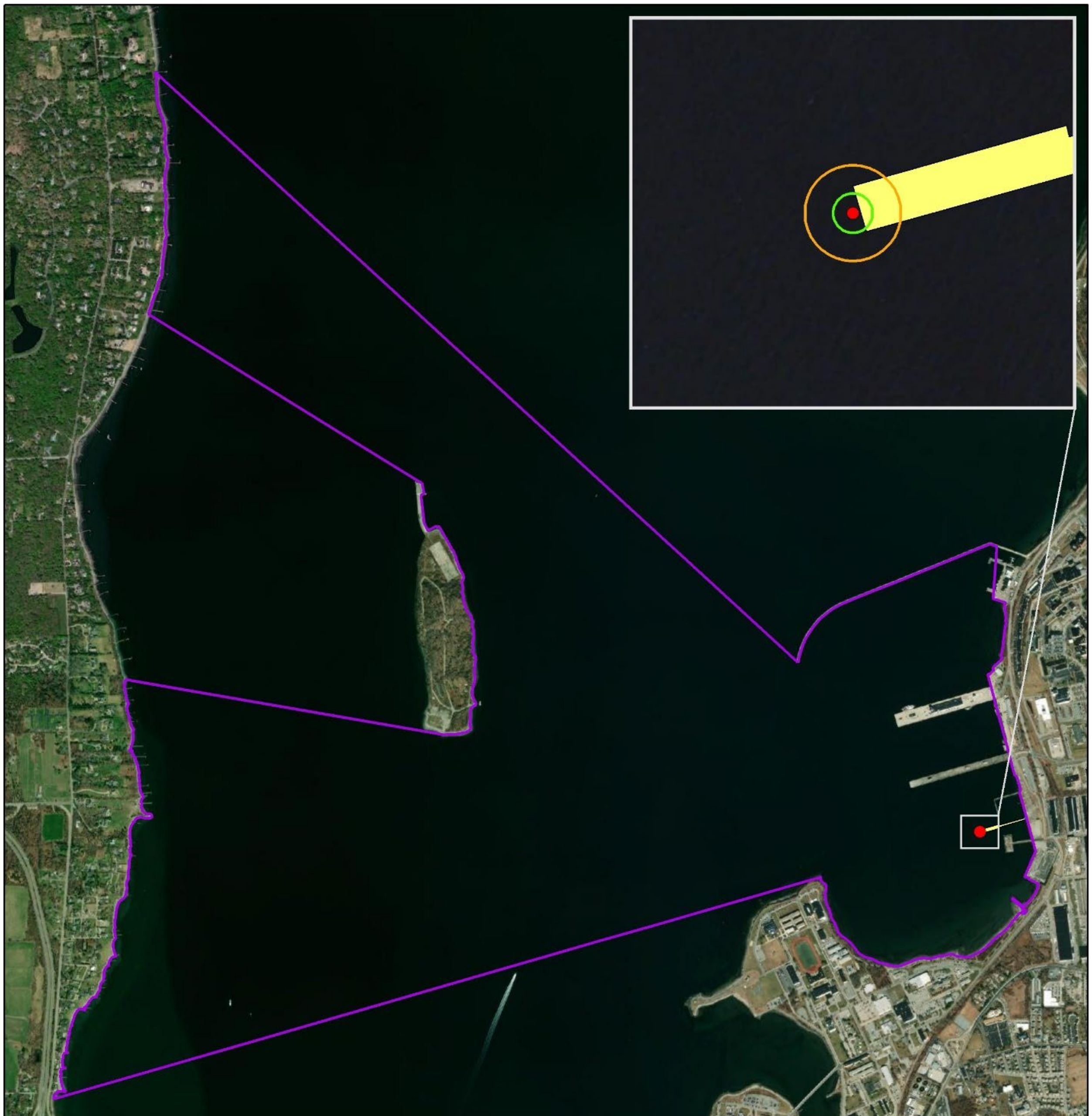


Figure 6-21 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation/Extraction Activity at the Pier – 16-inch Steel Pipe Template Piles



Note:Sound propagation distances may not be reached where ensonified areas would be truncated due to encountered land masses and anthropogenic structures that would prevent the noise from reaching the full extent from the in-water noise source.

16-inch Steel Pipe
Vibratory Installation
Level A (PTS onset), (Non-Impulsive/Continuous)

173 dB SEL_{CUM} (14.3 meters [47 feet])
High-Frequency Cetaceans

201 dB SEL_{CUM} (5.9 meters [19 feet])
Phocids

Note: The distance generated to the Level A (PTS Onset) Harassment Zone for mid-frequency cetaceans is not mapped as it is approximately 2 m or less and cannot be depicted effectively.

Level B (Behavioral), (Non-Impulsive/Continuous)

120 dB RMS (6,310 meters [20,702 feet])
All Marine Mammals

Notional Source Point

Proposed Pier

0 400 800
Meters
N

Source: ESRI (aerial photo)

Figure 6-22 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity of Fender Piles – 16-inch Steel Pipe

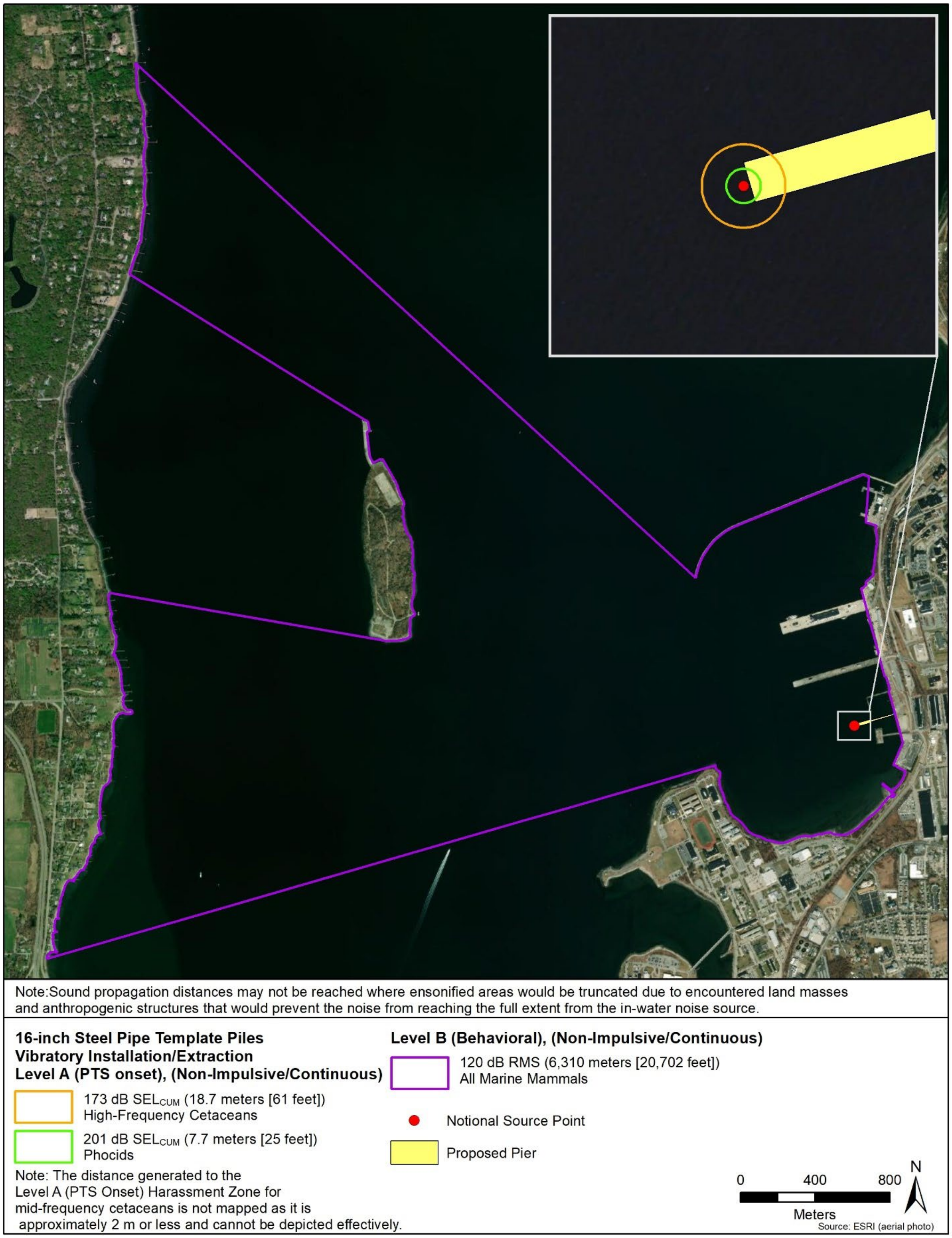


Figure 6-23 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation/Extraction Activity at Fender Pile Location – 16-inch Steel Pipe Template Piles

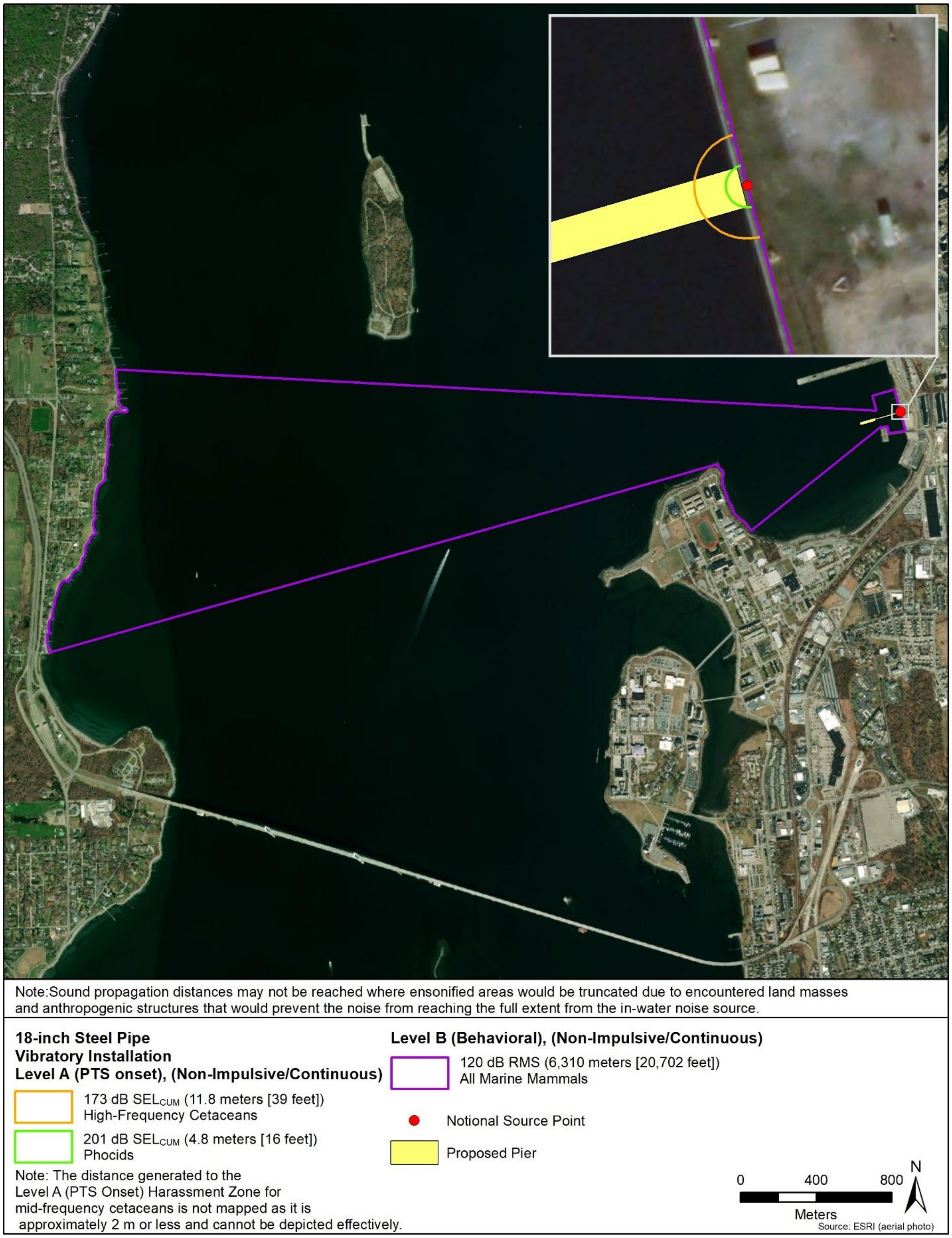


Figure 6-24 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity of Gangway Support Piles at Small Boat Floating Dock– 18-inch Steel Pipe

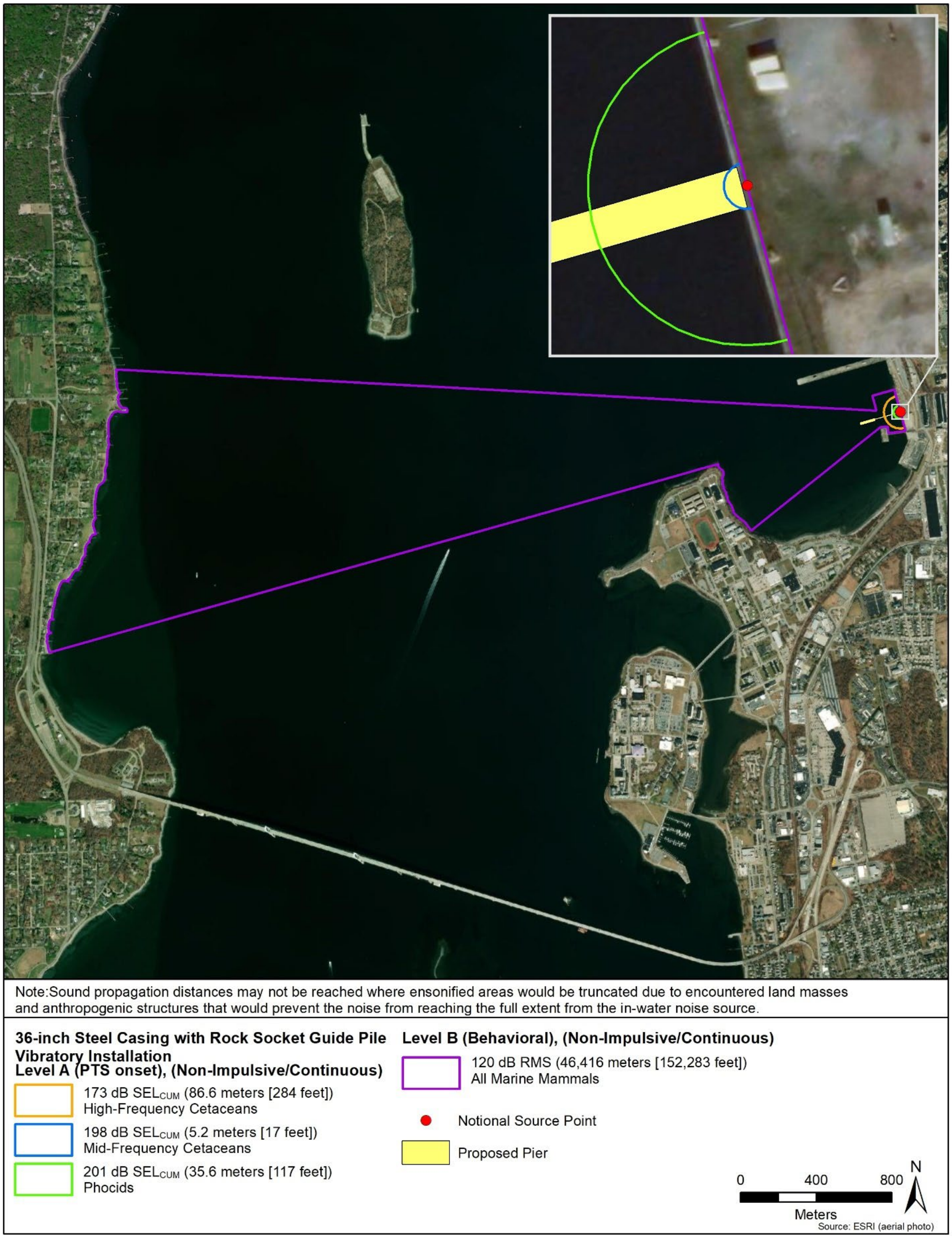


Figure 6-25 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity Small Boat Floating Dock– 36-inch Steel Casing with Rock Socket Guide Pile

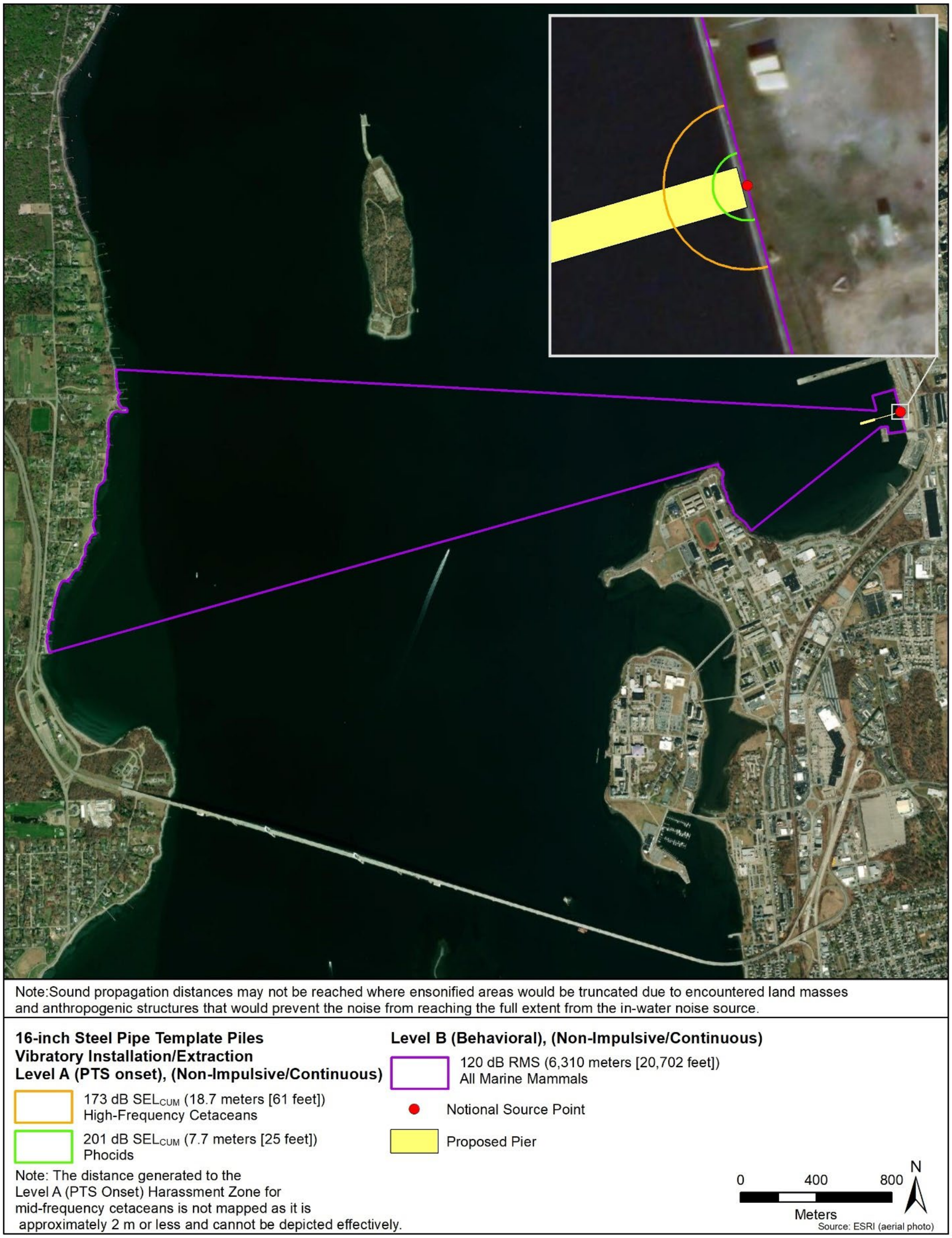


Figure 6-26 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation/Extraction Activity at Small Boat Floating Dock– 16-inch steel Pipe Template Piles

6.8.2 Concurrent Activities

Simultaneous use of pile drivers, hammers, and drills could result in increased SPLs and harassment zone sizes given the proximity of the structure sites and the rules of decibel addition.

According to recent guidance provided by NMFS, when two noise sources have overlapping sound fields, there is potential for higher sound levels than for non-overlapping sources because the isopleth of one sound source encompasses the sound source of another isopleth. In such instances, the sources are considered additive and combined using the rules of decibel addition (Table 6-6). For addition of two simultaneous sources, the difference between the two sound source levels is calculated, and if that difference is between 0 and 1 dB, 3 dB are added to the higher sound source levels; if the difference is between 2 or 3 dB, 2 dB are added to the highest sound source levels; if the difference is between 4 to 9 dB, 1 dB is added to the highest sound source levels; and with differences of 10 or more decibels, there is no addition (NMFS, 2021c unpublished).

Table 6-6 Rules for Combining Sound Levels

Difference in Sound Source Level (dB)	*Rule*
0 or 1 dB	Add 3 dB to the higher source level
2 or 3 dB	Add 2 dB to the higher source level
4 to 9 dB	Add 1 dB to the higher source level
10 dB or more	Add 0 dB to the higher source level

Source: Egger, 2021.
Notes: Daily production rates combined and recalculated for the predetermined overlapping activities.
Key: dB = decibel.

For simultaneous usage of three or more continuous sound sources, the three overlapping sources with the highest sound source levels are identified. Of the three highest sound source levels, the lower two are combined using the above rules, then the combination of the lower two is combined with the highest of the three. For example, with overlapping isopleths from 24-, 36-, and 42-inch diameter steel pipe piles with sound source levels of 161, 167, and 168 dB RMS respectively, the 24- and 36-inch would be added together; given that 167 – 161 = 6 dB, then 1 dB is added to the highest of the two sound source levels (167 dB), for a combined noise level of 168 dB. Next, the newly calculated 168 dB is added to the 42-inch steel pile with sound source levels of 168 dB. Since 168 – 168 = 0 dB, 3 dB is added to the highest value, or 171 dB in total for the combination of 24-, 36-, and 42-inch steel pipe piles (NMFS unpublished).

As shown in Table 2-2, there are anticipated to be scenarios when an impact hammer and vibratory hammer are occurring simultaneously or when two impact hammers may be operating simultaneously. In the situations, where an impact and vibratory hammer are used concurrently, the largest zone generated by either the vibratory hammer or impact hammer would be used (refer to Tables 6-4 and 6-5). Simultaneous use of two or more impact hammers does not require source level additions on its own as it is unlikely that two hammers would strike at the same exact instant and thus sound source levels are not adjusted regardless of distance (NMFS, unpublished).

By using the rules of decibel addition method (Table 6-6), a revised proxy source for Level A and Level B analysis was determined for the use of the concurrent non-impulsive activity scenarios. The revised proxy value is presented in Table 6-7, and the resulting harassment zones are summarized in Table 6-8 and depicted in Figures 6-21 through 6-25).

Table 6-7 Revised Proxy Values for Simultaneous Use of Non-impulsive Sources

Structure	*Activity and Proxy*	*New Proxy*
Bulkhead	Vibratory Install 16-inch steel pipe piles – 162 dB RMS Vibratory Install 18-inch steel pipe piles – 162 dB RMS	165 dB RMS
Bulkhead and Trestle	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS Vibratory Install Z26-700 sheet piles – 156 dB RMS Vibratory Install 18-inch steel pipe piles – 162 dB RMS	166 dB RMS
	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS Vibratory Install Z26-700 sheet piles – 156 dB RMS Rotary Drill 18-inch steel pipe piles – 154 dB RMS	163 dB RMS
Pier	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS Vibratory Install 30-inch steel pipe piles – 167 dB RMS	168 dB RMS
	Vibratory Install/extract 16-inch steel pipe piles– 162 dB RMS Rotary Drill 30-inch steel pipe piles – 154 dB RMS	163 dB RMS
Pier Fender Piles and Small Boat Floating Dock	Vibratory Install/extract 16-inch steel pipe piles – 162 dB RMS Vibratory Install 18-inch steel pipe piles – 162 dB RMS	165 dB RMS
	Vibratory Install/extract 16-inch steel pipe piles– 162 dB RMS Vibratory Install 36-inch steel pipe piles – 175 dB RMS	175 dB RMs

Key: dB RMS = Decibel Root Mean Square
Note: All sources are located in the same vicinity.

Table 6-8 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Concurrent Activities

Figure No.	*Structure*	*Pile Sizes and Type*	*Activity*	*Total Production Days*	*Level A (PTS Onset) Harassment*			*Level B (Behavioral) Harassment*
					MF Cetacean	*HF Cetacean*	*Phocid*	*All Marine Mammals*
					Maximum Distance to (Continuous -198 db SEL_{cum}) (DTH -185 dB SEL_{cum}) Threshold (m)/ Area of Harassment Zone (sq km)	*Maximum Distance to (Continuous -173 dB SEL_{cum}) (DTH -155 dB SEL_{cum}) Threshold(m)/Area of Harassment Zone (sq km)*	*Maximum Distance to (Continuous -201 dB SEL_{cum}) (DTH – 185 dB SEL_{cum}) Threshold(m)/Area of Harassment Zone (sq km)*	*Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (sq km) (Continuous and DTH)*
Figure 6-27	Bulkhead	Install of 16-inch and 18-inch steel pipe piles	Install/Extract using two Vibratory Pile Drivers	15	3.7/0.000021	61.6/0.0060	25.3/0.001	10,000/3.31
Figure 6-2[1]		Install 18-inch Steel	DTH Mono-hammer	12	4.6/0.000033	154.2/0.028	69.3/0.0075	13,594/3.31
Figure 6-28	Bulkhead and Trestle	Install of 16-inch and 18-inch steel pipe and Z26-700 steel sheet piles	Install/Extract using three Vibratory Pile Drivers	15	4.8/0.000036	79.6/0.01	32.7/0.0017	11,659/3.31
Figure 6-29	Bulkhead and Trestle	Install of 16-inch and 18-inch steel pipe and Z26-700	Install/Extract using two Vibratory Pile Drivers and a Rotary Drill	14	2.9/0.000013	47.8/0.0036	19.7/0.00061	7,356/3.31

Table 6-8 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Concurrent Activities

Figure No.	Structure	Pile Sizes and Type	Activity	Total Production Days	Level A (PTS Onset) Harassment			Level B (Behavioral) Harassment
					MF Cetacean	HF Cetacean	Phocid	All Marine Mammals
					Maximum Distance to (Continuous -198 db SEL_{cum}) (DTH - 185 dB SEL_{cum}) Threshold (m)/ Area of Harassment Zone (sq km)	Maximum Distance to (Continuous - 173 dB SEL_{cum}) (DTH -155 dB SEL_{cum}) Threshold(m)/Area of Harassment Zone (sq km)	Maximum Distance to (Continuous - 201 dB SEL_{cum}) (DTH – 185 dB SEL_{cum}) Threshold(m)/Area of Harassment Zone (sq km)	Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (sq km) (Continuous and DTH)
		steel sheet piles						
Figure 6-30	Pier	Install 16- and 30-inch steel pipe	Install/Extract using two Vibratory Pile Drivers	30	5.9/0.00011	97.6/0.030	40.1/0.0050	15,849/8.53
	Pier	Install 16- and 30-inch steel pipe	Install/Extract using a vibratory pile driver and rotary drill	27	2.0/0.0031	33.1/0.0034	13.6/0.00058	7,356/8.53
Figure 6-31	Pier Fender Piles and Gangway Support for Small Boat Floating Dock	16- and 18-inch steel pipe	Install/Extract using two Vibratory Pile Drivers	17	2.3/0.000017	38.8/0.0047	16.0/0.0008	10,000/8.53
Figure 6-32	Pier Fender Piles and Small Boat Floating	16-inch steel pipe and 36-inch shafts	Install using two Vibratory Pile Drivers	20	9.6/0.00029	159.5/0.080	65.6/0.013	46,416/8.53

Table 6-8 Calculated Maximum Distances Corresponding to MMPA Thresholds for Underwater Sound from Concurrent Activities

Figure No.	*Structure*	*Pile Sizes and Type*	*Activity*	*Total Production Days*	*Level A (PTS Onset) Harassment*			*Level B (Behavioral) Harassment*
					MF Cetacean	*HF Cetacean*	*Phocid*	*All Marine Mammals*
					Maximum Distance to (Continuous -198 db SEL_{cum}) (DTH - 185 dB SEL_{cum}) Threshold (m)/ Area of Harassment Zone (sq km)	*Maximum Distance to (Continuous - 173 dB SEL_{cum}) (DTH -155 dB SEL_{cum}) Threshold(m)/Area of Harassment Zone (sq km)*	*Maximum Distance to (Continuous - 201 dB SEL_{cum}) (DTH – 185 dB SEL_{cum}) Threshold(m)/Area of Harassment Zone (sq km)*	*Maximum Distance 120 dB RMS SPL Threshold (m)/ Area of Harassment Zone (sq km) (Continuous and DTH)*
Figure 6-8[1]		36-inch	DTH Mono-hammer	2	73/0.0084	2,444.5/1.21	1,098.2/0.42	13,594/3.31

Notes: [1]- These figures should be referenced for the days of DTH where Level A PTS onset zones are larger than the concurrent vibratory installation/extraction activities.

Key: dB RMS SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; m = meter; PTS = Permanent Threshold Shift; sq km = square kilometer

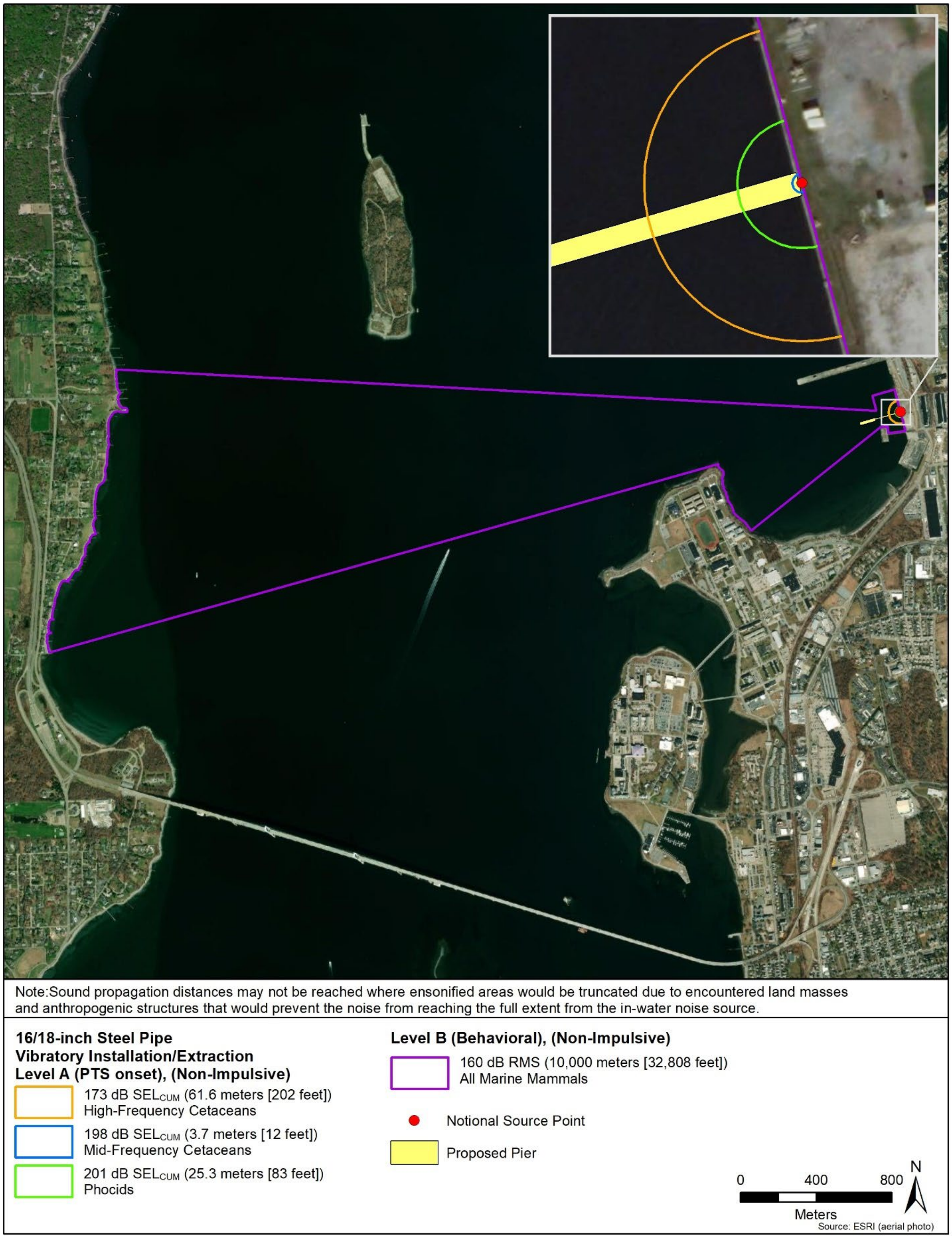


Figure 6-27 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Concurrent Vibratory Pile Driving/Extracting of 16-inch Steel Pipe and Vibratory Installation of 16-inch and 18-inch Steel Pipe Piles at the Bulkhead

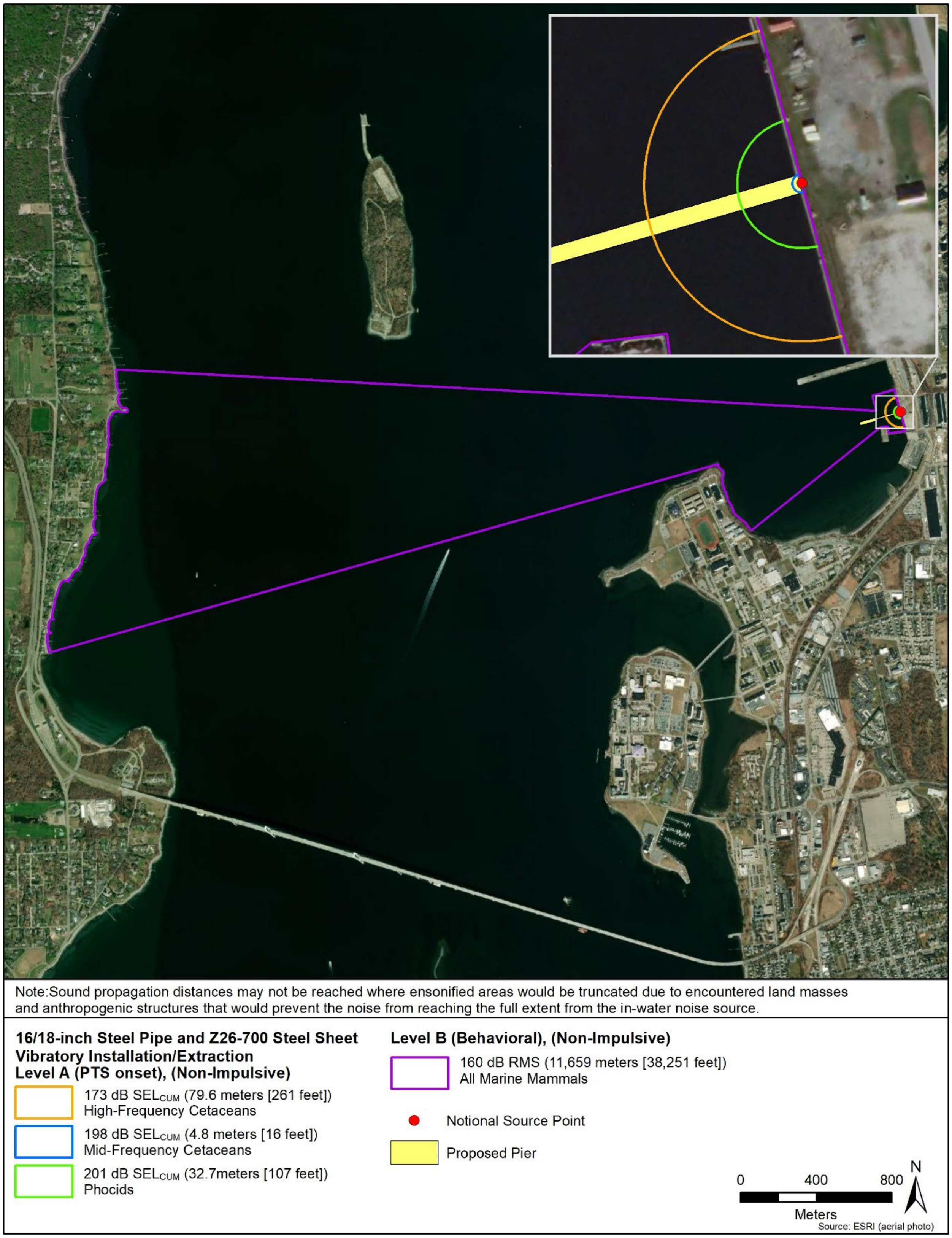


Figure 6-28 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Concurrent Vibratory Pile Driving/Extracting of 16-inch Steel Pipe Piles, Vibratory Installation of 16 and 18-inch Steel Pipe Piles, and Vibratory Installation of Steel Sheet Piles at the Bulkhead and Trestle

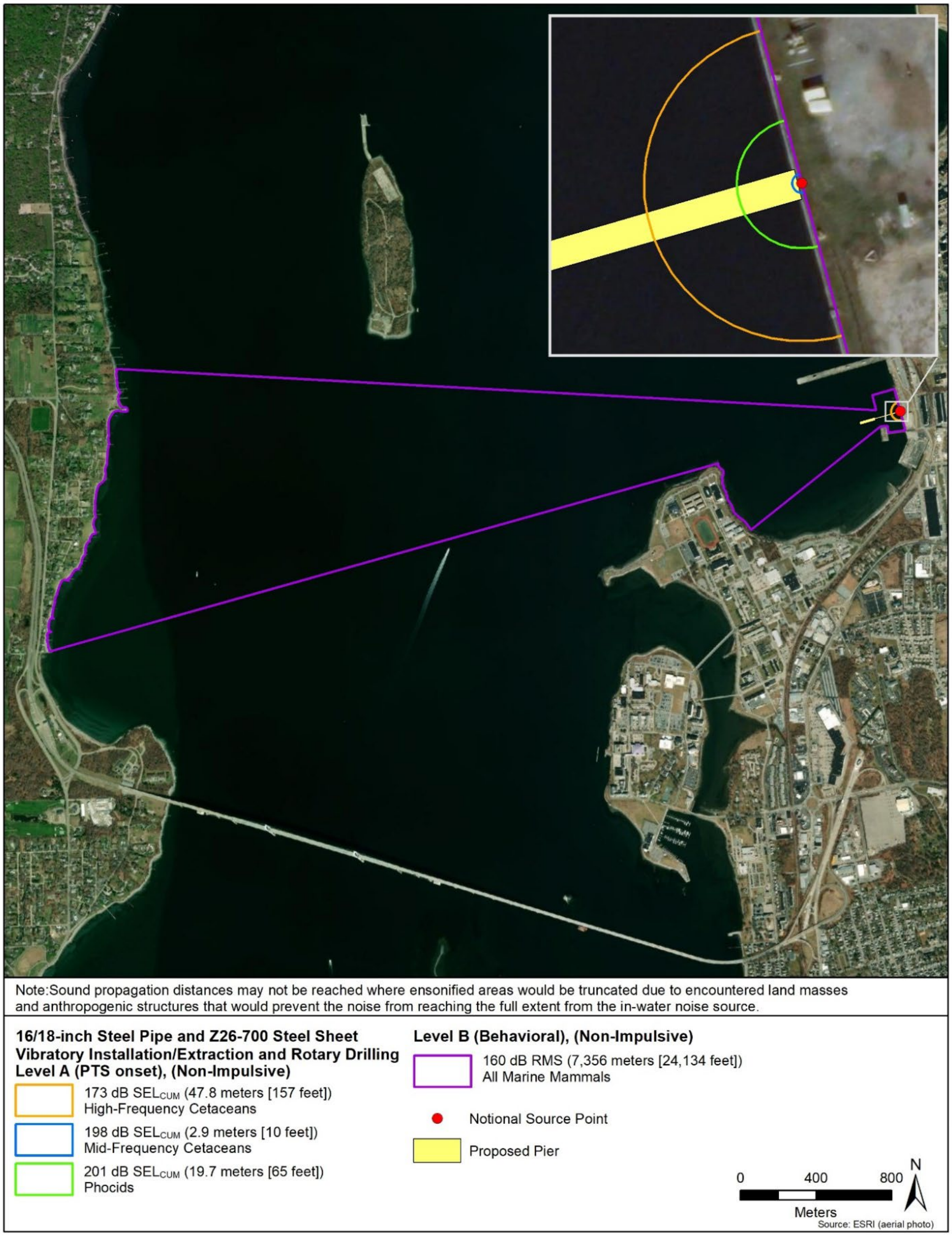


Figure 6-29 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Concurrent Vibratory Pile Driving/Extracting of 16-inch Steel Pipe Piles and Vibratory Installation/Rotary Drilling of 18-inch Steel Pipe Piles, and Vibratory Install Steel Sheet Piles at Bulkhead and Trestle

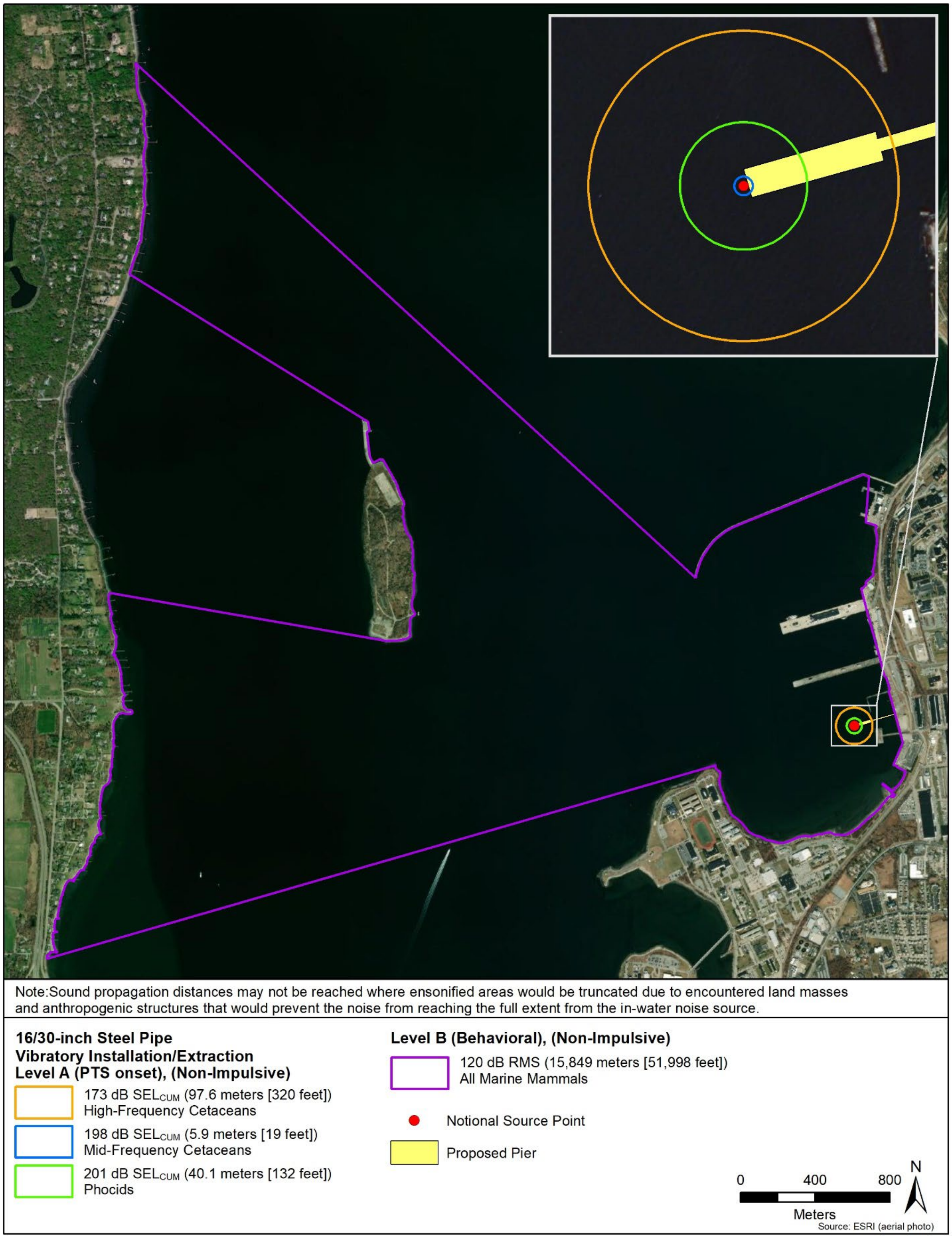


Figure 6-30 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Concurrent Vibratory Pile Driving/Extracting of 16-inch Steel Pipe and Vibratory Installation of 30-inch Steel Pipe Piles at the Pier

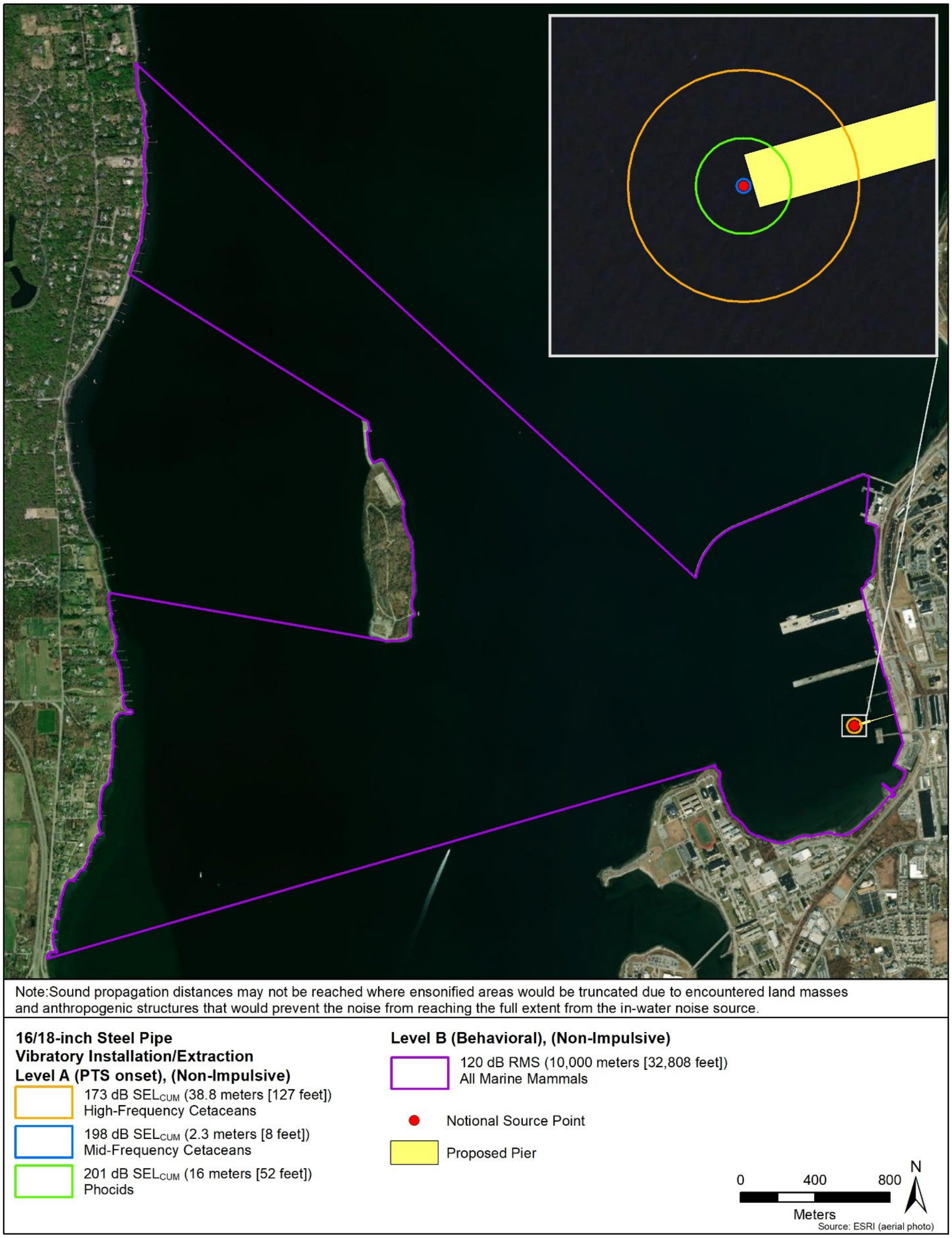


Figure 6-31 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Concurrent Vibratory Pile Driving/Extracting of 16-inch Steel Pipe Piles at the Pier Fender Piles and Vibratory Pile Installation of 18-inch Steel Pipe at the Small Boat Floating Dock

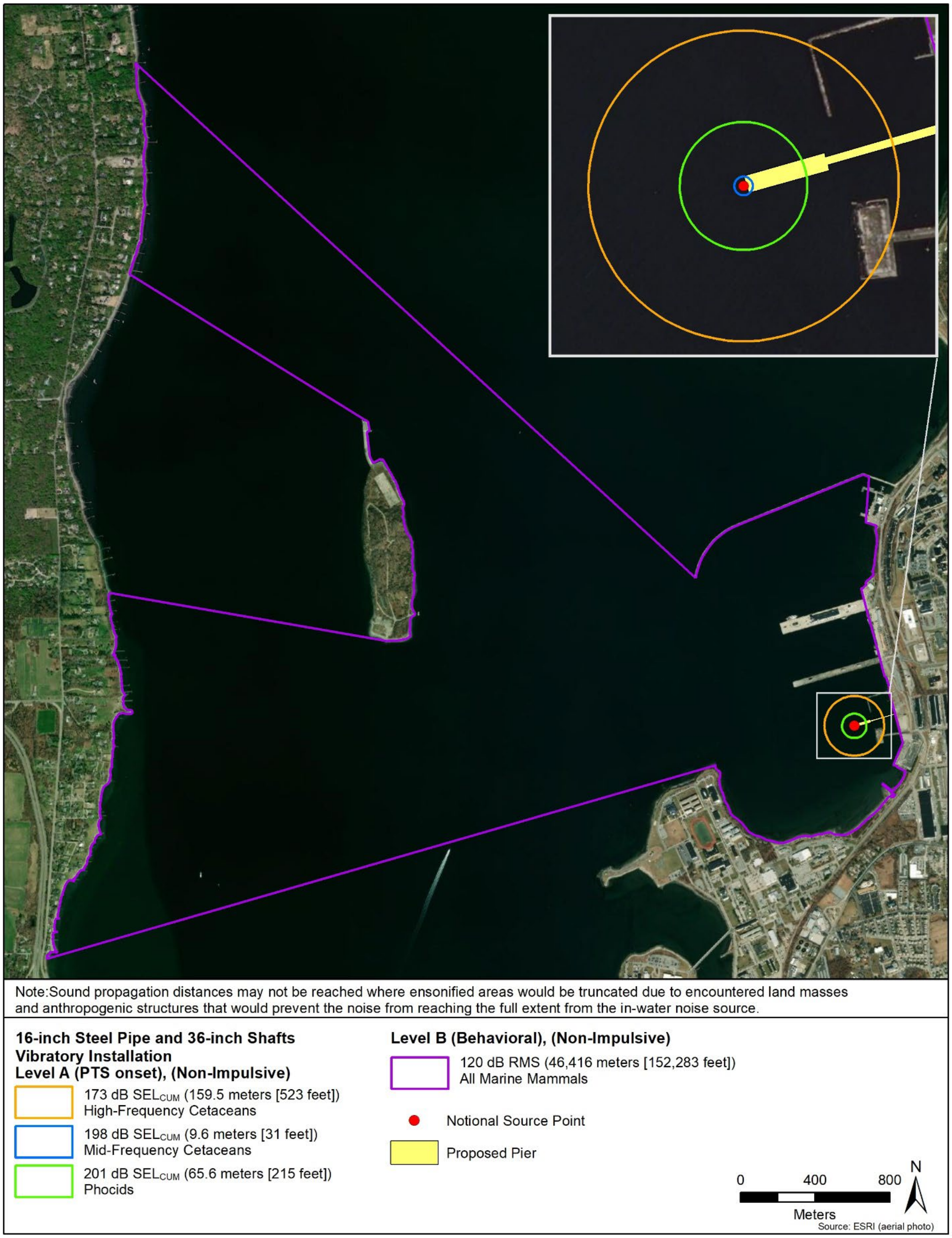


Figure 6-32 Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Concurrent Vibratory Pile Driving/Extracting of 16-inch Steel Pipe Piles at the Pier Fender Piles and Vibratory Pile Installation of 36-inch Steel Pipe at the Small Boat Floating Dock

6.9 Distance to Airborne Sound Threshold

Pile driving can generate airborne noise that could potentially result in harassment of marine mammals (pinnipeds) that are hauled out or at the water's surface. As a result, NOAA and the Navy analyzed the potential for pinnipeds hauled out or swimming at the surface to be exposed to airborne SPLs that could result in Level B (Behavioral) harassment. Because the noise from drilling would occur entirely underwater, it is assumed that these activities would have no airborne noise impacts on marine mammals. The airborne noise threshold for behavioral harassment for all pinnipeds, except harbor seals, is 100 dB RMS re 20 µPa (unweighted) and for harbor seals is 90 dB RMS re 20 µPa (unweighted) (see Table 6-2). Construction noise behaves as point source and, thus, propagates in a spherical manner with a 6 dB decrease in SPL over water ("hard site" condition) per doubling of distance. The water surface is considered a hard site and acts as a reflective surface where it does not provide any attenuation (Washington Department of Transportation, 2019). A spherical spreading loss model, assuming average atmospheric conditions, was used to estimate the distance to the 100 dB and 90 dB RMS re 20 µPa (unweighted) airborne thresholds. The TL equation is:

$$TL = 20\log_{10}\left(\frac{R_1}{R_2}\right)$$

Where:

TL is the transmission loss in dB,

R_1 is the distance of the modeled SPL from the driven pile, and

R_2 is the distance from the driven pile of the initial measurement.

The intensity of pile driving sounds is greatly influenced by factors such as the type of piles, hammers, and the physical environment in which the activity takes place. Pipe and sheet piles would be installed via impact and/or vibratory methods and may require DTH mono-hammer and rotary drilling for a subset of piles installed. Table 6-9 summarizes the airborne proxy source levels used for modeling distances to noise thresholds for pinniped (seal) haul-out areas.

Table 6-9 Summary of Airborne Proxy Source Levels

Pile Size (diameter in inches)	*Impact RMS L_{max} (Unweighted)*	*Vibratory/Drilling RMS L_{eq} (Unweighted)*
16-inch steel pipe[1]	110	88
18-inch Steel pipe[1]	110	88
30-inch steel pipe[1]	110	n/a
36-inch steel casing/shaft with rock socket[1]	112	95
Rotary Drilling[2]	69	69
DTH[2]	93	n/a

Source:
1. Navy, 2015 (Table 2-3).
2. Washington State Department of Transportation, 2020 (P. 7.13, 7.16). This value refers to a rock drill and is being used as a proxy for DTH.

Notes:
All values relative to dB re 20 µPa = dB referenced to a pressure of 20 microPascals at 15 meters (50-feet) (except where noted); RMS = root mean square, $L_{eq=}$ Equivalent continuous SPLs; L_{max}= RMS maximum level of a noise; n/a=not applicable. No data were available for 16-inch steel piles, so

proxies for impact install of 24-inch and vibratory install/extract of 18-inch are suggested. No Impact install proxy for 18-inch, so 24-inch proxy suggested.

The distances to the pinniped airborne noise thresholds produced by the loudest pile installation method (impact installation of steel pipe piles) are shown in Table 6-10 and Figure 6-33. Because these areas are smaller than the underwater behavioral threshold zones, a separate analysis of Level B (Behavioral) take was not conducted for the airborne zones. Animals in the airborne zones would already have been exposed within a Level B (Behavioral) underwater zone; therefore, no additional takes due to exposure to airborne noise are requested.

Table 6-10 Calculated and Measured Distances to Pinniped Behavioral Airborne Noise Thresholds

Activity	*Harbor Seal Threshold = 90 dB RMS*	*Gray Seal, Harp Seal, and Hooded Seal Threshold = 100 dB RMS*
Vibratory installation/removal sheet piles and 12- to 30-inch pipe piles	12 m	3.8 m
Impact install of 16-to 30-inch pipe piles	150 m	47.4 m
Vibratory install of 36-inch steel pipe	27 m	8.4 m
Impact install of 36-inch pipe piles	189 m	59.7 m
Rotary drilling	1 m	0.4 m
DTH Mono-Hammer	21 m	6.7 m

Notes: DTH = down-the-hole, m = meters, RMS = root mean square

6.10 Estimated Duration of In-water Construction

In-water construction activities for the proposed project will take approximately 343 non-consecutive days. A majority of the vibratory pile driving/extracting activities will occur during installation and removal of template piles associated with the pier and trestle construction. The template piles will be moved multiple times throughout the construction year.

6.11 Basis for Estimating Take by Harassment

NOAA and the Navy are seeking authorization for the potential taking of Atlantic white-sided and short-beaked common dolphins, harbor porpoises, harbor seals, gray seals, harp seals, and hooded seals near NAVSTA Newport as a result of pile driving/extraction, drilling, and DTH excavation activities associated with the proposed project. The takes requested are expected to have no effect on the populations of these species. Any effects experienced by individual marine mammals are expected to be limited to short-term disturbance of normal behavior or temporary displacement of animals near the source of the noise.

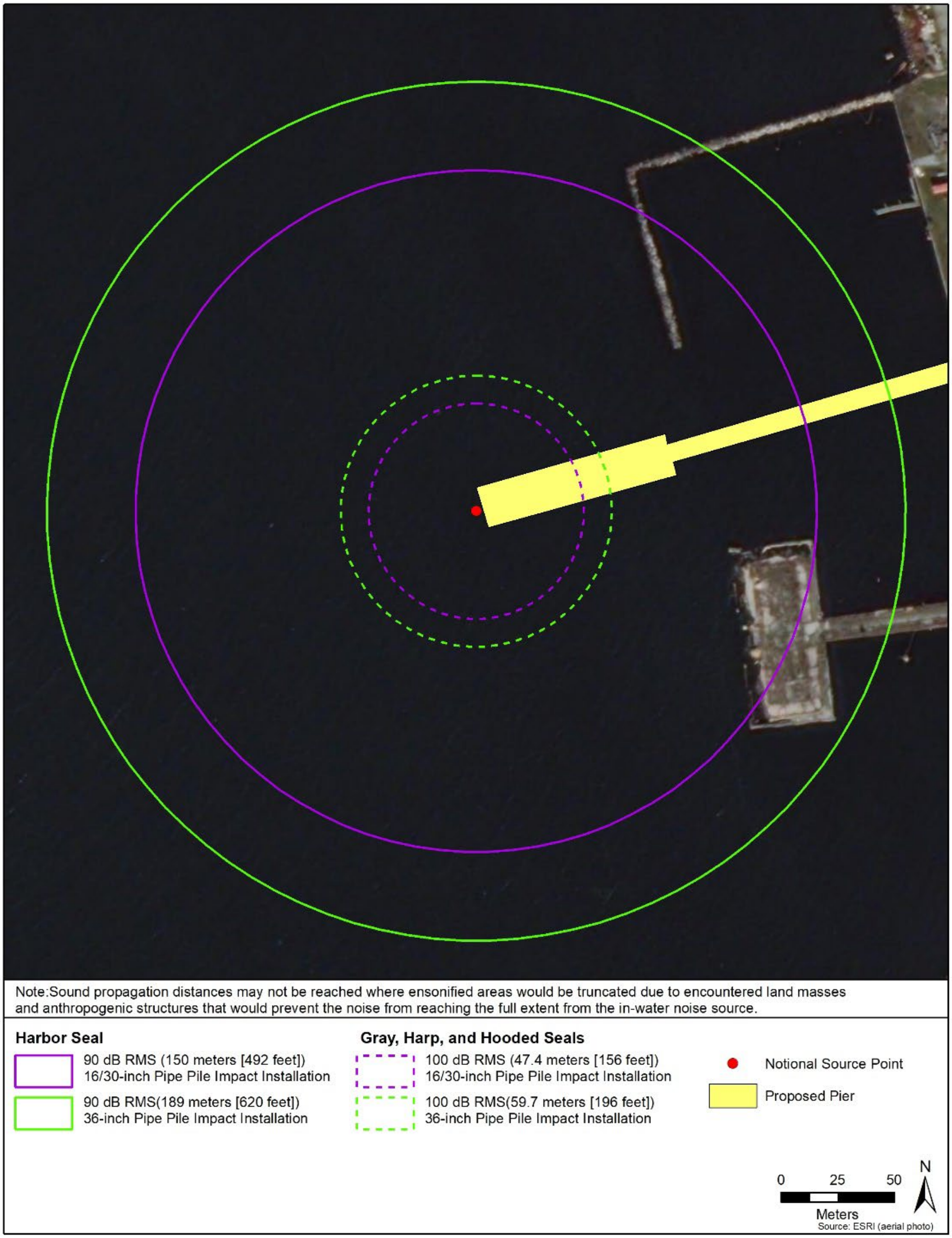


Figure 6-33 Maximum Distances to Airborne Noise Behavioral Harassment Zones from Impulsive Noise

6.12 Estimating Potential Exposures to Underwater Noise

Cetaceans spend their entire lives in the water and spend most of their time (greater than 90 percent for most species) entirely submerged below the surface. When at the surface, cetacean bodies are almost entirely below the water's surface, with only the blowhole exposed to allow breathing. This makes cetaceans difficult to locate visually and also exposes them to underwater noise, both natural and anthropogenic, essentially 100 percent of the time because their ears are nearly always below the water's surface.

Pinnipeds (seals and sea lions) spend significant amounts of time out of the water during breeding, molting, and hauling out periods. In the water, pinnipeds spend varying amounts of time underwater. When not actively diving, pinnipeds at the surface often orient their bodies vertically in the water column and hold their heads above the water surface. Consequently, pinnipeds may not be exposed to underwater sounds to the same extent as cetaceans.

For the purpose of assessing impacts from underwater sound, NOAA and the Navy assumed that all cetacean and pinniped species spend 100 percent of their time underwater. This approach is conservative because seals spend a portion of their time hauled out and, therefore, are expected to be exposed to less sound than is estimated by this approach.

To quantitatively assess exposure of marine mammals to noise levels from pile driving/extracting, DTH mono-hammer excavation, and drilling using the NMFS threshold guidance, marine mammal density estimates used in the analysis came from NMSDD (Navy, 2017a) (see Chapter 3). To guard against unauthorized take, NOAA and the Navy are requesting 1 Level B (Behavioral) take of hooded seal per month of construction when this species may occur (January through May) (total of 5 Level B Takes). Consistent with past applications in the northeastern U.S., no Level A takes are requested for this species.

To determine the number of animals potentially exposed in the harassment zone, the following equation was used:

Exposure estimate[1]= (N × harassment zone) × maximum days of pile driving/extracting, DTH, drilling

Where:

N = density estimate used for each species

Harassment Zone = the area where noise exceeds the noise threshold value

The following assumptions were used to calculate potential exposures to in-water construction noise for each threshold:

- Each animal can be "taken" via Level B (Behavioral) harassment once every 24 hours.
- The pile type, size, and installation method that produce the largest harassment zones were used to estimate exposure of marine mammals to noise impacts.
- All construction activities (pile driving/extracting, DTH excavation, and rotary drilling) will have an underwater noise disturbance distance equal to the activity that causes the greatest noise disturbance (i.e., the activity farthest from shore) installed with the method that has the largest harassment zone. If vibratory pile driving/extracting would occur, the largest behavioral

[1] Exposure estimate is rounded to a whole number at the end of the calculation

harassment zone will be produced by vibratory driving. In this case, the harassment zone for an impact hammer will be encompassed by the larger behavioral harassment zone from the vibratory driver.

- Days of construction were conservatively based on a relatively slow daily production rate, but actual daily production rates may be higher, resulting in fewer actual pile driving days. The days provided are used solely to assess the number of days during which underwater noise generation could occur if production was delayed due to equipment failure, safety, etc. In a real construction situation, production rates would be maximized when possible.

6.13 Exposure Estimates

Exposure estimates for all species from individual (non-concurrent) activities are shown in Table 6-11. Total incidental take estimates are provided in Chapter 5, Table 5-1. The take numbers requested in this application do not take mitigation measures into account and are therefore a conservative estimate. NOAA and the Navy are requesting authorization for takes to ensure an adequate number are authorized for the proposed construction activities.

Exposure estimates generally do not differentiate between age, sex, or reproductive condition. However, some inferences can be made based on what is known about the life stages of the animals that visit or inhabit Narragansett Bay and Coddington Cove. When possible and with the available data, this is discussed by species in the sections that follow.

Table 6-11 Total Underwater Exposure Estimates by Species by Individual Activity

Marine Mammals	Underwater Vibratory Pile driving and Rotary Drilling Criteria (e.g., non-impulsive/continuous sounds)				Underwater Impact Pile driving and DTH Excavation Criteria (e.g., impulsive sounds)				DTH Excavation (Continuous)
	Level A[1] (PTS onset) Threshold 173 dB SEL[2] Porpoise	Level A[1] (PTS onset) Threshold 198 dB SEL[2] Dolphins	Level A[1] (PTS onset) Threshold 201 dB SEL[2] Seals	Level B (Behavior) Harassment Threshold 120 dB RMS[3]	Level A[1] (PTS onset) Threshold 155 dB SEL[2] Porpoise	Level A[1] (PTS onset) Threshold 185 dB SEL[2] Dolphins	Level A[1] (PTS onset) 185 dB SEL[2] Seals	Level B (Behavior) Harassment Threshold 160 dB RMS[3]	Level B Disturbance Threshold 120 dB RMS[3]
Atlantic white-sided dolphin	NA	0	NA	6*	NA	0	NA	0	0
Short-beaked common dolphin	NA	0	NA	26*	NA	0	NA	0	0
Harbor porpoise	0	NA	NA	27	2	NA	NA	0	0
Harbor seal	NA	NA	0	1,449	NA	NA	55	0	29
Gray seal	NA	NA	0	306	NA	NA	11	0	6
Harp seal	NA	NA	0	115	NA	NA	4	0	2
Hooded seal[4]	NA	NA	0	5	NA	NA	0	0	0
Total All Species	**0**	**0**	**0**	**1,934**	**2**	**0**	**70**	**0**	**37**

Notes: There will be no non-auditory takes (see Chapter 5.2); *For requested takes for individual activities separate from concurrent, take numbers should be increased to mean group size of 16 for Atlantic white-sided dolphin and 28 for short-beaked common dolphin (Naval Undersea Warfare Center Division, 2017). Mean group size would not apply to those take estimates that exceed the mean group size. See Chapter 5.1, Table 5-1 for total estimated takes for individual and concurrent activities.

[1]Level A (PTS onset) takes would likely be multiple exposures of the same individual, rather than single exposures of unique individuals.

[2] dB re 1 μPa^2-s;

[3] dB re 1μPa RMS

[4] To guard against unauthorized take, NOAA is requesting 1 Level B (behavioral) take of hooded seal per month of construction when this species may occur (January through May)

6.13.1 Atlantic White-Sided Dolphin

Atlantic white-sided dolphins occur seasonally, occurring primarily along the continental shelf and occasional unconfirmed opportunistic sightings in Narragansett Bay in fall and winter. The most recent observation of a pod of dolphins in Narragansett Bay was in October 2007 (NUWC Division, 2011). Construction activity could occur at any time of year and would be short-term and intermittent. Therefore, the average species density was determined to be appropriate for estimating takes of Atlantic white-sided dolphin. Based on density data for Narragansett Bay obtained from the NMSDD (Navy, 2017a), the average density of Atlantic white-sided dolphin for the largest harassment zone was determined to be 0.003/sq km (see Table 3-1). This density was used to estimate abundance of animals that could be present in the area for exposure, using the equation abundance = n * harassment zone.

No Level A (PTS onset) takes of Atlantic white-sided dolphin are anticipated. Up to six Level B (Behavioral) takes could occur if Atlantic white-sided dolphins are moving through the area during in-water construction activities. However, as a conservative measure to prevent against unauthorized takes, the takes requested for this species have been increased to the mean group size (16) (Table 6-11) (Naval Undersea Warfare Center Division, 2017). Because this species' regular occurrence is in much deeper waters than the extent of the harassment zone (Hayes et al., 2019), takes of this species are extremely low. Should an Atlantic white-sided dolphin be exposed to sound from in-water activities, take would be by behavioral harassment (Level B [Behavioral]) only which may result in behavioral changes such as increased swimming speeds or increased surfacing time. Most likely, Atlantic white-sided dolphins would move away from the sound source with very little disruption to normal behavior. With the absence of any regular occurrence in Narragansett Bay, potential takes by disturbance would have a negligible short-term effect on individual Atlantic white-sided dolphins and would not result in population-level impacts.

For concurrent scenarios, takes are provided in Table 6-12 for Atlantic white-sided dolphins. These calculated exposures assume simultaneous efforts would reduce the total number of production days needed thus any of these scenarios employed should be considered as an alternative take request separate from those presented in Table 6-11 for individual activities. These take numbers do not include mean group size but should any of these scenarios occur, takes requested would be increased to 16 Level B Takes. No Level A Takes are requested for these scenarios.

Table 6-12 Atlantic White-Sided Dolphin Calculated Exposure Concurrent Equipment Use Scenario

Structure	*Concurrent Equipment Use Scenario*	*Level A Takes*	*Level B Takes*
Bulkhead	Vibratory Installation of 16-inch and 18-inch steel pipe piles and DTH of 18-inch steel pipe	0	0
Bulkhead and Trestle	Vibratory Installation/Extraction of 16-inch steel pipe and Vibratory Installation of sheet piles at the Bulkhead, and Vibratory Installation of 18-inch steel pipe piles at the Trestle	0	0
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of sheet piles at the Bulkhead, and Rotary Drilling of 18-inch steel pipe piles at the Trestle	0	0
Pier	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of 30-inch steel pipe piles at the Pier	0	1
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Rotary Drilling of 30-inch steel pipe piles at the Pier	0	1
Pier Fender Piles and Small Floating Dock	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Installation of 18-inch steel pipe piles at the Gangway for the Small Boat Floating Dock	0	0
	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Pile Installation and DTH of 36-inch Steel pipe piles at the Small Boat Floating Dock	0	1

6.13.2 Short-beaked Common Dolphin

Short-beaked common dolphins are the most likely dolphin species to be spotted in Narragansett Bay and usually in late fall or winter (Kenney, 2013). The most recent sighting of a short-beaked common dolphin recorded in Narragansett Bay was in October of 2016 (Hayes et al., 2019). Construction activity could occur at any time of year and would be short-term and intermittent. Therefore, the average species density was determined to be appropriate for estimating takes of short-beaked common dolphin. Based on density data for Narragansett Bay obtained from the NMSDD (Navy, 2017a), the average density of short-beaked common dolphin for the largest harassment zone was determined to be 0.011/sq km (see Table 3-1). This density was used to estimate abundance of animals that could be present in the area for exposure, using the equation abundance = n * harassment zone.

No Level A (PTS onset) takes of short-beaked common dolphin are anticipated. Up to 26 Level B (Behavioral) takes could occur if short-beaked common dolphins move through the area during in-water construction activities. However, as a conservative measure to prevent against unauthorized takes, the takes requested for this species have been increased to the mean group size (28) (Table 6-11). Because this species' regular occurrence is in much deeper waters than the extent of the harassment zone (Hayes et al., 2019), takes of this species are extremely low. Should a short-beaked common dolphin be exposed to sound from in-water construction activities, take would be by behavioral harassment (Level B) only, which may result in behavioral changes such as increased swimming speeds or increased surfacing time. Most likely, short-beaked common dolphins would move away from the sound source with very little disruption to normal behavior. Therefore, potential takes by disturbance would have a negligible short-term effect on individual short-beaked common dolphins and would not result in population-level impacts.

For concurrent scenarios, takes are provided in Table 6-13 for short-beaked dolphins. These calculated exposures assume simultaneous efforts would reduce the total number of production days needed thus any of these scenarios employed should be considered as an alternative take request separate from those presented in Table 6-11 for individual activities. No Level A Takes are requested for these scenarios.

Table 6-13 Short-Beaked Dolphin Calculated Exposure Concurrent Equipment Use Scenario

Structure	*Concurrent Equipment Use Scenario*	*Level A Takes*	*Level B Takes*
Bulkhead	Vibratory Installation of 16-inch and 18-inch steel pipe piles and DTH of 18-inch steel pipe	0	1
Bulkhead and Trestle	Vibratory Installation/Extraction of 16-inch steel pipe and Vibratory Installation of sheet piles at the Bulkhead, and Vibratory Installation of 18-inch steel pipe piles at the Trestle	0	1
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of sheet piles at the Bulkhead, and Rotary Drilling of 18-inch steel pipe piles at the Trestle	0	1
Pier	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of 30-inch steel pipe piles at the Pier	0	3
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Rotary Drilling of 30-inch steel pipe piles at the Pier	0	3
Pier Fender Piles and Small Floating Dock	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Installation of 18-inch steel pipe piles at the Gangway for the Small Boat Floating Dock	0	2
	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Pile Installation and DTH of 36-inch Steel pipe piles at the Small Boat Floating Dock	0	2

6.13.3 Harbor Porpoise

Harbor porpoise is the most stranded cetacean in Rhode Island and a strong seasonal occurrence of which harbor porpoise would be more likely to occur in Narragansett Bay in the spring. Construction activity could occur at any time of year and would be short-term and intermittent. Therefore, the average species density was determined to be appropriate for estimating takes of harbor porpoise. Based on density data for Narragansett Bay obtained from the NMSDD (Navy, 2017a), the average density of harbor porpoise for the largest harassment zone was determined to be 0.012/sq km (see Table 3-1). This density was used to estimate abundance of animals that could be present in the area for exposure, using the equation abundance = n * harassment zone.

There would be up to two Level A (PTS onset) takes of harbor porpoise**.** Up to 27 Level B (Behavioral) takes could occur if harbor porpoise move through the area during in-water construction activities. In this case, the mean group size for harbor porpoise (3) would not be appropriate, and as such, the current estimates of take are requested (Table 6-11). Harbor porpoises are highly transitory and would likely move away from the sound source with very little disruption to normal behavior.

Harbor porpoise are not common to Narragansett Bay but may occur, especially in winter and spring months (Kinney 2013). With the absence of any regular occurrence adjacent to the project site, potential takes by harassment would have a negligible short-term effect on individual harbor porpoises and would not result in population-level impacts.

For concurrent scenarios, takes are provided in Table 6-14 for harbor porpoise. These calculated exposures assume simultaneous efforts would reduce the total number of production days needed thus any of these scenarios employed should be considered as an alternative take request separate from those presented in Table 6-11 for individual activities. No Level A Takes are requested for these scenarios.

Table 6-14 Harbor Porpoise Calculated Exposure Concurrent Equipment Use Scenario

Structure	*Concurrent Equipment Use Scenario*	*Level A Takes*	*Level B Takes*
Bulkhead	Vibratory Installation of 16-inch and 18-inch steel pipe piles and DTH of 18-inch steel pipe	0	1
Bulkhead and Trestle	Vibratory Installation/Extraction of 16-inch steel pipe and Vibratory Installation of sheet piles at the Bulkhead, and Vibratory Installation of 18-inch steel pipe piles at the Trestle	0	1
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of sheet piles at the Bulkhead, and Rotary Drilling of 18-inch steel pipe piles at the Trestle	0	1
Pier	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of 30-inch steel pipe piles at the Pier	0	3
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Rotary Drilling of 30-inch steel pipe piles at the Pier	0	3
Pier Fender Piles and Small Floating Dock	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Installation of 18-inch steel pipe piles at the Gangway for the Small Boat Floating Dock	0	2
	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Pile Installation and DTH of 36-inch Steel pipe piles at the Small Boat Floating Dock	0	2

6.13.4 Harbor Seal

Narragansett Bay is a well-known winter feeding ground for harbor seals, occupied roughly from late September until early May and harbor seals are the most common pinniped in Narragansett Bay (Moll et. al., 2017). A nearshore survey conducted in 2016 identified one harbor seal in May and three in February. These seals were observed within 150 meters of the shoreline of NAVSTA Newport. A study of area haul-out usage noted an increase in Narragansett Bay harbor seal populations with upwards of 600 harbor seals utilizing the 20+ known haul-out sites in the Bay and 240-290 animals using The Sisters haul-out (Moll, et al., 2017). As discussed in Chapter 3, the NMSDD (Navy, 2017a) models harbor and gray seals as a guild due to the difficulty in distinguishing these species at sea. Therefore, the maximum species density was determined to be appropriate for estimating takes of harbor seal. Based on density data for Narragansett Bay (Navy, 2017a), the maximum density of harbor seals for the largest harassment zone was determined to be 0.623/sq km (see Table 3-1). This density was used to estimate abundance of animals that could be present in the area for exposure, using the equation abundance = n * harassment zone.

Potential take resulting from in-water construction noise could involve harbor seals that are moving through the area on foraging trips or moving to area haul-out sites. It is estimated that there could up to of 55 Level A (PTS onset) and 1,477 Level B (Behavioral) takes during construction (Table 6-11). Level A (PTS onset) takes would occur during impact pile driving and DTH mono-hammer excavation. Monitoring would aid in minimizing Level A (PTS onset) takes. Level B (Behavioral) takes would primarily occur during vibratory pile driving/extracting and rotary drilling activities.

It should be noted that Level A (PTS onset) takes of harbor seals would likely be multiple exposures of the same individuals, rather than single exposures of unique individuals. This request overestimates the likely Level A (PTS onset) exposure because: (1) seals are unlikely to remain in the Level A (PTS onset) zone (i.e. shutdown zone) underwater long enough to accumulate sufficient exposure to noise resulting in PTS, and (2) the estimate assumes that new seals are in the Level A (PTS onset) harassment zone every day during in-water construction activities. Harbor seals that are taken could encounter permanent hearing loss and/or exhibit behavioral changes such as increased swimming speeds, increased surfacing time, or decreased foraging. Most likely, harbor seals may move away from the sound source and be temporarily displaced from waters near the construction areas. As discussed above, Level A (PTS onset) takes would be minimized due to implementation of monitoring and shutdown procedures. With the absence of any major rookeries and only one haul-out site (The Sisters) within the noise harassment zones, potential takes by harassment would have a negligible short-term effect on individual harbor seals and would not result in population-level impacts.

For concurrent scenarios, takes are provided in Table 6-15 for harbor seals. These calculated exposures assume simultaneous efforts would reduce the total number of production days needed thus any of these scenarios employed should be considered as an alternative take request separate from those presented in Table 6-11 for individual activities. All takes requested are Level B takes, except one Level A take is requested for the concurrent scenario that would occur at the Pier Fender Piles and Small Floating Dock structures.

Table 6-15 Harbor Seal Calculated Exposure Concurrent Equipment Use Scenario

Structure	*Concurrent Equipment Use Scenario*	*Level A Takes*	*Level B Takes*
Bulkhead	Vibratory Installation of 16-inch and 18-inch steel pipe piles and DTH of 18-inch steel pipe	0	31
Bulkhead and Trestle	Vibratory Installation/Extraction of 16-inch steel pipe and Vibratory Installation of sheet piles at the Bulkhead, and Vibratory Installation of 18-inch steel pipe piles at the Trestle	0	31
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of sheet piles at the Bulkhead, and Rotary Drilling of 18-inch steel pipe piles at the Trestle	0	29
Pier	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of 30-inch steel pipe piles at the Pier	0	159
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Rotary Drilling of 30-inch steel pipe piles at the Pier	0	143
Pier Fender Piles and Small Floating Dock	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Installation of 18-inch steel pipe piles at the Gangway for the Small Boat Floating Dock	0	90

	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Pile Installation and DTH of 36-inch Steel pipe piles at the Small Boat Floating Dock	1	106

6.13.5 Gray Seal

Based on stranding records, gray seals are seasonally present in Rhode Island with the largest populations occurring from February through June with a sharp peak in March and April. Gray seals are considered only occasional visitors to Narragansett Bay (Kenney, 2020). The NMSDD (Navy, 2017a) provides combined densities for harbor seal and gray seal (as discussed in Chapter 6.13.4 above). Therefore, the minimum species density was determined to be appropriate for determining takes of gray seal. Based on density data for Narragansett Bay (Navy, 2017a), the minimum density of gray seal for the largest harassment zone was determined to be 0.131/sq km (see Table 3-1). This density was used to determine abundance of animals that could be present in the area for exposure, using the equation: abundance = n * harassment zone.

There could be up to 11 Level A (PTS onset) takes and up to 312 Level B (Behavioral) takes of gray seals. Takes of gray seals are estimated should they move through the area on foraging trips or to an area haul-out site during in-water construction activities. In this case, the mean group size for gray seals (50) would not be conservative and as such the current estimates of take are requested (Table 6-11). Gray seals that are taken could encounter permanent hearing loss and/or exhibit behavioral changes such as increased swimming speeds, increased surfacing time, or decreased foraging. Most likely, gray seals may move away from the sound source and be temporarily displaced from waters near the construction areas. With the absence of any major rookeries and only one haul-out site (The Sisters) within the noise harassment zones, as well as the overall rare occurrence of this species in Narragansett Bay, potential takes by harassment would have negligible short-term effects on individual gray seals and would not result in population-level impacts.

For concurrent scenarios, takes are provided in Table 6-16 for gray seal. These calculated exposures assume simultaneous efforts would reduce the total number of production days needed thus any of these scenarios employed should be considered as an alternative take request separate from those presented in Table 6-11 for individual activities. No Level A Takes are requested for these scenarios.

Table 6-16 Gray Seal Calculated Exposure Concurrent Equipment Use Scenario

Structure	*Concurrent Equipment Use Scenario*	*Level A Takes*	*Level B Takes*
Bulkhead	Vibratory Installation of 16-inch and 18-inch steel pipe piles and DTH of 18-inch steel pipe	0	7
Bulkhead and Trestle	Vibratory Installation/Extraction of 16-inch steel pipe and Vibratory Installation of sheet piles at the Bulkhead, and Vibratory Installation of 18-inch steel pipe piles at the Trestle	0	7
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of sheet piles at the Bulkhead, and Rotary Drilling of 18-inch steel pipe piles at the Trestle	0	6
Pier	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of 30-inch steel pipe piles at the Pier	0	34
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Rotary Drilling of 30-inch steel pipe piles at the Pier	0	30
Pier Fender Piles and Small Floating Dock	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Installation of 18-inch steel pipe piles at the Gangway for the Small Boat Floating Dock	0	19
	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Pile Installation of 36-inch Steel pipe piles at the Small Boat Floating Dock	0	22

6.13.6 Harp Seal

Harp seals may be present in the project vicinity January through May. In general, harp seals are much rarer than the harbor seal and gray seal in Narragansett Bay and are considered only occasional visitors to the Bay (Kenney, 2015). Therefore, the minimum species density was determined to be appropriate for determining takes of harp seal. Based on density data for Narragansett Bay obtained from the NMSDD, the minimum density of harp seal for the largest harassment zone was determined to be 0.050/sq km (see Table 3-1). This density was used to determine abundance of animals that could be present in the area for exposure, using the equation abundance = n * harassment zone.

It was estimated that 4 Level A (PTS onset) takes and 117 Level B (Behavioral) takes could occur if harp seals are moving through the area on foraging trips or to area haul-out sites during in-water construction activities (Table 6-11). Harp seals that are taken could exhibit behavioral changes such as increased swimming speeds, increased surfacing time, or decreased foraging. Most likely, harp seals may move away from the sound source and be temporarily displaced from waters near the construction areas. With the absence of any major rookeries and only one haul-out site (The Sisters) within the noise harassment zones, as well as the overall rare occurrence of this species in Narragansett Bay, potential takes by harassment would have negligible short-term effects on individual harp seals and would not result in population-level impacts.

For concurrent scenarios, takes are provided in Table 6-17 for harp seals. These calculated exposures assume simultaneous efforts would reduce the total number of production days needed thus any of these scenarios employed should be considered as an alternative take request separate from those presented in Table 6-11 for individual activities. All takes requested are Level B Takes. No Level A Takes are requested for these scenarios.

Table 6-17 Harp Seal Calculated Exposure Concurrent Equipment Use Scenario

Structure	*Concurrent Equipment Use Scenario*	*Level A Takes*	*Level B Takes*
Bulkhead	Vibratory Installation of 16-inch and 18-inch steel pipe piles and DTH of 18-inch steel pipe	0	2
Bulkhead and Trestle	Vibratory Installation/Extraction of 16-inch steel pipe and Vibratory Installation of sheet piles at the Bulkhead, and Vibratory Installation of 18-inch steel pipe piles at the Trestle	0	2
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of sheet piles at the Bulkhead, and Rotary Drilling of 18-inch steel pipe piles at the Trestle	0	2
Pier	Vibratory Installation/Extraction of 16-inch steel pipe piles and Vibratory Installation of 30-inch steel pipe piles at the Pier	0	13
	Vibratory Installation/Extraction of 16-inch steel pipe piles and Rotary Drilling of 30-inch steel pipe piles at the Pier	0	12
Pier Fender Piles and Small Floating Dock	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Installation of 18-inch steel pipe piles at the Gangway for the Small Boat Floating Dock	0	7
	Vibratory Installation/Extraction of 16-inch steel pipe piles at the Pier Fender Piles and Vibratory Pile Installation and DTH of 36-inch Steel pipe piles at the Small Boat Floating Dock	0	9

6.13.7 Hooded Seal

Hooded seals may be present in the project vicinity from January through May, although their exact seasonal densities are unknown. In general, hooded seals are much rarer than the harbor seal and gray seal in Narragansett Bay and are considered only occasional visitors to the Bay (Kenney, 2005). Based on density data for Narragansett Bay obtained from the NMSDD, the average density of hooded seal for the largest harassment zone was determined to be 0.001/sq km (see Table 3-1). This density was used to estimate abundance of animals that could be present in the area for exposure, using the equation: abundance = n * harassment zone.

Hooded seals have the potential to occur but are considered the least likely seal to be present in Narragansett Bay. No Level A (PTS onset) or Level B (Behavioral) takes are anticipated. However, in order to guard against unauthorized take, NOAA and the Navy are requesting 1 Level B (Behavioral) take of hooded seal per month of construction when this species may occur (January through May) (Total of 5 Level B Takes) (Table 6-11). No Level A takes are requested for this species. Most likely, hooded seals may move away from the sound source and be temporarily displaced from waters near the construction areas. With the absence of any major rookeries and only one haul-out (The Sisters) within the noise harassment zones, as well as the overall rare occurrence of this species in Narragansett Bay, potential takes by harassment would have a negligible short-term effect on individual hooded seals and would not result in population-level impacts.

For concurrent scenarios presented for the other species in Tables 6-12 through 6-17, takes for hooded would also be at 5 Level B Takes and no Level A takes requested.

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7 IMPACTS ON MARINE MAMMAL SPECIES OR STOCKS

The anticipated impact of the activity upon the species or stock of marine mammals

7.1 Potential Effects of Pile Driving on Marine Mammals

The effects of underwater noise on marine mammals is dependent on several factors, including the species, size, and depth of the animal; the depth, intensity, and duration of the underwater construction sound; the depth of the water column; the substrate of the habitat; the distance between the sound source and the animal; and the sound propagation properties of the environment. Impacts on marine mammals from in-water construction activities are expected to result primarily from acoustic pathways. As such, the degree of effect is intrinsically related to the received level and duration of the sound exposure, which are in turn influenced by the distance between the animal and the source. The farther away from the source, the less intense the exposure should be. The substrate and depth of the habitat affect the sound propagation properties of the environment. Shallow environments are typically more structurally complex, which leads to rapid sound attenuation. In addition, substrates that are soft (e.g., sand) will absorb or attenuate the sound more readily than hard substrates (e.g., rock), which may reflect the acoustic wave. Soft, porous substrates will also likely require less time to drive the pile, and possibly less forceful equipment, which will ultimately decrease the intensity of the acoustic source (Dahl et al., 2015).

Potential impacts on marine species are expected to be the result of physiological responses to both the type and strength of the acoustic signature (Viada et al., 2008). Behavioral impacts may also occur, though the type and severity of these effects are more difficult to define due to limited studies addressing the behavioral effects of impulsive as well as non-impulsive sounds on marine mammals. Potential effects can range from brief acoustic effects such as behavioral disturbance, tactile perception, physical discomfort, slight injury of the internal organs and temporary to permanent impairment of the auditory system to death of the animal (Yelverton et al., 1973; O'Keefe and Young, 1984; Ketten, 1995; Dahl et al., 2015; Finneran 2015; Kastelein et al., 2016, 2018).

7.1.1 Physiological Responses

Direct tissue responses to impact/impulsive sound stimulation may range from mechanical vibration or compression with no resulting injury to tissue trauma (injury). Because the ears are the most sensitive organ to pressure, they are the organs most sensitive to injury (Ketten, 2000). Sound-related trauma can be lethal or sub-lethal. Lethal impacts are those that result in immediate death or serious debilitation in or near an intense source (Ketten, 1995). Sub-lethal damage to the ear from a pressure wave can rupture the tympanum, fracture the ossicles, damage the cochlea, cause hemorrhage, and leak cerebrospinal fluid into the middle ear (Ketten 2004). Sub-lethal impacts also include hearing loss, which is caused by exposure to perceptible sounds. Moderate injury implies partial hearing loss. Permanent hearing loss (also called PTS) can occur when the hair cells of the ear are damaged by a very loud event, as well as prolonged exposure to noise.

Instances of TTS and/or auditory fatigue are well documented in marine mammal literature as being one of the primary avenues of acoustic impact. TTS has been documented in controlled settings using captive marine mammals exposed to strong SELs at various frequencies (Ridgway et al., 1997; Kastak et al., 1999; Finneran et al., 2005; Finneran 2015). While injuries to other sensitive organs are possible, they are less likely since pile driving impacts are almost entirely acoustically mediated. Based on the site-specific occurrence information presented in Chapter 4.4.3, harbor seals are likely to be present as they are common in the area. Harbor porpoise may also be present as they have been observed transiting the area. Gray, hooded and harp seals have not been observed in the proposed project area and, therefore, are less likely to be present. Auditory effects could be experienced by individual seals in the project area but are not expected to cause population-level impacts or affect the continued survival of the species.

7.1.2 Behavioral Responses

Behavioral responses to sound are highly variable and context specific. For each potential behavioral change, the magnitude of the change ultimately determines the severity of the response. A number of factors may influence an animal's response to noise, including its previous experience, its auditory sensitivity, its biological and social status (including age and sex), and its behavioral state and activity at the time of exposure. Habituation occurs when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok et al., 2004). Animals are most likely to habituate to sounds that are predictable and unvarying. The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure. Behavioral state or differences in individual tolerance levels may affect the type of response as well. For example, animals that are resting may show greater behavioral change in response to disturbing noise levels than animals that are highly motivated to remain in an area for feeding (Richardson et al., 1995; National Research Council, 2003; Wartzok et al., 2004). Indicators of disturbance may include sudden changes in the animal's behavior or avoidance of the affected area. A marine mammal may show signs that it is startled by the noise and/or it may swim away from the sound source and avoid the area. Increased swimming speed, increased surfacing time, and cessation of foraging in the affected area would indicate disturbance or discomfort. Pinnipeds may increase their haul-out time, possibly to avoid in-water disturbance.

Controlled experiments with captive marine mammals showed pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway et al., 1997; Finneran et al., 2003). Observed responses of wild marine mammals to loud pulsed sound sources (typically seismic guns or acoustic harassment devices, and also including pile driving) have been varied but often consist of avoidance behavior or other behavioral changes suggesting discomfort (Morton and Symonds, 2002; also see reviews in Gordon et al., 2004; Wartzok et al., 2004; and Nowacek et al., 2007). Some studies of acoustic harassment and acoustic deterrence devices have found habituation in resident populations of seals and harbor porpoises (see review in Southall et al., 2007). Blackwell et al. (2004) found that ringed seals exposed to underwater pile driving sounds in the 153 to 160 dB RMS range tolerated this noise level and did not seem unwilling to dive. One individual was as close as 207 feet (63 meters) from the pile driving. Responses of two pinniped species to impact pile driving at the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project were mixed (California Department of Transportation [Caltrans], 2001; 2006; 2010). Harbor seals were observed in the water at distances of approximately 1,300 to 1,650 feet (400 to 500 m) from the pile driving activity. The observed harbor seals exhibited no alarm responses, although several showed alert reactions, and none of the seals appeared to remain in the area. One of these harbor seals was even seen to swim to within 492 feet (150 m) of the pile driving barge during pile driving.

Studies of marine mammal responses to continuous noise, such as vibratory pile installation, are limited. Marine mammal monitoring at the Port of Anchorage marine terminal redevelopment project found no response by marine mammals swimming within the threshold distances to noise impacts from construction activities including pile driving (both impact hammer and vibratory driving) (Integrated Concepts & Research Corporation, 2009). Most marine mammals observed during the two lengthy construction periods (i.e., beluga whales, harbor seals, harbor porpoises, and Steller sea lions) were observed in smaller numbers. Background noise levels at this port are typically at 125 dB.

A comprehensive review of acoustic and behavioral responses to noise exposure by Nowacek et al. (2007) concluded that one of the most common behavioral responses is displacement. To assess the significance of displacement, it is necessary to know the areas to which the animals relocate, the quality of that habitat, and the duration of the displacement in the event that they return to the pre-disturbance area. Short-term displacement may not be of great concern unless the disturbance happens repeatedly. Similarly, long-term displacement may not be of concern if adequate replacement habitat is available.

Marine mammals encountering noise-producing activities during the in-water construction period will likely avoid affected areas where they experience noise-related discomfort, limiting their ability to forage or rest there. As described in the section above, individual responses to noise are expected to be variable: some individuals may occupy the project area during noise-generating activities without apparent discomfort, but others may be displaced with undetermined long-term effects. For example, harbor seals have been observed to temporarily avoid areas within 15 mi of active pile driving starting from predicted received levels of between 166 and 178 dB re 1 µPa (Russell et al., 2016). Avoidance of the affected area during in-water construction will reduce the likelihood of injury impacts and seals have not been observed foraging in and around the project area. Noise-related disturbance may also inhibit some marine mammals from transiting the area. Given the duration of the in-water construction period, there is a potential for displacement of marine mammals from the affected area due to these behavioral disturbances during the in-water construction period. However, habituation over time may occur, along with a decrease in the severity of responses. In addition, since impulse noise-generating activities (pile driving and DTH excavation) will only occur during daylight hours, marine mammals transiting the proposed project area or foraging or resting in the proposed project area at night will not be affected. Effects of noise-generating activities will be experienced by individual marine mammals but are not expected to cause population-level impacts or affect the continued survival of the species.

7.2 Conclusions Regarding Impacts on Species or Stocks

Individual marine mammals may be exposed to increased SPLs during in-water construction activities, which may result in Level B (Behavioral) harassment to all marine mammals and Level A (PTS onset) harassment for harbor porpoises, harbor seals, gray seals, and harp seals. Any marine mammals that are exposed (harassed) may change their normal behavior patterns (e.g., swimming speed, foraging habits, etc.) or be temporarily displaced from the area of construction. Any exposures to Level B (Behavioral) harassment will likely have only a minor effect on individuals and no effect on the population. For seal species, exposure to Level A (PTS onset) harassment during impulsive noise-producing activities (i.e., impact pile driving, DTH excavation) could result in a permanent change in hearing thresholds. To avoid permanent impacts to seal hearing, a shutdown zone would be implemented that encompasses as much of the Level A (PTS onset) zone as practicable (See Table 5-2). The sound generated from vibratory pile driving/extracting and rotary drilling would not result in injury to marine mammals because the areas where injury could potentially occur (i.e. shutdown zone) are small and would be fully monitored. In-water construction activities would stop if marine mammals approach the shutdown zones. The take numbers requested in this application do not take mitigation measures into account and are therefore, a conservative estimate. Mitigation is expected to avoid most potential adverse underwater impacts to marine mammals from impulsive noise sources. Nevertheless, some exposure would be unavoidable. The expected level of unavoidable AND unmitigated exposure (defined as acoustic harassment) is presented in Chapter 6. This level of effect is not anticipated to have any adverse impact to population recruitment, survival, or recovery.

8 IMPACTS ON SUBSISTENCE USE

The anticipated impact of the activity on the availability of the species or stock of marine mammals for subsistence uses.

This Chapter is not applicable. The project is within the Coddington Cove portion of Narragansett Bay in Rhode Island. No traditional subsistence hunting areas are within the region. No traditional subsistence hunting areas are within the region.

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9 IMPACTS ON MARINE MAMMAL HABITAT AND THE LIKELIHOOD OF RESTORATION

The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat.

Impacts to habitat will be temporary and include increased human activity and noise levels and localized, minor impacts to water quality near the individual project sites. Impacts would not result in permanent impacts to habitats used directly by marine mammals.

9.1 Effects from Human Activity and Noise

Existing human activity and underwater noise levels, primarily due to industrial activity and vessel traffic, could increase above baseline temporarily during in-water construction.

Marine mammals in proposed project and surrounding areas encounter vessel traffic associated with both Navy/NOAA and non-Navy/NOAA activities. Behavioral changes in response to vessel presence include avoidance reactions, alarm/startle responses, temporary abandonment of haul-outs by pinnipeds, and other behavioral and stress-related changes (such as altered swimming speed, direction of travel, resting behavior, vocalizations, diving activity, and respiration rate) (Watkins, 1986; Würsig et al., 1998; Terhune and Verboom, 1999; Ng and Leung, 2003; Foote et al., 2004; Bejder et al., 2006; Nowacek et al., 2007). Some dolphin species approach vessels and are observed bow riding or jumping in the wake of vessels (Norris and Prescott, 1961; Shane et al., 1986; Würsig et al., 1998; Ritter, 2002). In other cases, neutral behavior (i.e., no obvious avoidance or attraction) has been reported (review in Nowacek et al., 2007). Little is known about the biological importance of changes in marine mammal behavior under prolonged or repeated exposure to high levels of vessel traffic, such as increased energetic expenditure or chronic stress, which can produce adverse hormonal or nervous system effects (Reeder and Kramer, 2005).

During in-water construction/demolition activities, additional vessels may operate in the proposed project area, but would operate at low speeds within the relatively limited construction zone and access route during the in-water construction period. The presence of vessels would be temporary and occur at current Navy and United States Coast Guard facilities that have some level of existing vessel traffic. Therefore, effects are expected to be limited to short-term behavioral changes and are not expected to rise to the level of take or harassment as defined under the MMPA.

Additional noise could be generated by barge-mounted equipment, such as cranes and generators, but this noise will typically not exceed existing underwater noise levels resulting from existing routine waterfront operations. While the increase may change the quality of the habitat, it is not expected to exceed the Level A (PTS onset) harassment or Level B (Behavioral) harassment thresholds, and impacts to marine mammals from these noise sources is expected to be negligible.

9.2 In-water Construction Effects on Potential Foraging Habitat

Temporary and localized reduction in water quality would occur as a result of in-water construction activities. Most of this effect would occur during the installation of piles when bottom and intertidal sediments are disturbed. Turbidity and sedimentation effects are expected to be short-term, minor, and localized. Resuspended sediments in Coddington Cove are expected to remain in Coddington Cove due to the circular nature of the currents with ambient conditions returning a few hours after the completion of construction activity, whereas resuspended sediments in Narragansett Bay are anticipated to disperse quickly in the Bay currents. Following the completion of sediment-disturbing activities, the turbidity levels are expected to return to normal ambient levels following the end of construction. Turbidity within the water column has the potential to reduce the level of oxygen in the water and irritate the gills of prey fish species in the proposed project area. However, fish in the proposed project area would be able to move away from and avoid the areas where increase turbidity may occur. Therefore, it is expected that the impacts on prey fish species from turbidity, and therefore on marine mammals, would be minimal and temporary. In general, the area likely impacted by the project is relatively small compared to the available habitat in Narragansett Bay. As a result, activity at the project site would be inconsequential in terms of its effects on marine mammal foraging.

9.3 Underwater Noise Impacts on Fish

The greatest potential impact to fish during construction would occur during impact pile driving when pile driving noise would exceed the established underwater noise injury and behavioral (TTS) thresholds for fish. However, the duration of impact pile driving would be limited to the final stage of installation after the pile has been driven as close as practicable to the design depth with a vibratory driver.

Fishes are vulnerable to tissue damage and hearing loss from impact pile driving activities, but studies evaluating how fish detect particle motion components of sound indicate that exposure levels associated with vibratory or continuous sound do not produce tissue damage (Hastings, 2014; Hawkins and Popper 2018a, b). Results of studies on various stress parameters and behavioral responses in fish are highly variable. All studies, including those for long- and short-term exposure, were conducted on captive fish in enclosed areas where fish could not avoid the sounds. It is possible that it was not necessarily the sound itself that resulted in the stress response, but rather the inability for the fish to move away from the disturbing sound.

Research has shown that stress from noise is greater as a result of intermittent sounds than for vibratory and continuous sounds (Popper et al., 2019). Vibratory pile driving would possibly elicit behavioral reactions from fish such as temporary avoidance of the area but is unlikely to cause injuries to fish or have persistent effects on local fish populations. In addition, the project area is located in a bay with various coves and inlets that is subject to marine traffic from recreational boaters and commercial shipping, and thus fish are consistently exposed to continuous noise sources from vessel noise and other anthropogenic noise from adjacent facilities. In general, impacts on marine mammal prey species are expected to be minor and temporary.

Therefore, adverse effects to the marine mammal prey base would be insignificant and would not rise to the level of MMPA take.

9.4 Summary of Impacts on Marine Mammal Habitat

All marine mammal species using habitat near the proposed project area are primarily transiting the area; no known foraging or haul-out areas are located within one-half mile of the proposed project area. The most likely impacts on marine mammal habitat from the Proposed Action are from underwater noise, turbidity, and potential effects on the food supply. However, it is not expected that any of these impacts would be significant.

Construction may have impacts on benthic invertebrate species, another marine mammal prey source. Direct benthic habitat loss would result with the permanent loss of approximately 3,360 square feet of benthic habitat from bulkhead repair and pile installation and extraction. However, the areas to be permanently removed are within the Former Derecktor Shipyard offshore Environmental Restoration site along NAVSTA Newport's industrial waterfront. Habitat quality in this area is generally low and has been previously disturbed as part of offshore remediation activities. Therefore, impacts of the project are not likely to have adverse effects on marine mammal foraging habitat in the proposed project area.

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10 IMPACTS ON MARINE MAMMALS FROM LOSS OR MODIFICATION OF HABITAT

The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

The proposed activities would result in the loss of approximately 3,360 square feet of nearshore benthic habitat, but as discussed in section 9.2, these areas are previously disturbed and of low quality and would not significantly impact available prey for marine mammals. The most important impacts on marine fish species consumed by marine mammals would result from potential injury and behavioral disturbance to fish species during pile driving. Information provided in Chapter 9 indicates there may be temporary impacts, but those impacts would be short-term, and construction noise would cease upon the completion of in-water construction activities.

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11 MEANS OF EFFECTING THE LEAST PRACTICABLE ADVERSE IMPACTS – STANDARD OPERATING PROCEDURES AND MITIGATION MEASURES

The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.

NOAA and the Navy would employ the minimization measures listed in this chapter to avoid and minimize impacts on marine mammals, their habitats, and forage species. Best management practices (BMPs) and minimization measures are included in the construction contract plans and must be agreed upon by the contractor prior to any construction activities.

11.1 General Construction Best Management Practices

The construction contractor will be responsible for preparation of an environmental protection plan. The plan will be submitted and implemented prior to the commencement of any construction activities and is a binding component of the overall contract. The plan will identify construction elements and recognize spill sources at the site. The plan will outline BMPs, responsive actions in the event of a spill or release, and notification and reporting procedures. The plan will also outline contractor management elements such as personnel responsibilities, project site security, site inspections, and training. BMPs include:

- No petroleum products, chemicals, or other toxic or harmful materials shall be allowed to enter surface waters.
- Wash water resulting from washdown of equipment or work areas shall be contained for proper disposal and shall not be discharged unless authorized.
- Equipment that enters surface waters shall be maintained to prevent any visible sheen from petroleum products.
- No oil, fuels, or chemicals shall be discharged to surface waters or onto land where there is a potential for re-entry into surface waters to occur. Fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc. shall be checked regularly for leaks. Materials will be maintained and stored properly to prevent spills.
- No cleaning solvents or chemicals used for tools or equipment cleaning shall be discharged to ground or surface waters.
- Any floating debris generated during installation will be retrieved. Any debris in a containment boom will be removed by the end of the workday or when the boom is removed, whichever occurs first. Retrieved debris will be disposed of at an upland disposal site.

11.2 Minimization Measures for Marine Mammals

The following minimization measures will be implemented during in-water construction to reduce exposure to Level A (PTS onset) harassment and Level B (Behavioral) harassment and avoid non-auditory injury.

11.2.1 Coordination

NOAA and the Navy shall conduct briefings between construction supervisors and crews, the marine mammal monitoring team, NOAA and Navy staff prior to the start of all pile driving activities and when new personnel join the work. These briefings would explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

11.2.2 Acoustic Minimization Measures

Vibratory pile installation will be used to the extent possible to minimize high SPLs associated with impact pile driving.

11.2.3 Soft-Start

The objective of a soft-start is to provide a warning and/or give animals in proximity to impact pile driving a chance to leave the area prior to an impact driver operating at full capacity, thereby exposing fewer animals to loud underwater and airborne sounds.

- A soft-start procedure will be used for impact pile driving at the beginning of each day's in-water pile driving or any time pile driving has ceased for more than 30 minutes.
- The contractor will provide an initial set of strikes from the impact hammer at reduced energy, followed by a 30-sec waiting period, then two subsequent sets. (The reduced energy of an individual hammer cannot be quantified because it varies by individual drivers. Also, the number of strikes will vary at reduced energy because raising the hammer at less than full power and then releasing it results in the hammer "bouncing" as it strikes the pile, resulting in multiple "strikes.")

11.2.4 Visual Monitoring and Shutdown Procedures

A Marine Mammal Monitoring Plan will be submitted to NMFS for approval prior to commencement of project activities. The plan will incorporate all monitoring and mitigation measures and reporting requirements of the application and subsequent authorization. The purpose of the plan is for the contractor to prepare a comprehensive document containing all requirements and ensures they understand all requirements. At a minimum, the plan will include the following:

- For all in-water construction activities Level A (PTS onset) and Level B (Behavioral) harassment zones will be visually monitored (Table 11-1) with implementation of shutdown zones to avoid injury (see Table 5-2).

Table 11-1 Marine Mammal Level A (PTS Onset) and Level B (Behavioral) Harassment Zones for Monitoring

Pile type, Size, and Driving method, Location	*Level A (PTS Onset) Shutdown Zone*		*Level B (Behavioral)*
	Porpoise and Dolphin	**Seals**	**All Marine Mammals**
Vibratory Extract 12-inch steel pipe piles	10 meters	10 meters	2,600 meters
Vibratory Extract 12-inch timber pile	15 meters	10 meters	1,400 meters
Vibratory Install/Extract 16-inch steel pipe	20 meters	10 meters	6,400 meters
Impact Install 18-inch steel pipe piles	200 meters[1]	200 meters	640 meters
Vibratory Install 18-inch steel pipe piles	30 meters	15 meters	6,400 meters
Mono-hammer DTH 18-inch steel	200 meters[1]	200[1] meters	Maximum harassment zone[2]
Rotary drilling 18-inch holes	10 meters	10 meters	1,900 meters
Vibratory Install Z26-700 steel sheets	15 meters	10 meters	2,600 meters
Impact Install 30-inch steel pipe piles	200 meters[1]	200[1] meters	2,600 meters
Vibratory Install 30-inch steel pipe piles	55 meters	25 meters	Maximum harassment zone[2]
Rotary Drill for 30-inch steel	10 meters	10 meters	1,900 meters
Impact Install 36-inch steel pipe piles	200 meters[1]	200[1] meters	3,400 meters
Vibratory Install 36-inch steel pipe piles	90 meters	40 meters	Maximum harassment zone[2]
Mono-hammer DTH 36-inch shafts	200 meters[1]	200[1] meters	Maximum harassment zone[2]

1. Distance similar to shutdown zone distances implemented for other projects in the region (NMFS, 2022b)
2. Harassment zone will be truncated due to the presence of intersecting land masses and would encompass a maximum area of 3.31 sq km.

- To prevent injury from physical interaction with construction equipment, a shutdown zone of 33 feet or 10 meters will be implemented during all in-water construction activities having the potential to affect marine mammals to ensure marine mammals are not present within this zone and to protect marine mammals from collisions with project vessels during pile driving and other construction activities. These activities could include but are not limited to barge positioning, drilling, or pile driving. For some sound-generating activities, the potential for Level A (PTS onset) harassment by acoustic injury extends less than 10 meters from the source, and for these activities, the shutdown zone automatically mitigates/minimizes Level A (PTS onset) harassment (see Table 11-1).
- If a marine mammal species for which incidental take has not been authorized is seen approaching or entering the Level A (PTS onset) shutdown zone or the Level B (Behavioral) disturbance zone during pile driving, the noise-producing activity will cease. If such circumstances recur, NOAA and the Navy will consult with NMFS concerning the potential need for an additional take authorization.
- In-water construction activities will cease if any marine mammal is detected in the Level A (PTS onset) shutdown zone. If a marine mammal is observed in the Level B (Behavioral) disturbance zone, but not approaching or entering the Level A (PTS onset) shutdown zone, a “take” will be recorded, and the work will be allowed to proceed without cessation. Its behavior will be monitored and documented.

- In the event of a shutdown, in-water construction will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the Level A (PTS onset) shutdown zone or 30 minutes have elapsed without re-detection of the animal.
- Visual monitoring will take place from 30 minutes prior to initiation through 30 minutes post-completion of pile driving/drilling. Prior to the start of pile driving/drilling, the Level A (PTS onset) shutdown zone and Level B (Behavioral) disturbance zone will be monitored for 30 minutes to ensure that the zones are clear of marine mammals. Pile driving/drilling will only commence once observers have declared the Level A (PTS onset) shutdown zone clear of marine mammals.
- Visual monitoring will be conducted by Protected Species Observers (PSOs) with training in marine mammal detection and the ability to describe relevant behaviors that may occur in proximity to in-water construction activities.
- Visual monitoring will be conducted by, at a minimum, a two-person PSO team designated by the construction contractor. Given the configuration of the harassment zones, it is assumed that two to three PSOs would be sufficient to monitor the harassment zones given the abundance of suitable vantage points. However, additional PSOs may be added if warranted by site conditions and/or the level of marine mammal activity in the area. PSOs will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for a shutdown to the pile driver operator. Potential PSO observation points are shown in Figure 11-1.
- The PSOs shall have no other construction-related tasks while conducting monitoring.
- If the Level A (PTS onset) shutdown zone is obscured by fog or poor lighting conditions, pile driving will not be initiated until the entire Level A (PTS onset) shutdown zone is visible.

11.2.5 Acoustic Measurements.

During in-water construction activities, acoustic measurements will be obtained and will be used to empirically adjust the Level A (PTS onset) shutdown and Level B (Behavioral) disturbance zones, subject to review from NMFS. For further detail regarding acoustic monitoring, see Chapter 13.2.

11.2.6 Mitigation Effectiveness

As identified in Chapter 11.2.4, all PSOs utilized for mitigation activities will have received training in marine mammal detection and behavior. Due to their specialized training, NOAA and the Navy expect that visual mitigation will be highly effective. PSOs have specific knowledge of marine mammal physiology, behavior, and life history that may improve their ability to detect individuals or help determine whether observed animals are exhibiting behavioral reactions to construction activities.

Visual detection conditions in the proposed project area are generally excellent. Located in Narragansett Bay, the harassment zones are sheltered from large swells. PSOs will be positioned in locations that provide the best vantage point(s) for monitoring, such as on nearby breakwaters, Gould Island, Coddington Point, or Taylor Point (Figure 11-1). A minimum of 2 PSOs shall be posted during pile driving/drilling. Any activity that would result in threshold exceedance at or more than 1,900 meters would require a minimum of three PSOs to effectively monitor the entire harassment zone. As such, proposed mitigation measures are likely to be very effective.

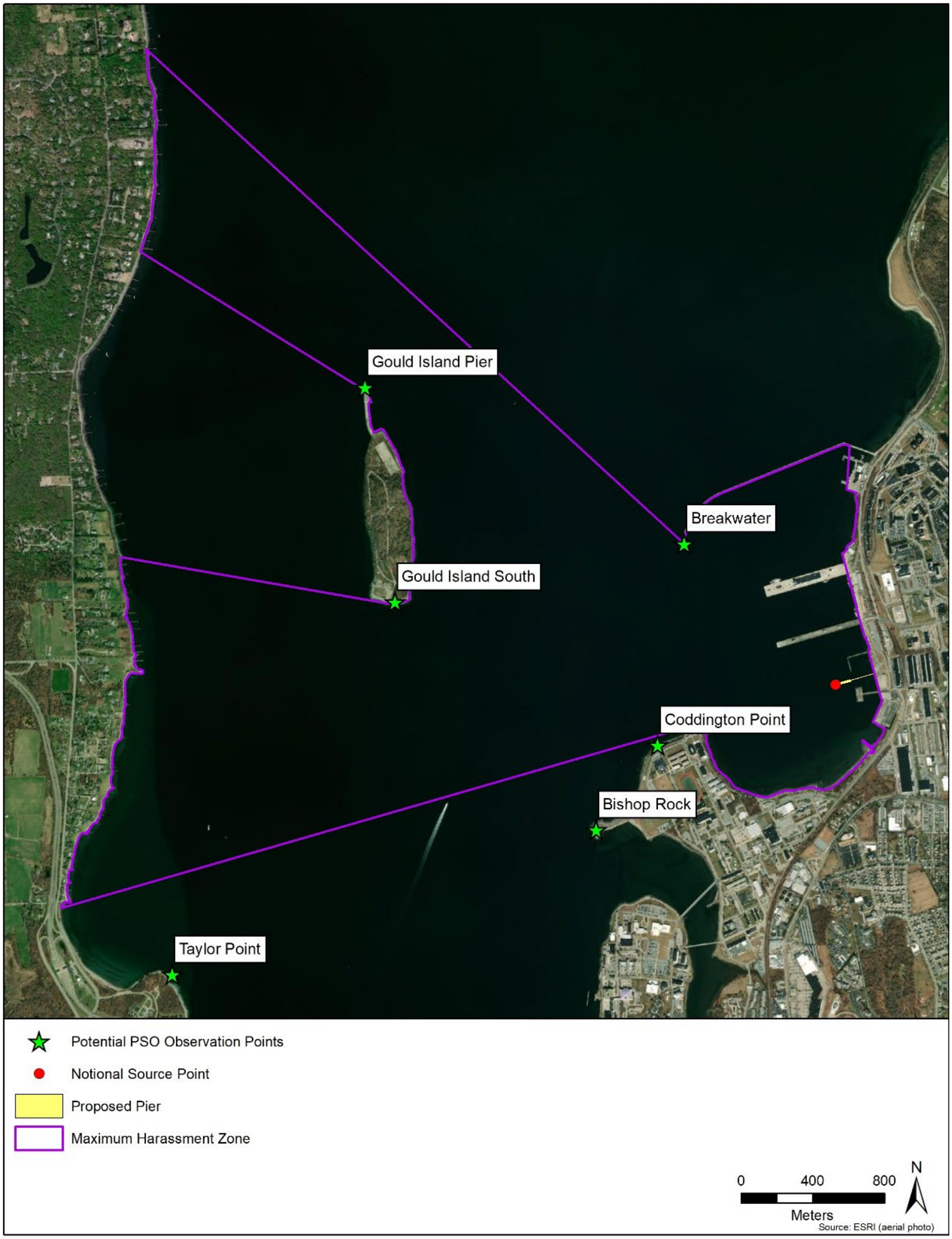

Figure 11-1 Potential Protected Species Observer Vantage Points

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12 ARCTIC PLAN OF COOPERATION

Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a plan of cooperation or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. A plan must include the following:

(i) A statement that the applicant has notified and provided the affected subsistence community with a draft plan of cooperation;

(ii) A schedule for meeting with the affected subsistence communities to discuss proposed activities and to resolve potential conflicts regarding any aspects of either the operation or the plan of cooperation;

(iii) A description of what measures the applicant has taken an/or will take to ensure that proposed activities will not interfere with subsistence whaling or sealing; and

(iv) What plans the applicant has to continue to meet with the affected communities, both prior to and while conducting activity, to resolve conflicts and to notify the communities of any changes in the operation.

This section is not applicable. There is no subsistence use of marine mammal species or stocks in the proposed project area.

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13 MONITORING AND REPORTING EFFORTS

The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding.

NOAA intends to complete marine mammal and acoustic monitoring of the proposed project area in order to provide a more robust assessment of sound levels from pile driving and marine mammal responses, and to refine avoidance and minimization measures as warranted by the results. A Marine Mammal Monitoring Plan will be developed further and submitted to NMFS for approval in advance of the start of construction of the IHA period.

The following monitoring measures would be implemented along with the mitigation measures (Chapter 11) to reduce impacts to marine mammals to the lowest extent practicable during the period of this IHA.

13.1 Marine Mammal Monitoring Plan

A Marine Mammal Monitoring Plan will be prepared and submitted to NMFS for approval well in advance of the start of construction of the IHA period. Visual monitoring of the Level A (PTS onset) shutdown and Level B (Behavioral) disturbance zone would occur for 100 percent of pile driving. If a marine mammal is observed entering the Level B (Behavioral) disturbance zone, an exposure would be recorded and behaviors documented.

13.1.1 Methods of Monitoring

NOAA and the Navy will monitor the shutdown, Level A (PTS onset), and Level B (Behavioral) disturbance zones before, during, and after pile driving activities. Based on NMFS requirements, the Marine Mammal Monitoring Plan would include the following procedures:

- PSOs will be located on land, land-based features such as docks, piers, or bridges, or small craft vessels in order to properly see the entire shutdown zone(s);
- The number of PSOs would vary from two to three depending on the size of the zone associated with the type of noise-generating activity occurring; site conditions, and the level of marine mammal activity;
- PSOs will be located at the best vantage point(s) to observe the zone associated with behavioral impact thresholds;
- During all observation periods, observers will use binoculars and the naked eye to search continuously for marine mammals;
- Monitoring distances will be measured with range finders;
- Distances to animals will be based on the best estimate of the PSO, relative to known distances to objects in the vicinity of the PSO;
- Bearing to animals will be determined using a compass;

- A census of pinniped species hauled out in the vicinity of pile driving encompassing the Level B (Behavioral) harassment zones will be performed;
- In-water activities will be curtailed under conditions of fog or poor visibility that might obscure the presence of a marine mammal within the shutdown or Level A (PTS onset) zone;
- Pre-Activity Monitoring:
    - The shutdown, Level A (PTS onset), and Level B (Behavioral) disturbance zones will be monitored for 30 minutes prior to in-water construction/demolition activities. If a marine mammal is present within the shutdown or Level A (PTS onset) zone, the activity will be delayed until the animal(s) leave the shutdown or Level A (PTS onset) zone. Activity will resume only after the PSO has determined that, through sighting or by waiting approximately 30 minutes, the animal has moved outside the shutdown or Level A (PTS onset) zone. If a marine mammal is observed approaching the shutdown or Level A (PTS onset) zone, the PSO who sighted that animal will notify the shutdown and Level A (PTS onset) zone PSO(s) of its presence.
- During Activity Monitoring:
    - If a marine mammal is observed entering the Level A (PTS onset) and Level B (Behavioral) disturbance zone, that activity will be completed without cessation, unless the animal enters or approaches the shutdown zone, at which point all activities will be halted. If an animal is observed within the shutdown zone during in-water construction, the activity will be stopped as soon as it is safe to do so. In-water construction can only resume once the animal has left the shutdown zone of its own volition or has not been re-sighted for a period of 15 minutes.
- Post-Activity Monitoring:
    - Monitoring of the shutdown, Level A (PTS onset), and Level B (Behavioral) disturbance zones will continue for 30 minutes following the completion of the activity.

13.1.2 Data Collection

PSOs must use previously approved sighting forms included in Appendix B. The marine mammal report must contain the informational elements described in the Marine Mammal Monitoring Plan, including but not limited to:

- Dates and times (begin and end) of all marine mammal monitoring.
- Construction activities occurring during each daily observation period, including how many and what types of piles were driven and by what method (i.e., impact or vibratory).
- Weather parameters and water conditions during each monitoring period (e.g., wind speed, percent cover, visibility, sea state).
- Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving); and for DTH excavation, duration of operation for both impulsive and non-pulse components.
- For DTH mono-hammers and cluster drills, duration of operation and the strike rate for impulsive components.
- Species (genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, numbers, group composition (if there is a mix of species), and, if possible, sex and age class of marine mammals.
- Time of sighting, PSO location during monitoring and at time of sighting (if different), and construction activity at time of sighting.

- Distance and location of each observed marine mammal relative to the in-water construction activities for each sighting and activity occurring at time of sighting.
- Estimated number of animals (minimum/maximum/best estimate).
- Estimated number of animals by cohort (adults/juveniles).
- Animal's closest point of approach and estimated time spent within the harassment zones.
- Description of any marine mammal behavioral observations (e.g., observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (e.g., no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching).
- Distances and bearings of each marine mammal observed to the in-water construction activity for each sighting (if activities were occurring at time of sighting).
- Estimated time span from when a marine mammal is observed approaching the Level A (PTS Onset) zone and when construction activity is shutdown, as well as, the estimated amount of time the marine mammal spends in the Level A (PTS Onset) zone during shutdown and estimated amount of time that a marine mammal spends within the Level B (Behavioral) harassment zones while construction activities are underway (see Section 11.2.4).
- Description of any marine mammal behavior patterns observed, including direction of travel and estimated time spent within the Level A (PTS Onset) and Level B (Behavioral) harassment zones while the source was active.
- Number of individuals of each species (differentiated by month as appropriate) detected within the harassment zone and estimates of number of marine mammals taken by species (a correction factor may be applied to total take numbers, as appropriate).
- Detailed information about any implementation of any mitigation triggered (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any.
- Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such ability to track groups or individuals.
- In some cases, the Level A (PTS Onset) harassment zone is larger than the Level B (Behavioral) harassment zone. An extrapolation of estimated takes by Level A or Level B harassment (depending on which zone is larger) will be based on the number of observed exposures within the Level A (PTS Onset) or Level B (Behavioral) harassment zones and the percentage of the Level A (PTS Onset) or Level B (Behavioral) harassment zones that were not visible.
- Submit all PSO datasheets and/or raw sighting data (in a separate file from the final report referenced above).

13.2 Hydroacoustic Monitoring Plan

NOAA will implement in situ acoustic monitoring efforts to measure SPLs from in-water construction activities. NOAA will collect and evaluate acoustic sound recording levels during in-water construction activities. Hydrophones would be placed at locations 33 feet from the noise source and, where the potential for Level A (PTS onset) harassment exists, at a second representative monitoring location at an intermediate distance between the cetacean and phocid shutdown and Level A (PTS onset) zones. For the pile driving, rotary drilling, and DTH excavation events acoustically measured, 100 percent of the data will be analyzed.

At a minimum, the methodology includes:

- For underwater recordings, a stationary hydrophone system with the ability to measure SPLs will be placed in accordance with NMFS most recent guidance for the collection of source levels.
- Hydroacoustic monitoring will be successfully conducted for at least 10 percent and up to 10 of each different type of pile and each method of installation (Table 13-1). Monitoring will occur at 33 feet from the noise; at a location intermediate of the pinniped and cetacean Level A (PTS onset) zones; and occasionally near the predicted harassment zones for Level B (Behavioral) harassment. The resulting data set will be analyzed to examine and confirm SPLs and rates of transmission loss for each separate in-water construction activity. With NMFS concurrence, these metrics will be used to recalculate the limits of the shutdown, Level A (PTS onset), and Level B (Behavioral) disturbance zones, and to make corresponding adjustments in marine mammal monitoring of these zones. Hydrophones will be placed using a static line deployed from a stationary (temporarily moored) vessel. Locations of hydroacoustic recordings will be collected via GPS. A depth sounder and/or weighted tape measure will be used to determine the depth of the water. The hydrophone will be attached to a weighted nylon cord or chain to maintain a constant depth and distance from the pile area. The nylon cord or chain will be attached to a float or tied to a static line.

Table 13-1 Hydroacoustic Monitoring Summary

Pile type	*Count*	*Method of Install*	*Number Monitored*
30-inch steel pipe	120	Impact	10
30-inch steel pipe	120	Vibratory	10
36-inch steel pipe	2	Impact	2
36-inch steel pipe	2	Vibratory	2
18-inch steel	2	Impacts	2
Z26-700 sheet piles	40	Vibratory	10
16-inch steel pipe piles	201	Vibratory Install/Extract	10
12-inch steel pipe	3	Vibratory extract	3
36-inch shafts	2	Rotary drill	2
36-inch shafts	2	DTH drill	2

- Each hydrophone (underwater) will be calibrated at the start of each action and will be checked frequently to the applicable standards of the hydrophone manufacturer.
- Environmental data would be collected, including but not limited to, the following: wind speed and direction, air temperature, humidity, surface water temperature, water depth, wave height, weather conditions, and other factors that could contribute to influencing the airborne and underwater sound levels (e.g., aircraft, boats, etc.).
- The chief inspector would supply the acoustics specialist with the substrate composition, hammer or drill model and size, hammer or drill energy settings and any changes to those settings during the piles being monitored, depth of the pile being driven or shaft excavated, and blows per foot for the piles monitored.
- For acoustically monitored piles and shafts, data from the monitoring locations will be post-processed to obtain the following sound measures:
    - Maximum peak pressure level recorded for all the strikes associated with each pile or shaft, expressed in dB re 1 µPa. For pile driving and DTH excavation, this maximum value

will originate from the phase of pile driving/drilling during which hammer/drill energy was also at maximum (referred to as Level 4).

- From all the strikes associated with each pile occurring during the Level 4 phase these additional measures will be made:
  - mean, median, minimum, and maximum RMS pressure level in [dB re 1 µPa]
  - mean duration of a pile strike (based on the 90 percent energy criterion)
  - number of hammer strikes
  - mean, median, minimum, and maximum single strike SEL in [dB re μPa^2 s]
- Cumulative SEL as defined by the mean single strike SEL + $10*\log_{10}$ (number of hammer strikes) in [dB re μPa^2 s].
- Median integration time used to calculate SPL RMS.
- A frequency spectrum (pressure spectral density) in [dB re μPa^2 per Hertz {Hz}] based on the average of up to eight successive strikes with similar sound. Spectral resolution will be 1 Hz, and the spectrum will cover nominal range from 7 Hz to 20 kHz.
- Finally, the cumulative SEL will be computed from all the strikes associated with each pile occurring during all phases, i.e., soft-start, Level 1 to Level 4. This measure is defined as the sum of all single strike SEL values. The sum is taken of the antilog, with $\log_{10}$ taken of result to express in [dB re μPa^2 s].

13.3 Reporting

13.3.1 Marine Mammal Monitoring Report

A draft monitoring report will be submitted to NMFS within 60 days of the end of pile driving activities. The report will synthesize the data recorded during hydroacoustic and marine mammal monitoring and estimate the number of marine mammals that may have been harassed through the entire project. The results would be summarized in graphical form and include summary statistics and time histories of sound values based upon the data from the activities monitored for this IHA period. NMFS would provide comments within 30 days after receiving this report, and NOAA and the Navy would address the comments and submit revisions within 30 days of receipt. If no comment is received from NMFS within 30 days, the report would be considered final.

13.3.2 Reporting Requirements

13.3.2.1 Marine Mammals

The marine mammal report will contain the informational elements described in the Monitoring Plan and, at minimum, will include:

1. Dates and times (begin and end) of all marine mammal monitoring;
2. Construction activities occurring during each daily observation period, including:
   - The number and type of piles that were driven and the method (e.g., impact, vibratory, DTH, drilling);
   - Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving); and

- For DTH excavation, duration of operation for both impulsive and non-pulse components.

3. PSO locations during marine mammal monitoring;
4. Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
5. Upon observation of a marine mammal, the following information:
    - Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting;
    - Time of sighting;
    - Identification of the animal(s) (e.g., genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species;
    - Distance and location of each observed marine mammal relative to the pile being driven for each sighting;
    - Estimated number of animals (minimum/maximum/best estimate);
    - Estimated number of animals by cohort (adults, juveniles, neonates, group composition, etc.);
    - Animal's closest point of approach and estimated time spent within the harassment zone;
    - Description of any marine mammal behavioral observations (e.g., observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (e.g., no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);
6. Number of marine mammals detected within the harassment zones, by species; and
7. Detailed information about implementation of any mitigation (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.

NOAA and the Navy will submit all PSO datasheets and/or raw sighting data with the draft report.

13.3.2.2 Hydroacoustic Monitoring

The hydroacoustic monitoring report will contain the informational elements described in the Hydroacoustic Monitoring Plan and, at minimum, will include:

1. Hydrophone equipment and methods: recording device, sampling rate, distance (meter) from the pile where recordings were made; depth of water and recording device(s);
2. Type and size of pile being driven, substrate type, method of driving during recordings (e.g., hammer model and energy), and total pile driving duration;
3. Whether a sound attenuation device is used and, if so, a detailed description of the device used and the duration of its use per pile;

4. For impact pile driving and/or DTH excavation (DTH mono-hammer) (per pile): Number of strikes and strike rate; depth of substrate to penetrate; pulse duration and mean, median, and maximum sound levels (dB re: 1 µPa): root mean square sound pressure level (SPLrms); cumulative sound exposure level (SELcum), peak sound pressure level (SPLpeak), and single-strike sound exposure level (SELs-s);
5. For vibratory driving/removal and/or DTH excavation (DTH mono-hammer) (per pile): Duration of driving per pile; mean, median, and maximum sound levels (dB re: 1 µPa): root mean square sound pressure level (SPLrms), cumulative sound exposure level (SELcum) (and timeframe over which the sound is averaged); and
6. One-third octave band spectrum and power spectral density plot.
7. General Daily Site Conditions
    - Date and time of activities.
    - Water conditions (e.g., sea state, tidal state).
    - Weather conditions (e.g., percent cover, visibility).

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14 RESEARCH EFFORTS

Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.

NOAA and the Navy are two of the world's leading organizations in assessing the effects of human activities in the marine environment, including marine mammals. From 2004 through 2013, the Navy has funded over $240 million specifically for marine mammal research. Navy scientists work cooperatively with other government researchers and scientists (i.e. NOAA), universities, industry, and non-governmental conservation organizations in collecting, evaluating, and modeling information on marine resources. They also develop approaches to ensure that these resources are minimally impacted by existing and future NOAA and Navy activities.

From daily weather forecasts, severe storm warnings, and climate monitoring to fisheries management, coastal restoration and supporting marine commerce, NOAA's products and services support economic vitality and affect more than one-third of America's gross domestic product. NOAA's dedicated scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need when they need it.

NOAA's mission is the systematic study of the structure and behavior of the ocean, atmosphere, and related ecosystems; integration of research and analysis; observations and monitoring; and environmental modeling. NOAA science includes discoveries and ever new understanding of the oceans and atmosphere, and the application of this understanding to such issues as the causes and consequences of climate change, the physical dynamics of high-impact weather events, the dynamics of complex ecosystems and biodiversity, and the ability to model and predict the future states of these systems.

NOAA uses the knowledge gained from its research efforts to protect people and the environment, as the Agency exercises its direct authority to regulate and sustain marine fisheries and their ecosystems, protect endangered marine and anadromous species, protect and restore habitats and ecosystems, conserve marine sanctuaries and other protected places, respond to environmental emergencies, and aid in disaster recovery.

It is imperative that the Navy's research and development (R&D) efforts related to marine mammals are conducted in an open, transparent manner with validated study needs and requirements. The goal of the Navy's R&D program is to enable collection and publication of scientifically valid research as well as development of techniques and tools for Navy, academic, and commercial use. Historically, R&D programs are funded and developed by the Navy's Chief of Naval Operations Energy and Environmental Readiness and Office of Naval Research, Code 322 Marine Mammals and Biological Oceanography Program. Primary focus of these programs since the 1990s is on understanding the effects of sound on marine mammals, including physiological, behavioral, and ecological effects.

The Office of Naval Research's current Marine Mammals and Biology Program trusts include, but are not limited to: (1) monitoring and detection research; (2) integrated ecosystem research, including sensor and tag development; (3) effects of sound on marine life (such as hearing, behavioral response studies, physiology [diving and stress], and Population Consequences of Acoustic Disturbance); and (4) models and databases for environmental compliance.

To manage some of the Navy's marine mammal research programmatic elements, the Navy developed the Living Marine Resources (LMR) R&D Program (http://www.lmr.navy.mil/) in 2011. The goal of the LMR R&D Program is to identify and fill knowledge gaps and to demonstrate, validate, and integrate new processes and technologies to minimize potential effects to marine mammals and other marine resources. Key elements of the LMR program include:

- Providing science-based information to support Navy environmental effects assessments for research, development, acquisition, testing, and evaluation as well as Fleet at-sea training, exercises, maintenance, and support activities;
- Improving knowledge of the status and trends of marine species of concern and the ecosystems of which they are a part;
- Developing the scientific basis for the criteria and thresholds to measure the effects of Navy-generated sound;
- Improving understanding of underwater sound and sound field characterization unique to assessing the biological consequences resulting from underwater sound (as opposed to tactical applications of underwater sound or propagation loss modeling for military communications or tactical applications); and
- Developing technologies and methods to monitor and, where possible, mitigate biologically significant consequences to LMR resulting from naval activities, emphasizing those consequences that are most likely to be biologically significant.

The Navy Natural Resources Management Program has invested in several marine resource surveys in and around NAVSTA Newport. This survey data will help provide a better understanding of marine mammals in the Bay; help support management of the resource; and support future mission readiness activities.

Overall, NOAA and the Navy will continue to research and contribute to university/external research to improve the state of the science regarding marine species biology and acoustic effects. These efforts include monitoring programs, data sharing with NMFS from R&D efforts, and current research as previously described.

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Appendix A Acoustic Calculations Using NMFS Optional User Spreadsheets

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A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Abandoned Guide Piles along Bulkhead. 12-inch steel pipe, Vibratory Extraction. February 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	155
Number of piles within 24-h period	3
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	5400
10 Log (duration of sound production)	37.32
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**3.6**	**0.3**	**5.3**	**2.2**	**0.2**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Floating Dock Demolition (Timber Guide Piles). 12-inch timber, Vibratory Extraction. February 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	152
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**2.7**	**0.2**	**4.0**	**1.7**	**0.1**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead construction. 18-inch Steel Pipe. February - May 2024

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	215.0

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	176
Number of strikes per pile	1000
Number of piles per day	8
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G29)	208
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	223.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	1,363.9	48.5	1,624.7	729.9	53.1
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	1.8	NA	25.1	2.2	NA

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[∆] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[∆]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	
$L_{p,0\text{-}pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	-0.01	-19.74	-26.87	-2.08	-1.15

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead construction. 18-inch Steel Pipe. February - May 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	8
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	14400
10 Log (duration of sound production)	41.58
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**20.1**	**1.8**	**29.7**	**12.2**	**0.9**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.2: DTH PILE DRIVING/INSTALLATION (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead Construction (Combination Pipe/Z-pile). DTH drilling for 18-inch steel pile. February - May 2024

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value

Weighting Factor Adjustment (kHz)[¥]	2	

[¥] Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 50), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	**199.7**

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B30)	146
Strike rate (average strikes per second)	13
Duration to drive pile (minutes)	300
Number of piles per day	1
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10
Total number of strikes in a 24-h period	234000

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G26)	172
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	187.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**129.5**	**4.6**	**154.2**	**69.3**	**5.0**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**NA**	**NA**	**NA**	**NA**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead construction (Combination Pipe/Z-Pile). Z26-700 steel sheet. February - May 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	156
Number of piles within 24-h period	8
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	14400
10 Log (duration of sound production)	41.58
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**8.0**	**0.7**	**11.8**	**4.9**	**0.3**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead construction (Combination Pipe/Z-Pile). 16-inch steel pipe Template piles. Install and extract. February - May 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**12.6**	**1.1**	**18.7**	**7.7**	**0.5**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bents 1-18). 18-inch Steel Pipe. May - July 2024

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value

Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	210.8

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	176
Number of strikes per pile	1500
Number of piles per day	2
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0-pk}$ specified at "x" meters (Cell G29)	208
Distance of $L_{p,0-pk}$ measurement (meters)	10
$L_{p,0-pk}$ Source level	223.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	709.3	25.2	844.9	379.6	27.6
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	1.8	NA	25.1	2.2	NA

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[Δ] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[Δ]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0-pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0-pk}$ measurement (meters)	
$L_{p,0-pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	-0.01	-19.74	-26.87	-2.08	-1.15

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bents 1-18). 18-inch Steel Pipe. May - July 2024

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	2
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	3600
10 Log (duration of sound production)	35.56
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**8.0**	**0.7**	**11.8**	**4.8**	**0.3**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A: STATIONARY SOURCE: Non-Impulsive, Continuous

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bents 1-18). Rotary Drilling for 18-inch. May - July 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value.
Weighting Factor Adjustment (kHz)¥	2	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 47), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Source Level (L_{rms})	154
Duration of Sound Production (hours) within 24-h period	5
Duration of Sound Production (seconds)	18000
10 Log (duration of sound production)	42.55
Propagation loss coefficient	15

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**0.7**	**0.0**	**0.6**	**0.4**	**0.0**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bents 1-18). 16-inch steel pipe Template piles. Install and extract. May - July 2024

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**12.6**	**1.1**	**18.7**	**7.7**	**0.5**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bent 19). 30-inch Steel Pipe. July 2024

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) **PREFERRED METHOD (pulse duration not needed)**

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	**217.0**

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	181
Number of strikes per pile	2000
Number of piles per day	2
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G29)	211
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	226.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**1,851.2**	**65.8**	**2,205.0**	**990.7**	**72.1**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**2.9**	**NA**	**39.8**	**3.4**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[∆] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[∆]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	
$L_{p,0\text{-}pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bent 19). 30-inch Steel Pipe. July 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	167
Number of piles within 24-h period	2
Duration to drive a single pile (minutes)	45
Duration of Sound Production within 24-h period (seconds)	5400
10 Log (duration of sound production)	37.32
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**22.5**	**2.0**	**33.2**	**13.7**	**1.0**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Trestle (Bent 19). 16-inch steel pipe Template piles. Install and extract. July 2024
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**12.6**	**1.1**	**18.7**	**7.7**	**0.5**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Pier. 30-inch Steel Pipe. July 2024 - January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	**220.0**

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	181
Number of strikes per pile	2000
Number of piles per day	4
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G29)	211
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	226.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**2,938.5**	**104.5**	**3,500.3**	**1,572.6**	**114.5**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**2.9**	**NA**	**39.8**	**3.4**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[Δ] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[Δ]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	
$L_{p,0\text{-}pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring

requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Pier. 30-inch Steel Pipe. July 2024 - January 2025
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	167
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	45
Duration of Sound Production within 24-h period (seconds)	10800
10 Log (duration of sound production)	40.33
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**35.7**	**3.2**	**52.8**	**21.7**	**1.5**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A: STATIONARY SOURCE: Non-Impulsive, Continuous

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Pier. Rotary Drilling for 30-inch. July 2024 - January 2025
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value.
Weighting Factor Adjustment (kHz)¥	2	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 47), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Source Level (L_{rms})	154
Duration of Sound Production (hours) within 24-h period	5
Duration of Sound Production (seconds)	18000
10 Log (duration of sound production)	42.55
Propagation loss coefficient	15

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**0.7**	**0.0**	**0.6**	**0.4**	**0.0**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Pier. 16-inch steel pipe Template piles. Install and extract. July 2024 - January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**12.6**	**1.1**	**18.7**	**7.7**	**0.5**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Fender Piles. 16-inch Steel Pipe. October 2024 - January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	20
Duration of Sound Production within 24-h period (seconds)	4800
10 Log (duration of sound production)	36.81
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**9.6**	**0.9**	**14.3**	**5.9**	**0.4**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Gangway Support Piles (small boat floating dock). 18-inch Steel Pipe. January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	209.0

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	176
Number of strikes per pile	1000
Number of piles per day	2
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G29)	208
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	223.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**541.3**	**19.3**	**644.8**	**289.7**	**21.1**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**1.8**	**NA**	**25.1**	**2.2**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[∆] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[∆]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	
$L_{p,0\text{-}pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring

requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Gangway Support Piles (small boat floating dock. 18-inch Steel Pipe. January 2025
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	2
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	3600
10 Log (duration of sound production)	35.56
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**8.0**	**0.7**	**11.8**	**4.8**	**0.3**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Small Boat Floating Dock. 36-inch Steel Pipe. January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	213.0

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	183
Number of strikes per pile	1000
Number of piles per day	1
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G29)	209
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	224.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	998.6	35.5	1,189.5	534.4	38.9
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	2.2	NA	29.3	2.5	NA

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[∆] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[∆]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	
$L_{p,0\text{-}pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	-0.01	-19.74	-26.87	-2.08	-1.15

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Small Boat Floating Dock. 36-inch Steel Pipe. January 2025
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	175
Number of piles within 24-h period	1
Duration to drive a single pile (minutes)	60
Duration of Sound Production within 24-h period (seconds)	3600
10 Log (duration of sound production)	35.56
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**58.6**	**5.2**	**86.6**	**35.6**	**2.5**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.2: DTH PILE DRIVING/INSTALLATION (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Small Boat Floating Dock. DTH drilling for 36-inch rock socket. January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥] Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 50), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	**217.7**

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B30)	164
Strike rate (average strikes per second)	13
Duration to drive pile (minutes)	300
Number of piles per day	1
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10
Total number of strikes in a 24-h period	234000

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G26)	194
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	209.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**2,052.2**	**73.0**	**2,444.5**	**1,098.2**	**80.0**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**NA**	**NA**	**2.9**	**NA**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.01**	**-19.74**	**-26.87**	**-2.08**	**-1.15**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Fender. 16-inch steel pipe Template piles. Install and extract. January 2025

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	162
Number of piles within 24-h period	4
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	7200
10 Log (duration of sound production)	38.57
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	12.6	1.1	18.7	7.7	0.5

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead construction. Concurrent vibratory install/extraction of 16-inch steel pipe (60) and 18-inch steel pipe (115) . February 1, 2024 - January 31, 2025. Total of 175 piles install concurrently. Production of 8 piles/day + 4 piles/day = 12 piles/day. 175 piles/12 per day = ~15 days
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	165
Number of piles within 24-h period	12
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	21600
10 Log (duration of sound production)	43.34
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**41.7**	**3.7**	**61.6**	**25.3**	**1.8**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead & Trestle construction. Concurrent vibratory install/extraction of 16-inch steel pipe (60), Z26-700 sheets (115 pairs), 18-inch steel pipe (36). Feb 1, 2024-Jan 31, 2025. Total 211 piles install concurrently. Production 4 piles/day + 8 piles/day +2 piles/day =14 piles/day. 211 piles/14 per day = ~15 days
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	166
Number of piles within 24-h period	14
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	25200
10 Log (duration of sound production)	44.01
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**53.8**	**4.8**	**79.6**	**32.7**	**2.3**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead & Trestle construction. Concurrent vibratory install/extraction of 16-inch steel pipe (60), Z26-700 sheets (115 pairs), 18-inch steel pipe (4). Feb 1, 2024 - Jan 31, 2025. Total 179 piles install concurrently. Production 4 piles/day + 8 piles/day +1 hole/day =13 piles/day. 179 piles/13 per day = ~14 days
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	163
Number of piles within 24-h period	13
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	23400
10 Log (duration of sound production)	43.69
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**32.3**	**2.9**	**47.8**	**19.7**	**1.4**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Pier. Concurrent Install/Extraction 16-inch template piles (120) and 30-inch Steel Pipe (120). Feb 1, 2024 - Jan 31, 2025. Total piles installed is 240. Production of 4 piles/day + 4 piles/day = 8 piles/day. 240 piles/8 piles per day = 30 Total days.
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	168
Number of piles within 24-h period	8
Duration to drive a single pile (minutes)	45
Duration of Sound Production within 24-h period (seconds)	21600
10 Log (duration of sound production)	43.34
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**66.0**	**5.9**	**97.6**	**40.1**	**2.8**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Pier. Concurrent Install/Extraction 16-inch template piles (120) and Rotary Drill of 30-inch Steel Pipe (12). Feb 1, 2024 - Jan 31, 2025. Total piles installed is 132. Production of 4 piles/day + 1 hole/day = 5 piles/day. 132 piles/5 piles per day = ~27 Total days.
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	163
Number of piles within 24-h period	5
Duration to drive a single pile (minutes)	45
Duration of Sound Production within 24-h period (seconds)	13500
10 Log (duration of sound production)	41.30
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**22.4**	**2.0**	**33.1**	**13.6**	**1.0**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Fender and Gangway Support. Concurrent install/extract 16-inch steel pipe Template piles (96) and 18-inch steel (4). Feb 1, 2024 - Jan 31, 2025. Total of 100 piles installed. May-Sept 2024. 4 piles/day + 2 piles/day = 6 piles/day. 100 piles/6 piles per day = 17 Total Days
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)¥	2.5	

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	165
Number of piles within 24-h period	6
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	10800
10 Log (duration of sound production)	40.33
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**26.3**	**2.3**	**38.8**	**16.0**	**1.1**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A.1: Vibratory Pile Driving (STATIONARY SOURCE: Non-Impulsive, Continuous)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Fender and Small Floating Boat Dock. Concurrent install/extract 16-inch steel pipe Template piles (96) and 36-inch steel (2). Total of 98 piles installed. Feb 1, 2024 - Jan 31, 2025. 4 piles/day + 1 piles/day = 5 piles/day. 96 piles/5 piles per day = ~20 Total Days

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2.5	

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 48), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B30)	175
Number of piles within 24-h period	5
Duration to drive a single pile (minutes)	30
Duration of Sound Production within 24-h period (seconds)	9000
10 Log (duration of sound production)	39.54
Transmission loss coefficient	15
Distance of sound pressure level (L_{rms}) measurement (meters)	10

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**107.9**	**9.6**	**159.5**	**65.6**	**4.6**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**-0.05**	**-16.83**	**-23.50**	**-1.29**	**-0.60**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.2: DTH PILE DRIVING/INSTALLATION (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value

Weighting Factor Adjustment (kHz)¥		

¥ Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 50), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Unweighted $SEL_{cum \text{ (at measured distance)}}$ = SEL_{ss} + 10 Log (# strikes)	**#NUM!**

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p, \text{single strike}}$) specified at "x" meters (Cell B30)	
Strike rate (average strikes per second)	
Duration to drive pile (minutes)	
Number of piles per day	
Transmission loss coefficient	
Distance of single strike SEL_{ss} ($L_{E,p, \text{single strike}}$) measurement (meters)	
Total number of strikes in a 24-h period	0

PK

$L_{p,0\text{-pk}}$ specified at "x" meters (Cell G26)		
Distance of $L_{p,0\text{-pk}}$ measurement (meters)		
$L_{p,0\text{-pk}}$ Source level		#NUM!

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

A: STATIONARY SOURCE: Non-Impulsive, Continuous

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value.
Weighting Factor Adjustment (kHz)[¥]		

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 47), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

Source Level (L_{rms})	
Duration of Sound Production (hours) within 24-h period	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Propagation loss coefficient	

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

B: STATIONARY SOURCE: Non-Impulsive, Intermittent

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]		

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 62), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD B1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method B2 if SEL-based source levels are not available.

B1: METHOD (SINGLE PING/PULSE EQUIVALENT) **PREFERRED METHOD (pulse duration not required)**

Source Level ($L_{E,p}$, single ping/pulse)	
Activity Duration (hours) within 24-h period	
Number pulses in 1-h period	
Number of pulses in 24-h	0
10 Log (number of pulses)	#NUM!
Propagation loss coefficient	

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

B2: METHOD USING RMS SPL SOURCE LEVEL

Source Level (L_{rms})	
Activity Duration (hours) within 24-h period	
Pulse duration (seconds)	
1/Repetition rate^ (seconds)	
Duty cycle	#DIV/0!
Duration of Sound Production (seconds)	#DIV/0!
10 Log (duration of sound production)	#DIV/0!
Propagation loss coefficient	

^Time between onset of successive pulses (inverse of repetition rate or inter-pulse interval).

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

C: MOBILE SOURCE: Non-Impulsive, Continuous ("SAFE DISTANCE" METHODOLOGY)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	
Please include any assumptions	
PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]		

[¥] Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 45), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION[‡]

Source Level (L_{rms})	
Source Velocity (meters/second)	
Duty cycle	1
Source Factor	1

‡Methodology assumes propagation loss of 20 log R; Activity duration (time) independent

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

D: MOBILE SOURCE: Non-Impulsive, Intermittent ("SAFE DISTANCE" METHODOLOGY)

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]		

¥ Broadband: 95% frequency contour percentile (kHz) OR Narrowband: frequency (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 61), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD D1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method D2 if SEL-based source levels are not available.

D1: METHOD† (SINGLE PING/PULSE EQUIVALENT) **PREFERRED METHOD (pulse duration not required)**

Source Level ($L_{E,p,\text{ single ping/pulse}}$)	
Source Velocity (meters/second)	
1/Repetition rate^ (seconds)	
Source Factor	#DIV/0!

†Methodology assumes propagation loss of 20 log R; Activity duration (time) independent
^Time between onset of successive pulses (inverse of repetition rate or inter-pulse interval).

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

D2: METHOD‡ USING RMS SPL SOURCE LEVEL

Source Level (L_{rms})	
Source Velocity (meters/second)	
Pulse Duration (seconds)	
1/Repetition rate^ (seconds)	
Duty Cycle	#DIV/0!
Source Factor	#DIV/0!

‡Methodology assumes propagation loss of 20 log R; Activity duration (time) independent
^Time between onset of successive pulses (inverse of repetition rate or inter-pulse interval).

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS

Hearing Group	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
SEL_{cum} Threshold	199	198	173	201	219
PTS Isopleth to threshold (meters)	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	**Low-Frequency Cetaceans**	**Mid-Frequency Cetaceans**	**High-Frequency Cetaceans**	**Phocid Pinnipeds**	**Otariid Pinnipeds**
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a\,[1+(f/f_2)^2]^b}\right\}$$

E: STATIONARY SOURCE: Impulsive, Intermittent

VERSION 2.2: 2020

KEY

(green)	**Action Proponent Provided Information**
(pink)	**NMFS Provided Information (Technical Guidance)**
(blue)	**Resultant Isopleth**

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]		

[¥] Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 71), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD 12 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E2 if SEL-based source levels are not available.

E1: METHOD TO CALCULATE PK AND SEL_{cum} (SHOT/PULSE EQUIVALENT) **PREFERRED METHOD (pulse duration not needed)**

SEL_{cum}

Source Level ($L_{E,p,\text{ single ping/pulse/shot}}$)	
Activity Duration (hours) within 24-h period	
Number of pulses in 1-h period	
Propagation loss coefficient	
Number of pulses in 24-h period	0
10 log (number of pulses)	#NUM!

PK

Source Level ($L_{p,0\text{-}pk}$)	

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**NA**	**NA**	**NA**	**NA**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Source Level (L_{rms})	
Activity Duration (hours) within 24-h period	
Pulse Duration[Δ] (seconds)	
1/Repetition rate^ (seconds)	
Duty cycle	#DIV/0!
Duration of Sound Production (seconds)	#DIV/0!
10 Log (duration of sound production)	#DIV/0!
Propagation loss coefficient	

[Δ]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005
^Time between onset of successive pulses (inverse of repetition rate or inter-pulse interval).

PK

Source Level ($L_{p,0\text{-}pk}$)	

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS SEL_{cum} Isopleth to threshold (meters)	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**NA**	**NA**	**NA**	**NA**	**NA**

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

E.1: IMPACT PILE DRIVING (STATIONARY SOURCE: Impulsive, Intermittent)

VERSION 2.2: 2020

KEY

(green)	Action Proponent Provided Information
(pink)	NMFS Provided Information (Technical Guidance)
(blue)	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	NOAA Newport Homeporting
PROJECT/SOURCE INFORMATION	Bulkhead construction (Cobmination Pipe/Z-Pile). 18-inch Steel Pipe. Feb-April 2023

Please include any assumptions

PROJECT CONTACT	

STEP 2: WEIGHTING FACTOR ADJUSTMENT

		Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value
Weighting Factor Adjustment (kHz)[¥]	2	

[¥]Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 73), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD E.1-1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method E.1-2 if SEL-based source levels are not available.

E.1-1: METHOD TO CALCULATE PK AND SEL_{cum} (SINGLE STRIKE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

Unweighted $SEL_{cum\ (at\ measured\ distance)}$ = SEL_{ss} + 10 Log (# strikes)	205.0

SEL_{cum}

Single Strike SEL_{ss} ($L_{E,p,\ single\ strike}$) specified at "x" meters (Cell B32)	166
Number of strikes per pile	1000
Number of piles per day	8
Transmission loss coefficient	15
Distance of single strike SEL_{ss} ($L_{E,p,\ single\ strike}$) measurement (meters)	10

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G29)	200
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	10
$L_{p,0\text{-}pk}$ Source level	215.0

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	293.9	10.5	350.0	157.3	11.4
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	NA	NA	7.4	NA	NA

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

E.1-2: METHOD TO CALCULATE PK AND SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Sound Pressure Level (L_{rms}), specified at "x" meters (Cell B53)	
Number of piles per day	
Strike (pulse) Duration[Δ] (seconds)	
Number of strikes per pile	
Duration of Sound Production (seconds)	0
10 Log (duration of sound production)	#NUM!
Transmission loss coefficient	
Distance of sound pressure level (L_{rms}) measurement (meters)	

[Δ]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

PK

$L_{p,0\text{-}pk}$ specified at "x" meters (Cell G47)	
Distance of $L_{p,0\text{-}pk}$ measurement (meters)	
$L_{p,0\text{-}pk}$ Source level	#NUM!

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	-0.01	-19.74	-26.87	-2.08	-1.15

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

F: MOBILE SOURCE: Impulsive, Intermittent ("SAFE DISTANCE" METHODOLOGY)

VERSION 2.2: 2020

KEY

	Action Proponent Provided Information
	NMFS Provided Information (Technical Guidance)
	Resultant Isopleth

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE	
PROJECT/SOURCE INFORMATION	

Please include any assumptions

PROJECT CONTACT	

SEISMIC METRIC CONVERSIONS

Source Level ($L_{p,pk\text{-}pk}$)			
Source Level ($L_{p,0\text{-}pk}$)	-6	**Source Level ($L_{p,0\text{-}pk}$)**	
Source Level (L_{rms})	-12	**Source Level (L_{rms})**	-6
Source Level ($L_{E,p,\text{single shot}}$)	-22	**Source Level ($L_{E,p,\text{single shot}}$)**	-16

Bars	$L_{p,pk\text{-}pk}$
	#NUM!

STEP 2: WEIGHTING FACTOR ADJUSTMENT

Specify if relying on source-specific WFA, alternative weighting/dB adjustment, or if using default value

Weighting Factor Adjustment (kHz)[¥]		

[¥] Broadband: 95% frequency contour percentile (kHz); For appropriate default WFA: See INTRODUCTION tab

† If a user relies on alternative weighting/dB adjustment rather than relying upon the WFA (source-specific or default), they may override the Adjustment (dB) (row 68), and enter the new value directly. However, they must provide additional support and documentation supporting this modification.

STEP 3: SOURCE-SPECIFIC INFORMATION

NOTE: METHOD F1 is PREFERRED method when SEL-based source levels are available (because pulse duration is not required). Only use method F2 if SEL-based source levels are not available.

F1: METHOD[†] TO CALCULATE PK and SEL_{cum} (SINGLE SHOT/PULSE EQUIVALENT) PREFERRED METHOD (pulse duration not needed)

SEL_{cum}

Source Level ($L_{E,p,\text{single ping/pulse/shot}}$)	
Source Velocity (meters/second)	
1/Repetition rate^ (seconds)	
Source Factor	#DIV/0!

PK

Source Level ($L_{p,0\text{-}pk}$)	

†Methodology assumes propagation loss of 20 log R; Activity duration (time) independent

^Time between onset of successive pulses (inverse of repetition rate or inter-pulse interval).

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS SEL_{cum} Isopleth to threshold (meters)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	NA	NA	NA	NA	NA

"NA": PK source level is ≤ to the threshold for that marine mammal hearing group.

F2: METHOD[‡] TO CALCULATE PK and SEL_{cum} (USING RMS SPL SOURCE LEVEL)

SEL_{cum}

Source Level (L_{rms})	
Source Velocity (meters/second)	
Pulse Duration[Δ] (seconds)	
1/Repetition rate^ (seconds)	
Duty Cycle	#DIV/0!
Source Factor	#DIV/0!

PK

Source Level ($L_{p,0\text{-}pk}$)	

‡Methodology assumes propagation loss of 20 log R; Activity duration (time) independent

[Δ]Window that makes up 90% of total cumulative energy (5%-95%) based on Madsen 2005

^Time between onset of successive pulses (inverse of repetition rate or inter-pulse interval).

NOTE: The User Spreadsheet tool provides a means to estimates distances associated with the Technical Guidance's PTS onset thresholds. Mitigation and monitoring requirements associated with a Marine Mammal Protection Act (MMPA) authorization or an Endangered Species Act (ESA) consultation or permit are independent management decisions made in the context of the proposed activity and comprehensive effects analysis, and are beyond the scope of the Technical Guidance and the User Spreadsheet tool.

RESULTANT ISOPLETHS*

*Impulsive sounds have dual metric thresholds (SELcum & PK). Metric producing largest isopleth should be used.

Hearing Group	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
SEL_{cum} Threshold	183	185	155	185	203
PTS SEL_{cum} Isopleth to threshold (meters)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

“NA”: PK source level is ≤ to the threshold for that marine mammal hearing group.

PK Threshold	219	230	202	218	232
PTS PK Isopleth to threshold (meters)	**NA**	**NA**	**NA**	**NA**	**NA**

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
a	1	1.6	1.8	1	2
b	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94
f_2	19	110	140	30	25
C	0.13	1.2	1.36	0.75	0.64
Adjustment (-dB)†	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**	**#NUM!**

NOTE: If user decided to override these Adjustment values, they need to make sure to download another copy to ensure the built-in calculations function properly.

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

Appendix B Marine Mammal Observation Record Form

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Project name: ______________________ Lead observer: ______________________ Page ________ of ________

Project location : ______________________ Lead observer contact info: ______________________ Date: ______________

Effort Info				Sighting Info*				
Event	Time of Event (start and end)	Observer*	Visibility Info (e.g. wind, glare, swell)	Species	Distance to Animal (from Observer)	# of Animals Group Size (min/max/best) # of Calves	Animal Movement Relative to Pile Driving Equipment/ Behavior Code	Behavior Change/ Response to Activity/ Other Comments
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: ________	

*Note location of observer and any marine mammal sightings with date/time on project map

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
1315 East-West Highway
Silver Spring, Maryland 20910

INCIDENTAL HARASSMENT AUTHORIZATION

The National Oceanic and Atmospheric Administration (NOAA) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to incidentally harass marine mammals, under the following conditions:

1. This incidental harassment authorization (IHA) is valid from February 1, 2024 through January 31, 2025.

2. This IHA authorizes take incidental to the specified construction activities in the NOAA's 2022 IHA application, associated with the relocation of NOAA vessels at Naval Station Newport, RI. Hereafter (unless otherwise specified) the term "pile driving" is used to refer to both pile installation and pile removal.

3. General Conditions

(a) A copy of this IHA must be in the possession of the Holder of the Authorization (Holder), supervisory construction personnel, lead protected species observers (PSOs), and any other relevant designees of the Holder operating under the authority of this IHA at all times that activities subject to this IHA are being conducted.

(b) The species and/or stocks authorized for taking are listed in Table 1. Authorized take, by Level A and Level B harassment only, is limited to the species and numbers listed in Table 1.

(c) The taking by serious injury or death of any of the species listed in Table 1 or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA. Any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of this IHA.

(d) The Holder must ensure that construction supervisors and crews, the monitoring team, and relevant NOAA staff are trained prior to the start of construction activity subject to this IHA, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work.

4. Mitigation Requirements

(a) The Holder must employ PSOs and establish monitoring locations as described in Section 5 of this IHA and the Marine Mammal Monitoring Plan. The holder must monitor the project area to the maximum extent possible based upon the required number of PSOs, required monitoring locations, and environmental conditions.

(b) Monitoring must take place from 30 minutes prior to initiation of construction activities, including pile driving, down-the-hole hammering (DTH), rotary drilling, (hereafter referred to as “construction activities”) (*i.e.*, pre-start clearance monitoring) through 30 minutes of completion of post construction activity.

(c) If a marine mammal is observed entering or within the shutdown zones indicated in Table 2, construction activities must be delayed or halted. Construction activities must be commenced or resume as described in condition 4 (e) of this IHA.

(d) Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones indicated in Table 2 are clear of marine mammals. Construction activities may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals.

(e) If construction activities are delayed or halted due to the presence of a marine mammal, the activities may not commence of resume until the animal has voluntarily exited or been visually confirmed beyond the shutdown zone indicated in Table 2, or 15 minutes have passed without redetection of the animal.

(f) Construction activities must be halted (as described in condition 4(c) of this IHA) upon observation of a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met entering or within the harassment zone, as shown in Table 2.

(g) A minimum shutdown zone of 10 m must be established for all construction activities. If the Level A shutdown zone is too large to monitor, a shutdown zone will be established 200 m from the acoustic source.

(h) The Holder must use soft start procedures when impact pile driving. Soft start requires contractors to provide an initial set of three strikes from the hammer at reduced energy, following a 30-second waiting period, then two subsequent reduced energy strike sets. A soft start must be implemented at the start of each day’s impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer.

(i) The Holder, construction supervisors and crews, PSOs, and relevant NOAA staff must avoid direct physical interaction with marine mammals during construction activity. If a marine mammal comes with 10 meters of such activity, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions, as necessary to avoid direct interaction.

(j) Should environmental conditions deteriorate such that marine mammals within the entire shutdown zone would not be visible (*e.g.,* fog, heavy rain, night), the Holder shall delay construction activities until observers are confident marine mammals within the shutdown zone could be detected.

5. <u>Monitoring</u>

(a) Marine mammal monitoring must be conducted in accordance with the conditions in this section, the Monitoring Plan, and this IHA. NOAA shall submit a Marine Mammal Monitoring Plan to NMFS for approval in advance of construction.

(b) Monitoring must be conducted by qualified, NMFS-approved PSOs, in accordance with the following conditions:

(i) PSOs must be independent (*i.e.*, not construction personnel) and have no other assigned tasks during monitoring periods.

(ii) At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization.

(iii) Other PSOs may substitute other relevant experience, education (degree in biological science or related field), or training for prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization.

(iv) Where a team of three or more PSOs is required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization.

(v) PSOs must be approved by NMFS prior to beginning any activity subject to this IHA.

(c) The Holder must establish monitoring locations with the best views of monitoring zones as described in the Marine Mammal Monitoring Plan. For all construction activities, a minimum of two PSOs must be assigned to each active pile driving/DTH/rotary drilling location to monitor shutdown zones.

(d) PSOs must record all observations of marine mammals, regardless of distance from the pile being driven or the construction activity taking place (i.e., DTH, rotary drilling, rock hammering), as well as the additional data indicated in Section 6 of this IHA.

(e) Acoustic monitoring must be conducted in accordance with the Acoustic Monitoring Plan. NOAA must conduct hydroacoustic data collection (sound source verification and propagation loss) in accordance with an acoustic monitoring plan that must be approved by NMFS in advance of construction.

6. Reporting

(a) The Holder must submit its draft report(s) on all monitoring conducted under the IHA within 90 calendar days of the completion of marine mammal and acoustic monitoring or 60 calendar days prior to the requested issuance of any subsequent IHA for construction activity at the same location, whichever comes first. A final report must be prepared and submitted within thirty days following receipt of any NMFS comments on the draft report. If no comments are received from NMFS within thirty calendar days, the report shall be considered final.

(b) All draft and final monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.taylor@noaa.gov*.

(c) The marine mammal report must contain the informational elements described in the Monitoring Plan and, at minimum, must include:

(i) Dates and time (beginning and end) of all marine mammal monitoring;

(ii) Construction activities occurring during each daily observation period, including:

A. The number and type of piles that were driven or removed and the method (*e.g.,* impact, vibratory, rotary drill, DTH);

B. Total duration of driving time for each pile (vibratory driving) and number of strikes for each pile (impact driving); and

C. For DTH, duration of operation for both impulsive and non-pulse components.

(iii) PSO locations during marine mammal monitoring;

(iv) Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;

(v) Upon observation of a marine mammal, the following information:

A. Name of PSO who sighted the animal(s) and PSO location and activity at time of sighting;

B. Time of sighting;

C. Identification of the animal(s) (e.g., genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species;

D. Distance and location of each observed marine mammal relative to the pile being driven for each sighting;

E. Estimated number of animals (min/max/best estimate);

F. Estimated number of animals by cohort (adults, juveniles, neonates, group composition, etc.);

G. Animal's closest point of approach and estimated time spent within the harassment zone;

H. Description of any marine mammal behavioral observations (*e.g.,* observed behaviors of any feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (e.g., no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);

(vi) Number of marine mammals detected within the harassment zones, by species; and

(vii) Detailed information about implementation of any mitigation (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.

(d) The Holder must submit all PSO datasheets and/or raw sighting data with the draft report, as specified in condition 6(a) of this IHA.

(e) The acoustic monitoring report must contain the informational elements described in the Acoustic Monitoring Plan and, at minimum, must include:

(i) Hydrophone equipment and methods: Recording device, sampling rate, distance (m) from the pile where recordings were made; depth of water and recording device(s);

(ii) Type and size of pile being driven, substrate type, method of driving during recordings (*e.g.,* hammer model, energy), and total pile driving duration;

(iii) Whether a sound attenuation device is used and, if so, a detailed description of the device and the duration of its use per pile;

(iv) For impact pile driving (per pile) of DTH: Number of strikes and strike rate, depth of substrate to penetrate; pulse duration and mean, median, and maximum sound levels (dB re: 1 μPa); root mean square sound pressure level (SPL_{rms}), cumulative sound exposure level (SEL_{cum}), peak sound pressure level (SPL_{peak}), and single strike exposure sound level ($SEL_{s\text{-}s}$);

(v) For vibratory driving/removal (per pile), rotary drilling, and rock hammering: Duration of driving per pile; mean, median, and maximum sound levels (dB re: 1 μPa): root mean square sound pressure level (SPL_{rms}), cumulative sound exposure level (SEL_{cum}) (and timeframe over which the sound is averaged); and

(vi) One-third octave band spectrum and power spectral density plot.

(vii) Collect and evaluate acoustic sound record levels for 10 percent of the new rotary drilling, DTH excavation (DTH mono-hammer and cluster drill) activities.

(viii) Collect environmental data, including but not limited to, the following: wind speed and direction, air temperature, humidity, surface water temperature, water depth, wave height, weather conditions, and other factors that could contribute to influencing the airborne and underwater sound levels (*e.g.,* aircraft, boats, etc.).

(f) Reporting injured or dead marine mammals:

In the event that personnel involved in construction activities discover an injured or dead marine mammal, the Holder must report the incident to the Office of Protected Resources (OPR), NMFS (*PR.ITP.MonitoringReports@noaa.gov* and *ITP.taylor@noaa.gov*) and to the Greater Atlantic Region New England/Mid-Atlantic Regional Stranding Coordinator (978-282-8478 or 978-281-9291) as soon as feasible. If the death or injury was clearly caused by the specified activity, the Holder must immediately cease the activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of this IHA. The Holder must not resume their activities until notified by NMFS.

The report must include the following:

(i) Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

(ii) Species identification (if known) or description of the animal(s) involved;

(iii) Condition of the animal(s) (including carcass condition if the animal is dead);

(iv) Observed behaviors of the animal(s), if alive;

(v) If available, photographs or video footage of the animal(s); and

(vi) General circumstances under which the animal was discovered.

7. This Authorization may be modified, suspended or revoked if the holder fails to abide by the conditions prescribed herein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines: (1) the authorized taking is likely to have or is having more than a negligible impact on the species or stocks of affected marine mammals or (2) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat.

8. Renewals
On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical, or nearly identical, activities are planned or (2) the specified activities would not be completed by the time this IHA expires and a Renewal would allow for completion of the activities, provided all of the following conditions are met:

(a) A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (the Renewal IHA expiration date cannot extend beyond one year from expiration of this IHA).

(b) The request for renewal must include the following:

(i) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed for this IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(ii) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

(c) Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings made in support of this IHA remain valid.

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12/15/2022

Kimberly Damon-Randall,
Director, Office of Protected Resources,
National Marine Fisheries Service.

Date

Table 1. Authorized Incidental Take

Common Name	Species Name	Stock	Level A Harassment	Level B Harassment
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Western North Atlantic	0	16
Short-beaked common dolphin	*Delphinus delphis*	Western North Atlantic	0	39
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	2	40
Harbor seal	*Phoca vitulina*	Western North Atlantic	56	2,067
Gray seal	*Halichoerus grypus*	Western North Atlantic	11	437
Harp seal	*Pagophilus groenlandicus*	Western North Atlantic	4	164
Hooded seal	*Cystophora cristata*	Western North Atlantic	0	10

Table 2. Shutdown Zones and Level B harassment Zones by Activity

		Shutdown Zones (m)		Level B Harassment Zones (m)
Pile type/size	Driving Method	Cetaceans	Pinnipeds	All Marine Mammals
12" steel pipe	Vibratory extraction	10	10	2,600
12" timber	Vibratory extraction	15	10	1,359
16" steel pipe	Vibratory install/extract	20	10	6,400
18" steel pipe	Impact install	200	200	640
	Vibratory install	30	15	6,400
	Mono-hammer DTH	200	200	Maximum harassment zone [1]
	Rotary drilling 18" holes	10	10	1,900
Z26-700 steel sheets	Vibratory install	15	10	2,600
30" steel pipe	Impact install	200	200	2,600
	Vibratory install	55	25	Maximum harassment zone [1]
	Rotary drilling	10	10	1,900
36" steel pipe	Impact install	200	200	3,400
	Vibratory install	90	40	Maximum harassment zone [1]
36" shafts	Mono-hammer DTH	200	200	Maximum harassment zone [1]

[1] *Harassment zone will be truncated due to the presence of intersecting land masses and would encompass a maximum area of 3.31 km*^{2}.

Appendix F Endangered Species Act Documents

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June 30, 2022

NOAA Fisheries
Greater Atlantic Regional Fisheries Office
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

Attn: Meagan Riley

Re: REQUEST FOR INFORMAL CONSULTATION ON RELOCATION OF NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESEARCH VESSELS AT NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Dear Ms. Riley,

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation and homeporting of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (RI) as described below. This letter is to request Endangered Species Act (ESA) concurrence from your office for the NOAA Research Vessel Relocation at NAVSTA Newport. NOAA has determined that the proposed activity may affect, but is not likely to adversely affect, any species listed as threatened or endangered by National Marine Fisheries Service (NMFS) under the ESA of 1973, as amended. No Critical Habitat is present in the project area. Our supporting analysis is provided below.

Proposed Project

NOAA proposes to establish adequate pier, shoreside, and support facilities to support the permanent relocation and homeporting of four NOAA Atlantic Fleet research vessels at NAVSTA Newport, Newport, RI. The proposed Project includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove (Pier Landing Site) and the construction of a parking lot near Building 11 to the east of Pier Landing Site, as shown in Enclosure 1. The Pier Landing Site is the former site of the Robert E. Derecktor Shipyard, now designated as Environmental Restoration Program Site 19.

NOAA's Office of Marine and Aviation Operations operates a wide assortment of hydrographic survey, oceanographic research, and fisheries survey vessels. Currently, two of the Atlantic

Region NOAA research vessels, the *Henry B. Bigelow* and *Okeanos Explorer*, are located in Rhode Island at Pier 2 at NAVSTA Newport. Pier 2 does not meet NOAA requirements for NOAA vessels due to its limited capacity and utilities. The other two vessels that would be relocated and homeported at NAVSTA Newport would be part of NOAA's existing Atlantic fleet, which is currently located in New Hampshire, Virginia, South Carolina, and Mississippi.

Because many of NOAA's research cruises are conducted in the Northeast, relocating four vessels to this area presents logistical advantages, as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for NOAA research vessels (Cardno, 2016a, 2016b).

Proposed Action

Pier and Trestle

Under the Preferred Alternative, a new four-berth pier would be constructed approximately 450 feet (137 meters) north of the existing T-pier in Coddington Cove for the berthing of four NOAA research vessels. The new pier would be approximately 62-feet (19-meters) wide and 587-feet (179-meters) long (approximately 36,400 square feet [3,380 square meters). The pier would be accessed by a 28-foot (8.5-meter) wide by 525-foot (160-meter) long trestle (portion over water would be 506 feet (154 meters) and approximately 14,200 square feet [1,320 square meters]). A plan view of the pier and trestle is provided in Enclosure 2.

The new pier and trestle would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that would connect to shore utilities. Fueling of ships would be conducted using a tanker truck. NAVSTA Newport has an existing Spill Prevention, Containment, and Countermeasure Plan already in place to provide timely containment and clean-up instructions for any potential spill.

The pier would be a pile-supported concrete deck. Structural support piles for the new pier would consist of 120 steel pipe piles measuring 30 inches (76 centimeters) in diameter. The piles would have permanent high-density polyethylene grouted jackets. The piles would be driven into the cove bottom from the mudline to weathered bedrock by vibratory and impact hammers to depths required to achieve bearing capacity. If obstructions, such as glacial boulders, are encountered, a rotary drill may be used to clear the obstruction. Fender piles would be installed along the perimeter of the pier and would consist of 201, 16-inch (40-centimeter) diameter steel pipe piles.

The access trestle would span over two existing bulkheads: a U-pile wall with an internal wale that was noted as existing circa 1950, and a sheet pile (MZ 32) bulkhead with an external double channel wale placed circa 1980. The trestle access would be located upland and would span the existing and new bulkhead and provide access (i.e., bridge) to the pier. The pier begins where there is adequate water depth (-25 feet mean lower low water [MLLW]). Structural support piles for the trestle concrete deck would consist of 36 steel pipe piles with permanent high-density polyethylene grouted jackets measuring 18-inches (46-centimeters) in diameter and two (2) steel pipe piles measuring 30-inches (76-centimeters) in diameter. The piles would be driven to depths required to achieve bearing capacity.

Pile installation would occur using barge-mounted cranes and land-based cranes equipped with vibratory and impact hammers. Piles would be installed initially using vibratory means and then finished with impact hammers, as necessary. Impact hammers would also be used where obstructions or sediment conditions do not permit the efficient use of vibratory hammers.

Trestle and pier piles would be installed using a template that would be secured by four, 16-inch (41-centimeter) pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of pier/trestle construction. The use of the template would require the driving and removal of the template piles approximately 19 times for the trestle (72 piles) and 30 times for the pier (196 total installation/extraction moves of pipe piles). Pile installation is estimated to occur within one calendar year.

The small boat floating dock would be constructed northwest of the main pier and trestle structures. The floating dock is positioned at a location where the water depth is approximately -15 feet MLLW. The floating system would consist of a single heavy duty 19.7-foot (6-meter) by 65.6-foot (20-meter) concrete float (approximately 1,300 square feet [121 square meter]) and two 80-foot (24-meter) long and 5.5-foot (1.7-meter) wide gangway segments (approximately 440 square feet each [41 square meters]) to the floating pier directly from land, with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway would be supported by four 18-inch (46-centimeter) diameter and 85-foot (26-meter) long steel pipe piles. The floating dock would provide berthing on three sides; two, 36-inch (91-centimeter) diameter, steel guide piles would provide lateral support. The guide piles would be rock socketed into bedrock. The small floating dock would be equipped with electrical shore power, lighting, communications, and potable water, but would not have fueling or sewage pump out capabilities.

Demolition would be required at the proposed site of the floating dock to remove an existing abandoned dock. Demolition would require vibratory extraction of three 12-inch (30-centimeter) diameter steel pipe piles and four 12-inch (30-centimeter) timber piles.

Bulkhead Reinforcement

Approximately 728 feet (222 meters) of bulkhead would be constructed at the Pier Landing site to reinforce and stabilize the existing deteriorating bulkhead and to support the new facilities. The new bulkhead would be constructed in front of the existing bulkhead from the T-pier to the existing breakwater (Enclosure 2). A combination of approximately 115, 18-inch (46-centimeter) diameter pipe piles (king piles) and 230 steel Z-shaped sheet piles would be installed along the face of the existing bulkhead. Piles would be installed in front of the existing double channel wale, which extends approximately 12 inches (30 centimeters) from the existing bulkhead face. The existing bulkhead wale cannot be removed to place the new bulkhead closer because such disturbance could cause collapse of the existing bulkhead.

The bulkhead would project a total of approximately 30 inches (76 centimeters) into the water beyond the existing bulkhead. This space would be filled with pea gravel. The combination bulkhead would provide sufficient support so that anchors on land would not be required, thus avoiding disturbance of the existing shoreline anchoring system and soils. The new bulkhead would be topped with a concrete cap and concrete facade that would extend to just below mean high water.

The pipe piles would be driven into the cove bottom from the mudline to weathered bedrock and sheet piles would be driven into dense glacial till by vibratory and impact hammers. If obstructions, such as boulders or debris are encountered, pile installation may require use of a "down-the-hole" hammer to break up rock or may require moving the obstruction aside using mechanical means with incidental sediment disturbance. Debris would be pulled from the water and disposed of appropriately. Rock would be stockpiled during pile driving and then reset as close to the original position as possible.

Minimal demolition would be required along the existing bulkhead. No demolition would occur in the water. The existing concrete sheet pile cap would be removed along with several feet of the steel sheet piles to enable construction of the new combination bulkhead. To tie in the ends of the new bulkhead, a portion of the existing revetment rock at the north and south ends would be removed and salvaged.

Shoreside and Support Facilities

Shoreside and support facility construction would take place on land and is not covered here as there are no species under NOAA Fisheries jurisdiction in these areas. Shoreside and support facilities are fully discussed in the project Environmental Assessment and in a Biological Assessment covering species under the jurisdiction of the United States Fish and Wildlife Service.

Project Timeframe

Construction is planned to begin in 2024 and take approximately 2 years to complete. In-water construction would occur over approximately 1 year.

Description of the Action Area

The action area is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR §402.02). The action area directly includes the project footprint of the new pier, shoreside, and support facilities in NAVSTA Newport at Coddington Cove (41°31′41″N 71°18′43″W) and indirectly includes portions of Narragansett Bay (Enclosure 1). Areas indirectly affected would be areas of Coddington Cove where there are temporary increases in underwater noise levels and turbidity from construction and areas where work vessels would transit to and from the construction and demolition areas. Construction activities under the proposed action are estimated to require the use of about six barges and four support vessels. In addition, NOAA vessels and project vessels would transit through the Atlantic Ocean on their way to and from homeport.

Pile driving activities are expected to produce total suspended sediment (TSS) concentrations of approximately 5.0 to 10.0 mg/L above background levels within approximately 300 feet (91 meters) of the pile being driven (Federal Highway Administration [FHWA], 2012 as cited in NOAA Fisheries, 2021a). The action area also includes the underwater noise region of influence, which is the full extent of potential underwater noise impacts for the project before encountering an obstruction (i.e., landmass, solid filled structures, breakwaters, etc.). The maximum distances to noise disturbance thresholds for sturgeon and sea turtles potentially present are 3,825 feet (1,166 meters) and 33 feet (10 meters), respectively.

Coddington Cove is a protected embayment located on the western side of Aquidneck Island. It is formed by Coddington Point to the south and a 4,000-foot-long (1,219-meter-long) rubble-mound breakwater to the north. The water depths in the proposed project area range between approximately 6 feet (1.8 meters) and 25 feet (7.6 meters) MLLW. Beyond the protected areas water depths gradually deepen towards Narragansett Bay to a maximum depth of approximately 36 feet (11 meters) MLLW (NAVFAC, 2015). The mean tidal range in Newport, RI is 3.46 feet (1.0 meter) (NOAA, 2020). Due to the presence of breakwaters and other shoreline structures, tidal circulation and current within Coddington Cove is generally weak and circular.

Water temperatures recorded at the NOAA Gauging Station located at the southern extent of Coasters Harbor Island (Station 8452660 Newport) range from approximately 36 degrees Fahrenheit (°F) (2° Celsius [C]) in winter to upwards of 68°F (20°C) in summer (NOAA National Data Buoy Center, 2021). Salinity in the action area ranges from 29.2 to 33.7 parts per thousand with both the observed minimum and maximum salinity values observed during the summer (Navy, 2017a).

Water quality within Coddington Cove is relatively homogeneous. Water quality observations obtained in the fall indicated low biomass productivity and low ammonia relative to other areas of Narragansett Bay. Dissolved oxygen concentrations and percent saturation ranged from 1.6 to 13.6 mg/L and 17.3 to 165.6 percent, respectively (Navy, 2017a). The minimum values for both parameters were observed during the summer and the maximum values were observed in the fall. A nearshore survey of the NAVSTA Newport site in 2017 found total suspended solids (TSS) ranging from 4 to 7 mg/L (Navy, 2017a).

The waters of Coddington Cove are classified as SB water by Rhode Island Department of Environmental Management (RIDEM) (RIDEM, 2018). Class SB waters are designated for primary and secondary contact recreational activities; fish and wildlife habitat; and good aesthetic value. According to the 2018 state water quality assessment conducted under Section 303(d) of the CWA, Newport Harbor/Coddington Cove is listed as impaired or Category 5 and does not support its designated use as fish and wildlife habitat due to the presence of pollutants in sediments (sediment bioassay for estuarine and marine water). Category 5 waters are identified as impaired and require the establishment of a total maximum daily load (RIDEM, 2018). Pier Landing Site contains several permitted stormwater outfalls that discharge into Coddington Cove.

In addition to the RIDEM classification, the waters of Coddington Cove are classified as Category 6 Industrial Waterfronts and Commercial Navigation Channels by Rhode Island Coastal Resources Management Commission (RICRMC), a category that includes water areas that are extensively altered in order to accommodate commercial and industrial water-dependent and water-enhanced activities. The shoreline is classified as manmade (RICRMC, 2017).

Surface sediments in Coddington Cove are fine-grained with more silt and clay than the underlying sandy sediments. This is probably due to the decreased bottom energy and increased fine-grained sediment deposition resulting from construction of the Coddington Cove breakwater in 1957 (NAVFAC, 2014). Some areas of the marine sediments in Coddington Cove, concentrated in areas around Piers 1 and 2, required remediation as part of the Former Derecktor Shipyard (NAVFAC, 2014). Sediment contamination was remediated using a combination of dredging and offsite disposal and placement of a sand/gravel cap under Pier 2 (north of the breakwater) in 2017.

The sediments in the project area did not exceed cleanup levels or require remediation (NAVFAC, 2016). The proposed in-water work for pier facilities and bulkhead reinforcement would not overlap with previously remediated areas or result in capped areas being disturbed.

Available mapping indicates that macroalgal or seaweed beds are present along the NAVSTA Newport shoreline, in and around Coddington Point and the southwest corner of Coddington Cove. Eelgrass (*Zostera marina*) can be found on sand or silt substrate on the lee side of Narragansett Bay islands where it is protected from predominant winds. An eelgrass survey of the proposed project area was conducted on July 10 and 11, 2018 during the time of peak biomass in New England (AECOM, 2018). The survey was performed in the proposed project area shown in Enclosure 1. Live eelgrass was not observed in the project area and therefore no eelgrass was mapped.

A benthic survey including a towed camera video survey was performed in March 2017 to assess a broad area of the proposed project area for general habitat and megafauna (AECOM, 2017). Three habitat types were observed in the project area: 1) silty sand/sandy silt areas where much of the bottom is visible and macroalgae is sparse; 2) large expanses of silt bottom with little to no macroalgae; and 3) areas of narrow bands where the substrate is covered by shells and macroalgae is abundant. The silt bottom habitat was the most prevalent habitat observed within the survey area (AECOM, 2017). These observations were confirmed by the eelgrass survey in 2018 that recorded: 1) silty sand or sandy silt with shells, shell hash, and macroalgae; and 2) silt with few shells and little shell hash.

The benthic grab samples collected during the survey were sieved through 0.5 mm mesh and most of the individual animals sorted were identified to the species level. Polychaetes comprised approximately 43 percent of the individuals that were identified to species, with mollusks comprising approximately 32 percent, arthropods another 17 percent, oligochaetes 8 percent and nemerteans less than 1 percent. No echinoderms, anemones, or any other taxa were found in the benthic grab samples (AECOM, 2017).

The towed video camera segments commonly observed slipper snails (*Crepidula fornicata*), burrowing anemones (*Ceriantheopsis americanus*), hermit crabs, and amphipods. No fish or large pelagic or benthic invertebrates (squid, lobster, urchins, etc.) were observed in any of the videos. Empty quahog valves (*Mercenaria mercenaria*) were often seen on the sediment surface. Shrimp and spider crabs were rarely seen. Macroalgae (e.g., *Enteromorpha, Spermothamnion, and Codium*) was seen in all videos, but no eelgrass beds were observed (AECOM, 2017).

ESA-Listed Species in the Project Area under NOAA Fisheries Jurisdiction

ESA-protected species potentially found in the area were identified using the ESA species mapper (NOAA Fisheries, 2022a). The eight threatened or endangered species under the jurisdiction of NOAA Fisheries that potentially occur in the project area include two fish species, four sea turtle species, and two whale species. They are listed below with their associated Federal Register (FR) and Species Recovery Plan citations, followed by a brief overview of each species. Critical habitat has been designated for the Atlantic sturgeon and North Atlantic right whale, but no critical habitat is present in the project area for these species.

- Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) (77 FR 5880 and 77 FR 5914; Critical habitat 82 FR 39160)
- Shortnose sturgeon (*Acipenser brevirostrum*) (32 FR 4001; Recovery plan: NMFS, 1998)
- Loggerhead turtle (*Caretta caretta*) (76 FR 58868; Recovery plan: NMFS and USFWS, 2008; Critical habitat 79 FR 4837)
- Leatherback turtle (*Dermochelys coriacea*) (35 FR 8491; Recovery plan: NMFS and USFWS, 1992)
- Green turtle (*Chelonia mydas*) (81 FR 20057; Recovery plan: NMFS and USFWS, 1991)
- Kemp's ridley turtle (*Lepidochelys kempii*) (35 FR 18319; Recovery plan: NMFS *et al.,* 2011)
- North Atlantic right whale (*Eubalaena glacialis*) (73 FR 12024; Recovery plan: NMFS, 2005; Critical habitat 59 FR 28805 and 81 FR 4837)
- Fin whale (*Balaenoptera physalus*) (35 FR 18319; Recovery plan: NMFS, 2010)

Fish

The Atlantic sturgeon and the shortnose sturgeon share many characteristics and are both long-lived, late-maturing, estuarine-dependent, anadromous species. Atlantic sturgeon grow larger, spend more time in marine environments, and have a more northerly range than the shortnose sturgeon (Atlantic Sturgeon Status Review Team [ASSRT], 2007). Early life stages of both sturgeon species below are not expected in the action area. The action area is a coastal environment with high salinity and early life stages of sturgeon do not tolerate saltwater. For similar reasons, sturgeon spawning is also not expected to occur in the action area because sturgeon spawn in freshwater portions of their natal rivers.

Atlantic Sturgeon

There are five distinct population segments (DPSs) of Atlantic sturgeon. The New York Bight, Chesapeake Bay, South Atlantic, and Carolina DPSs are listed as endangered, while the Gulf of Maine DPS is listed as threatened. The marine range of all five DPSs extends along the Atlantic coast from Canada to Cape Canaveral, Florida; therefore, Atlantic sturgeon from any of the DPSs may occur in the project area. There is no critical habitat for Atlantic sturgeon designated in Rhode Island.

Atlantic sturgeon spawn in freshwater but spend most of their adult life in the marine environment. Spawning usually takes place from April to May in mid-Atlantic systems (ASSRT, 2007), but fall spawning has been documented in Virginia waters (Hager et al., 2014). Spawning occurs in flowing water between the salt front and fall line of large rivers. Sturgeon require freshwater for spawning. Following spawning, males may remain in the river or lower estuary until the fall; females typically exit the rivers within four to six weeks. Juveniles move downstream and inhabit brackish waters for a few months. When they reach a size of about 30 to 36 inches (76 to 91 centimeters), they move into nearshore coastal waters. Tagging data indicate that immature Atlantic sturgeon travel widely once they emigrate from their natal rivers (ASSRT, 2007). Atlantic sturgeon stay at the bottom and move into deeper waters when the temperature drops to between 37 to 46°F (3 to 8°C). They disperse back into shallower waters as temperatures rise again. Subadults and adults live in coastal waters and estuaries when not spawning (ASSRT, 2007). They are normally captured in shallow (30 to 165 feet [9 to 50 meters]) nearshore areas dominated by gravel and sand substrate, generally in shallow inshore areas of the continental shelf where they feed, including the mouth of Narragansett Bay (Stein et al., 2004).

Adult and subadult Atlantic sturgeon may occur in the project area year-round. Atlantic sturgeon opportunistically forage year-round as they migrate along the coast to and from their natal spawning grounds (Hilton et al., 2016). They may aggregate in ocean and estuarine areas during certain times of year, exhibit seasonal coastal movements in the spring and fall and are expected to typically remain within the165-foot (50-meter) depth contour (Erickson et al., 2011).

Atlantic sturgeon are seasonally present in Narragansett Bay. The distribution range of subadult and adult Atlantic sturgeon includes Narragansett Bay where suitable foraging areas are present (NOAA Fisheries, 2022b). Two Atlantic sturgeon were captured by the RIDEM Trawl Survey conducted from 1997 to 2007; one in 1997 in Narragansett Bay and another in 2005 in Rhode Island Sound (ASSRT, 2007).

Since 2019 the Rhode Island Division of Marine Fisheries has been maintaining four acoustic array stations in Narragansett Bay (Hammersmith Farm, Kettle Bottom, Dutch Island, and Austin Hollow). The acoustic array in Rhode Island consists of stations with a buoy, line, and anchor equipped with a receiver that 'listens' for tagged fish. The tagged fish include 10 species that have been tagged as part of projects all along the coast by researchers for scientific studies, and include the Atlantic sturgeon. In 2019, 21 unique individuals were detected a total of 490 times at 8 stations in Rhode Island waters (Rhode Island Division of Marine Fisheries [RIDMF], 2021). In 2020, 31 unique individuals were detected a total of 774 times at 15 stations in Rhode Island waters (RIDMF, 2021). Atlantic sturgeon were most frequently detected in Narragansett Bay in May and June (RIDMF, 2021).

Based on the acoustic surveys recording Atlantic sturgeon in the area Atlantic sturgeon may occur in the project area, particularly during the months of May and June.

Shortnose Sturgeon

The endangered shortnose sturgeon is smaller than the Atlantic sturgeon, and primarily occurs in freshwater rivers and coastal estuaries of the Northeast and Southeast United States (U.S.). It is found from New Brunswick, Canada down to Florida, occasionally moving short distances to the mouths of estuaries and into the nearshore coastal waters (NMFS, 1998). The project area lies between the Gulf of Maine shortnose sturgeon metapopulation in northern Massachusetts and higher latitudes and the Connecticut and Housatonic population that are found in Connecticut and south (Shortnose Sturgeon Status Review Team [SSSRT], 2010). Only adults occur in marine waters, with some adults making coastal migrations between river systems (NOAA Fisheries, 2022c).

Although classified as anadromous, shortnose sturgeon spend only a limited amount of time at sea and do not venture far offshore. Shortnose sturgeon spawn at or above the head-of-tide (the farthest point upstream affected by tidal fluctuations) in most rivers, which mature adults migrate to in spring.

After hatching, the young-of-year remain in freshwater for about one year before moving downstream to the zone where fresh and salt water interface. Juveniles (3 to 10 years of age) occur at the fresh-saline water interface in most rivers, where they shift slightly upstream in spring and summer and downstream in fall and winter. Adults are generally found upstream while spawning in the spring and spend the remainder of the year at the fresh and saltwater interface. In estuarine systems, juveniles and adults occupy areas with little or no current over a bottom composed primarily of mud and sand (SSSRT, 2010). In northern populations, adults and juveniles form dense aggregations in relatively deep water during winter months (SSSRT, 2010). Individual shortnose sturgeon do not disperse far along the coastline beyond their home river estuaries (NMFS, 1998).

There are no known shortnose sturgeon populations in the rivers between the Merrimack and Connecticut rivers (NMFS, 1998). Shortnose sturgeon have occurred in area coastal waters and in Narragansett Bay (Dadswell et al., 1984). Adult shortnose sturgeon are potentially present throughout Narragansett Bay where suitable foraging is present (NOAA Fisheries, 2022c), although the RIDEM Division of Marine Fisheries is not aware of any sightings there (McManus, 2022). They are unlikely to be found in the project area due to the absence of suitable foraging habitat and the distance from known populations, but occasional transient adults could potentially occur from April 1 through November 30 (NOAA Fisheries, 2022c).

Sea Turtles

Four species of federally listed threatened or endangered sea turtles may be seasonally found in coastal waters of New England including the action area. These species include the threatened Northwest Atlantic Ocean DPS of loggerhead and North Atlantic DPS of green turtle, and endangered Kemp's ridley and leatherback sea turtles. As water temperatures of coastal New England rise in the spring, sea turtles begin to migrate north from their overwintering waters further south. The other marine turtle species have more southerly or tropical ranges and their occurrence in Narragansett Bay would be regarded as an accidental wandering. There is no sea turtle nesting in Rhode Island.

Loggerhead Sea Turtle

The loggerhead sea turtle occurs worldwide, and nine DPSs are identified under the ESA (Conant et al., 2009). In the Atlantic, loggerhead turtles occur from Newfoundland, Canada, to Argentina. Loggerheads potentially present in the project area would be part of the Northwest Atlantic Ocean DPS, which is classified as threatened. Critical habitat for this DPS includes parts of the Gulf of Mexico and the Atlantic Ocean south of Delaware. There is no critical habitat designated in the project area.

On the Atlantic coast, female loggerheads nest from April to September primarily on narrow, steep, high energy beaches along the coasts of Florida, Georgia, South Carolina, and North Carolina (Conant et al., 2009). Hatchlings emerge between June and November and swim or are swept away from land toward offshore ocean currents, where they can become transported to the Gulf of Mexico or North Atlantic. As they reach 7 to 12 years of age, oceanic juveniles migrate to nearshore coastal areas from Massachusetts to Texas.

Juveniles, feeding largely on benthic invertebrates with hard shells, such as crabs, are the predominant loggerhead size class found along the northeast and mid-Atlantic U.S. coast, while adults inhabit the entire continental shelf area. Adult loggerheads feed on hard-shelled prey including whelks and conch, but also consume some plant matter. Juveniles are frequently observed in developmental habitats, including coastal inlets, sounds, bays, estuaries, and lagoons with depths less than 300 feet (91 meters). The Long Island Sound, Cape Cod Bay, and Chesapeake Bay are the most frequently used juvenile developmental habitats along the Northeast U.S. Continental Shelf Large Marine Ecosystem. In general, juvenile and adult loggerhead sea turtles migrate north in the spring as water temperatures warm, arriving in mid-Atlantic waters in May. As the waters cool in the fall, the trend is reversed with most sea turtles leaving the area by the end of November.

Although loggerheads are much more abundant off the northeastern U.S. than leatherbacks, they are less likely to be seen in cooler and nearshore waters. It is possible for loggerheads to occur occasionally in the waters of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf in summer or fall (Kenney and Vigness-Raposa, 2010).

Leatherback Sea Turtle

The endangered leatherback is the largest sea turtle in the world, weighing up to 2,200 pounds (1,000 kilograms) with a shell length of 4.5 to 5.5 feet (1.4 to 1.7 meters) (NMFS and USFWS, 1992). Leatherbacks feed on soft-bodied pelagic prey including jellyfish and salps (pelagic tunicates), as they lack the strong jaws necessary to eat hard-shelled prey. Unlike other sea turtle species, leatherbacks are more dependent on prey availability and reproductive requirements than temperature for determining their distribution because they are able to regulate their internal temperature (Eckert et al., 2012).

This highly migratory species of sea turtle is listed as endangered throughout its range, which includes both the Atlantic and Pacific Oceans. The most significant nesting locations near the U.S. Atlantic coast are found in Puerto Rico, the Virgin Islands, and Southeast Florida.

Adults tolerate a wide range of temperatures and follow prey seasonally. They have been sighted along the entire east coast of the U.S. as far north as the Gulf of Maine. In general, juvenile and adult leatherback sea turtles migrate north in the spring as water temperatures warm, arriving in mid-Atlantic waters in May. Their occurrence in the northeast Atlantic is during the warmest part of the year, generally from July through November. As the waters cool in the fall, most sea turtles leave the area. In October 2021, a male adult leatherback was rescued after being stranded on Cape Cod and a female leatherback was rescued after being entangled in fishing gear off Cape Cod (IFAW, 2021).

Leatherbacks are the most likely sea turtle species to be encountered in the waters of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf (Kenney and Vigness-Raposa, 2010). Narragansett Bay may provide an important foraging area for leatherback juvenile and sub-adult turtles during late summer and early fall.

Kemp's Ridley Sea Turtle

Kemp's ridley turtle is listed as endangered throughout its range, which extends from the Gulf of Mexico along the U.S. Atlantic coast to Nova Scotia, Canada. Kemp's ridley turtles in U.S. waters are found in warm-temperate to subtropical sounds, bays, estuaries, tidal passes, shipping channels, and beachfront waters, where their preferred food, the blue crab, is abundant.

Females nest primarily in Mexico in large groups from May to July. Hatchlings emerge after two months and remain out at sea in the currents often associated with rafts of *Sargassum* to escape predators. Juveniles migrate to habitats along the U.S. Atlantic continental shelf from Florida to New England starting at about two years of age (Morreale and Standora, 2005). Older juveniles and adults feed on crabs, mollusks, fish, and jellyfish in sublittoral coastal areas on muddy or sandy bottoms, rarely venturing deeper than 160 feet (49 meters). Some individuals migrate along the coast seasonally, while others do not. Prolonged exposure to water at 50°F (10°C) or lower can cause Kemp's ridleys to become cold-stunned (sluggish behavior and reduced activity due to exposure to cold water) (NMFS et al., 2011).

In general, juvenile and adult Kemp's ridley sea turtles migrate north in the spring as water temperatures warm, arriving in mid-Atlantic waters in May. As the waters cool in the fall, the trend is reversed with most sea turtles leaving the area by the end of November (NOAA Fisheries, 2022a).

Kemp's ridley sea turtles have been observed in the waters of Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf, but they are much rarer than leatherbacks or loggerheads. In addition, small juveniles, too small to be detected during surveys, are known to utilize shallow developmental habitats around eastern Long Island and may transit through the Rhode Island Sound (Kenney and Vigness-Raposa, 2010).

Green Sea Turtle

The range of the threatened green turtle in the U.S. Atlantic includes inshore and nearshore waters from Texas to Massachusetts, occupying beaches for nesting, open ocean for convergence zones, and coastal areas for benthic feeding. Green sea turtles in this area are part of the North Atlantic DPS.

Nesting in the Northern Atlantic is primarily along the coasts of Puerto Rico, the Virgin Islands, and Florida, with lower levels of nesting found in Georgia, South Carolina, and North Carolina. Nesting is from June to September, with peaks in June and July. Hatchlings emerge after two months and swim to offshore areas where they are thought to live for years feeding close to the surface. Green sea turtles live in the open-ocean waters of the Gulf Stream and North Atlantic Gyre during the first 5 to 6 years of life. As ocean temperatures increase in the spring, green sea turtles migrate from southeastern U.S. waters to the estuarine habitats of Long Island Sound, Peconic Bay, and possibly Nantucket Sound, where an abundance of algae and eelgrass occurs.

Green sea turtles have never been recorded in Rhode Island Sound and they are much rarer in the study area than leatherbacks or loggerhead turtles because they prefer shallow tropical waters. However, small juveniles, too small to be detected during surveys, are known to utilize shallow developmental habitats around eastern Long Island and may transit through Rhode Island Sound (Kenney and Vigness-Raposa, 2010). Given that nesting occurs in warmer waters in the U.S., only adult and juvenile green turtles are expected to be present in the action area.

ESA-listed sea turtles could potentially occur in the action area from spring to early fall but are unlikely be present in Coddington Cove due to the industrial site characteristics and limited suitable habitat and associated prey. No sea turtles were observed during the four nearshore surveys of NAVSTA Newport conducted from May 2016 to February 2017 (Navy, 2017a).

Whales

The fin whale and North Atlantic right whale are seasonally present in New England waters. However, due to the relatively shallow depths of Narragansett Bay and nearshore location of the action area, these listed marine mammals are unlikely to occur there (NUWC Division, 2011). Therefore, the only project-related impacts to whales are considered here are from NOAA research vessel transits.

North Atlantic Right Whale

The endangered North Atlantic right whale is a large baleen whale that is the rarest of all large whale species. The total population size is estimated at 368 individuals (NOAA Fisheries, 2021b) and is decreasing (Hayes et al., 2020). The North Atlantic right whale population is considered to be two separate stocks: the Eastern and Western Atlantic stocks. North Atlantic right whales in U.S. waters belong to the Western Atlantic stock. The Western Atlantic stock ranges primarily from calving grounds in coastal waters of the southeastern U.S. from South Carolina to northeastern Florida to feeding grounds in New England waters and the Canadian Maritimes. North Atlantic right whales inhabit the Atlantic Ocean, mainly between 20° and 60° latitude. They are mainly found in coastal or shelf waters, although movements over deep waters are known (NMFS, 2005).

North Atlantic right whales breed during the winter in the coastal waters of the southeast U.S. and in the spring, summer, and into fall; many of these whales can be found in waters off New England and further north into Canadian waters, where they feed and mate. There is no critical habitat present in the action area (59 FR 28805 and 81 FR 4838). For much of the year, their distribution is strongly correlated to the distribution of their zooplankton prey. Both adult whales and calves migrate seasonally (NMFS, 2005) and may occur year-round while foraging or migrating in coastal New England waters.

Historical right whale abundance in the region peaked in spring during the northbound migration from southern calving grounds. In recent years, right whales have occurred in southern New England in all seasons and in the Rhode Island Ocean Special Area Management Plan (SAMP) area in spring and fall (Kenney and Vigness-Raposa, 2010). The SAMP study area encompasses approximately 1,500 square miles (3,800 square kilometers) of sea including Rhode Island Sound, Block Island Sound, and the Inner Continental Shelf. The SAMP study area is characterized by shallow, nearshore continental shelf waters, with water depths averaging 115 feet (35 meters). The area is interconnected to Narragansett Bay, Buzzards Bay, and Long Island Sound, and is connected to the Atlantic Ocean via the Inner Continental Shelf. There may be occasional years when they linger in the SAMP area for feeding for days or weeks rather than just transiting through on migration (Kenney and Vigness-Raposa, 2010). Right whales are not likely to occur in Coddington Cove due to the depths of Narragansett Bay and its nearshore location (NUWC Division, 2011).

North Atlantic right whales regularly occur between Block Island, Martha's Vineyard, and Aquidneck Island (Tritt, 2017) where a seasonal management area has been established. Within this area, vessels 65 feet (20 meters) or greater in length are required to travel at speeds of 10 knots or less from November 1 through April 30 in order to reduce the potential for vessel strikes (78 FR 73726).

Once the facility upgrades are complete and vessels are moved to NAVSTA Newport, NOAA vessels would traverse the waters between Block Island, Martha's Vineyard, and Aquidneck Island, where right whales may occur, when leaving and returning to the homeport. NMFS established both regulatory and non-regulatory actions to reduce the threat of ship collisions and entanglement in fishing gear, including speed reductions, shipping routes, reporting systems, and alerts (73 FR 60173).

Fin Whale

The endangered fin whale is common in waters of the Atlantic, principally from Cape Hatteras northward, and is the most abundant large whale in southern New England. Fin whales found off the eastern U.S., Nova Scotia, and the southeastern coast of Newfoundland are believed to constitute a single stock, the Western North Atlantic stock. The estimated population size of the Western North Atlantic fin whale is 6,802 individuals (NOAA Fisheries, 2021b).

Fin whales are the second-largest species of whale, with a maximum length of about 75 feet (23 meters) in the Northern Hemisphere. Fin whales are baleen whales and feed on krill, small schooling fish, sand lance, and squid and their local distribution during much of the year is probably governed largely by prey availability (NMFS, 2010). New England waters represent a major feeding ground for fin whales (Hayes et al., 2020). Regular mass movements along well-defined migratory corridors with specific end-points have not been documented by sightings. Adult and juvenile North Atlantic right whales may occur year-round while foraging or migrating in coastal New England waters.

Fin whales can occur in the SAMP area and just offshore of the area in all seasons and are most common in summer when they tend to congregate in feeding areas between 41°20'N and 51°00'N, from shore seaward to the 6,000-foot (1,800-meter) contour (Kenney and Vigness-Raposa, 2010). Fin whales are the most commonly stranded large whale in and near Rhode Island, with 28 records between 1970 and 2005 (Kenney, 2015).

Fin whales regularly occur between Block Island and Martha's Vineyard, and Aquidneck Island (Kenney, 2015). As described above, NOAA research vessels may traverse these waters when leaving and returning to the homeport. Fin whales are not likely to occur in Coddington Cove due to the depths of Narragansett Bay and its nearshore location (NUWC Division, 2011).

Effects of the Action

Potential effects of the project on ESA species are discussed below, including vessel strikes, water quality impacts, alteration of sea floor bottom, associated benthic prey impacts, and acoustic disturbances.

Vessel or Equipment Strike

Narragansett Bay is an extensively used body of water with a substantial number of vessels transiting it. Construction activities under the proposed action are estimated to require the use of about six barges and four support vessels. The additional vessels could potentially increase the existing level of risk of collision with vessels or cause short-term behavioral changes in species present in the area. However, the barge and support vessel would move at slow speeds, and the increase in vessel traffic above existing levels would be small and localized, minimizing the chances for collision. Therefore, the risk that any vessel in the area during construction will strike an individual or will increase it is such a small increment that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured, detected, or evaluated.

The proposed action would result in a very small increase in traffic associated with the two additional research vessels homeporting at NAVSTA Newport, increasing the number of NOAA research vessels homeported at NAVSTA Newport from two to four. The risk of a vessel strike associated with this increase is considered to be too small to be meaningfully measured or detected. Each group of protected species is discussed below.

Fish. Sturgeon are bottom dwelling fish and would not overlap spatially with most transiting vessels. In the event a sturgeon were present near the vessel or construction equipment it would likely move away or avoid the impacted area due to the disturbance. The vessel would be moving slowly, which would allow the sturgeon sufficient time to move out of the way. Given the low number of NOAA vessels in the homeport, any changes in risk associated with vessel traffic from construction or operations associated with the proposed action are too small to be meaningfully measured or detected, and therefore, insignificant.

Sea Turtles. The probability of an endangered or threatened sea turtle being present in the project area is very low, as sea turtles are not commonly found near Coddington Cove. If green sea turtles were to venture into Narragansett Bay, they would likely prefer aquatic vegetation beds, such as eelgrass, which are not present in the project area. Other sea turtle species would forage on whatever prey is available. In the event of a sea turtle being near the project during construction, they would likely move away or avoid the area due to the disturbance. The vessel and construction equipment would be moving slowly which would allow the turtle to move out of the way. Potential effects from avoidance behavior are considered insignificant because the behavior is temporary and not expected to increase the likelihood of injury due to disruption. Given the low number of NOAA vessels proposed in the homeport, any changes in risk associated with vessel traffic from construction or operations associated with the proposed action are too small to be meaningfully measured or detected, and therefore, insignificant.

Whales. Due to the depths of Narragansett Bay and nearshore location of the action area, whales are unlikely to occur in the project area (NUWC Division, 2011). Research vessels would transit to and from NAVSTA Newport. Two vessels are already homeported at NAVSTA Newport and there would be no significant change to the movements of these two ships. The proposed action would increase the vessel capacity of the pier area and, as a result, at least two additional research vessels would be homeported at NAVSTA Newport in the future. The remaining two vessels have yet to be determined but would come from NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, South Carolina, and Mississippi, which would not result in any change to the current baseline risk of vessel strike along the Atlantic coast. The risk within the action area would not change as whales are not expected to be present based on the shallow depth of the action area. The transit of barges and support vessels for construction to and from the action area would not measurably increase baseline traffic in the area. The increase in vessel traffic resulting from relocating two research vessels to NAVSTA Newport would be too small to meaningfully measure, detect, or evaluate and the increased risk of vessel strikes with whales is considered insignificant.

In the event of whale sightings during transiting to and from the homeport, vessels would adhere to safety zone separations from sighted federally threatened or endangered species. The specific buffer zone for the North Atlantic right whale is 500 yards (457 meters) or greater (per 50 CFR 224.103 [62 FR 6729 and 73 FR 60173]) and 100 yards (91 meters) for other whale species. It is also noted that the mission of the research vessels may include marine mammal surveys, which incorporate protective measures.

Water Quality Impacts

The proposed action would result in temporary adverse surface water quality impacts from turbidity associated with sediment resuspension during construction of the new pier. Whales are not expected to be present in areas where water quality effects will be observed based on the depth of the action area. Therefore, water quality impacts on whales are not considered further.

Under the proposed action, construction of the new pier, trestle, floating dock, and bulkhead would cover a total of approximately 55,000 square feet (5,110 square meters) of surface water. Construction of the new bulkhead for stabilization of the shoreline and construction of the new pier, trestle, and floating dock would result in the filling of approximately 3,360 square feet (312 square meters) of sea floor and require the placement of approximately 1,770 cubic yards (1,353 cubic meters) of fill. NOAA would apply for permits from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act and Section 10 Rivers and Harbors Act and would apply for a Water Quality Certification from the State of Rhode Island for compliance with Clean Water Act Section 401 to ensure that impacts to water resources from construction activities are minimized and not significant.

Total suspended sediment concentration (TSS), a gravimetric measure of particles in suspension generally measured as milligram per liter (mg/L), is used here as a measure of turbidity to evaluate water quality impacts. The method for estimating sediment turbidity impacts involved review of a summary of turbidity data from past projects by NOAA Fisheries (NOAA Fisheries, 2021a).

Construction of the new pier, small boat floating dock, and bulkhead reinforcement will require the installation of steel pipe piles, Z-piles, and drilling steel casings. Pile driving activities would be expected to generate TSS concentrations of about 5 to 10 mg/L above background levels within approximately 300 feet (91 meters) of the pile being driven (FHWA, 2012, as cited in NOAA Fisheries, 2021a).

The proposed action includes fill activities that generate TSS. Beach nourishment studies were used as a proxy to estimate water quality impacts from fill activities (NOAA Fisheries, 2021a). Maximum bottom surf zone and nearshore TSS concentrations related to beach nourishment activities have been measured at 64 mg/L and 34 mg/L, respectively, compared with respective maximum bottom concentrations of 81 mg/L and 425 mg/L after storms (Wilber et al., 2006). Studies have estimated that elevated TSS concentrations associated with beach nourishment site range from within 1,312 feet (400 meters) (Wilber et al., 2006) to 1,640 feet (500 meters) (Burlas et al., 2001) from the discharge pipe in the swash zone (defined as the area of the nearshore that is intermittently covered and uncovered by waves). Pea gravel fill would be used for the proposed action. Gravel is coarser than the sand used in beach nourishment projects, consequently settling to the bottom quicker and reducing the transport distance from the placement area. Filling activities would be expected to generate maximum TSS levels of 64 mg/L above background levels in localized areas.

Sediments would not be disturbed in areas of the shipyard that have undergone remediation and all protective caps would remain intact.

Fish. High TSS levels can cause a reduction in dissolved oxygen (DO) levels and sturgeon may become stressed when DO falls below certain levels. Johnson (2018) recommends that sturgeon should not be exposed to TSS levels of 1,000 mg/L above ambient for longer than 14 days at a time to avoid behavioral and physiological effects. The TSS concentrations generated by pile driving and fill activities would be well below this level and are expected to quickly return to ambient conditions.

After reviewing the available studies relative to the ESA-listed species in the Greater Atlantic Region, NOAA Fisheries concluded the effects of turbidity and suspended sediment are greatest for fish species, with eggs are larvae being the most sensitive stages (NOAA Fisheries, 2021a). Only adult and subadult sturgeon would potentially be present in the project area.

TSS is most likely to affect sturgeon if a plume causes a barrier to normal behaviors. Behavioral responses could include temporary avoidance of areas of increased turbidity and possibly temporary disruption of foraging in those areas until turbidity levels return to normal. However, sturgeon are expected to swim through the plume to avoid the area (NOAA Fisheries, 2021a). Effects on sturgeon would be too small to be meaningfully measured or detected, and therefore, insignificant.

Sea Turtles. No information is available on the effects of increased suspended sediments on juvenile and adult sea turtles. Sea turtles breathe air and would be able to swim away from the turbidity plume and therefore would not be adversely affected by passing through the temporary increase in TSS (NOAA Fisheries, 2021a). It is highly unlikely that there would be any alteration to normal movements of sea turtles and if so, these minor movements would be too small to be meaningfully measured or detected, and therefore, insignificant.

Alteration of the Sea Floor Bottom

During the installation of the pier pilings, the sea floor bottom may experience temporary impacts, such as disturbance of sediments, and the permanent loss of the area where piles would be installed. These disturbances would be limited to a small area of Coddington Cove. Whales are not expected to be present in areas where alteration of the sea floor bottom would occur based on the depth of the action area. Therefore, alteration of the sea floor bottom impacts on whales are not considered further.

Approximately 3,360 square feet (310 square meters) of benthic habitat would be displaced by piles and fill associated with bulkhead stabilization. Decking of the new pier and trestle under the proposed action would shade approximately 55,000 square feet (510 square meters) of previously exposed cove bottom resulting in long-term, indirect impacts to benthic habitat. Temporary impacts to the cove bottom would be incurred from the spudding/anchoring of construction vessels and from the driving and removal of the template being used for pier and trestle installation.

Fish. Atlantic sturgeon and possibly shortnose sturgeon may seasonally forage in Coddington Cove. The area disturbed by construction would be small relative to available habitat. The effects of the alteration of the sea floor resulting from the proposed action on sturgeon would be too small to be meaningfully measured or detected, and therefore, insignificant..

Sea Turtles. Sea turtles may seasonally forage in Coddington Cove. The area disturbed by construction would be small relative to available habitat. The effects of the alteration of the sea floor resulting from the proposed action on sea turtles would be too small to be meaningfully measured or detected, and therefore, insignificant.

Impacts on Benthic Prey

During construction impacts on benthic prey may result from the direct disturbance of sediments and indirect effects from turbidity and resuspended sediments. Benthic communities occurring within the footprint of the piles/fill areas would be at risk of direct mortality during pile installation/shoreline stabilization or loss of habitat due to seafloor displacement resulting in long-term localized disturbances.

Finer sediments, such as silt and clay, would be suspended in the water column during installation and would settle in adjacent areas. TSS levels generated by installation activities are estimated to be about 5 to 10 mg/L above background levels within approximately 300 feet (91 meters) of the pile being driven (FHWA, 2012, as cited in NOAA Fisheries, 2021a) and about 64 mg/L above background levels within 1,312 feet (400 meters) from fill activities (Wilber et al., 2006). As such it would not exceed concentrations of 390 mg/L that are considered to potentially adversely affect benthic communities (USEPA, 1986; NOAA Fisheries, 2021a).

Approximately 3,360 square feet (310 square meters) of benthic habitat would be displaced by piles and fill associated with bulkhead stabilization. Benthic communities occurring within the footprint of the piles/fill areas would be at risk of direct mortality during pile installation/ shoreline stabilization or loss of habitat due to seafloor displacement. The addition of the piles for the pier and trestle would increase the available surface areas for sessile species, such as mussels and barnacles, and may be a beneficial impact.

These disturbances would be localized but long term. Given the fact that Narragansett Bay has a surface area of 147 square miles (380 square kilometers), this loss of benthos would impact a very small fraction of a percent of Narragansett Bay. Therefore, impacts on benthic invertebrates and their habitat would not be significant.

Temporary impacts to the benthic substrate would occur from the anchoring of construction vessels. Although the size and number of construction barges is not known, it is probable that the area of impacts would be confined to the immediate proposed pier area and impacts to the benthos from their use during construction would be minor and temporary. The benthic community that would be temporarily adversely impacted during construction activities due to construction vessel anchoring is expected to rapidly recover upon project completion (Brooks et al., 2006). After construction, the new pier, trestle, and floating dock would create up to approximately 55,000 square feet (510 square meters) of overwater coverage within the project area. Overwater coverage reduces light penetration and can lead to a reduction in vegetation or compromised benthic vegetation function (Haas et al., 2002). However, the bottom substrate in the project area is largely silty/sandy, without rocks and structures that support an abundance of macroalgae and associated benthic organisms. The addition of the piles for the pier and trestle would increase the available surface areas for sessile species providing additional prey. Shading and the addition of hard substrate in the project could change the composition and diversity of the benthic population, but associated impacts on ESA-listed fish and turtles would be insignificant.

Whales are not expected to be present in areas where impacts to benthic prey would occur based on the depth of the action area. Therefore, benthic prey impacts on whales are not considered further.

Fish. Atlantic sturgeon and possibly shortnose sturgeon may seasonally forage in Coddington Cove. TSS levels generated from the proposed action would be below the concentration that could affect benthic communities; therefore, the loss of prey would be limited to individuals that are directly physically impacted or buried by alteration of the sea floor bottom. The area disturbed by construction would be small relative to the areas remaining available for foraging within the action area. The effects on benthic prey resulting from pier construction and overwater coverage are considered temporary, spatially limited, and insignificant.

Sea Turtles. Sea turtles on may seasonally forage in Coddington Cove. TSS levels generated from the proposed action would be below the concentration that could affect benthic communities; therefore, the loss of prey would be limited to individuals that are directly physically impacted or buried by alteration of the sea floor bottom. The area disturbed by construction would be small relative to the areas remaining available for foraging within the action area. The impacts on benthic prey resulting from the proposed action on sea turtles would be too small to be meaningfully measured or detected, and therefore, insignificant.

Underwater Noise

Construction of the new pier, small boat floating dock, and bulkhead reinforcement will require the installation of steel pipe piles, timber, sheet piles (Z-piles), and drilling steel casings, as summarized in Table 1. Construction will temporarily increase the noise level in the project area.

Whales are not expected to be in close proximity to the project area where noise would occur based on the depth of the action area. Therefore, noise impacts on whales are not considered further.

Sound levels are expressed in decibels (dB), which describes the magnitude of a sound pressure or sound pressure level (SPL) on a logarithmic scale relative to reference pressure, which is 1 microPascal (μPa) for underwater SPL. Sound energy associated with a pile driving pulse, or series of pulses, is characterized by the Sound Exposure Level (SEL). SEL is the constant sound level which has the same amount of acoustic energy, normalized to a one-second duration, as the original time-varying sound (i.e., the total energy of an event). SEL is calculated by summing the cumulative pressure squared over the time of the event and is often expressed as dB referenced to 1 μPa2 at 1 second (dB re 1 μPa2•sec). Root mean square (rms) is the square root of the average squared pressures over the duration of a pulse and represents the effective pressure and the intensity (in dB re 1 μPa) produced by a sound source.

Pile installation methods would require the use of an impact pile driver and vibratory pile driver, as well as drilling. Pile installation and extraction would occur using barge mounted cranes equipped with both vibratory and impact hammers. Piles would be installed initially using vibratory means and then finished with impact hammers, as necessary. Impact hammers would also be used where obstructions or sediment conditions do not permit the efficient use of vibratory hammers. A down-the-hole hammer may be used to clear boulders and other hard driving conditions for pipe piling at the bulkhead. This method will only be used when obstructions or refusal (hard driving) occurs that prevents the pile from being advanced to the required tip elevation using vibratory/impact driving. The down-the-hole hammer uses both impulsive (strikes/second) and continuous methods (minutes). The type/size of hammers that would be used to complete the work is currently unknown. Table 1 provides the pile installation/extraction, drilling and down-the-hole activity assumptions used to model acoustic noise. Underwater noise was modeled without accounting for potential noise minimization measures.

Impacts to underwater receptors depend on each species' sensitivity, hearing range, and likelihood of occurrence in the action area during construction periods. Noise generated from underwater activities may cause behavioral or physiological changes to aquatic organisms under some conditions. Physiological impacts include temporary or permanent hearing loss, bruising, damage to the swim bladder and internal organs, or death. Behavioral changes may include avoidance of the action area, disruption of foraging attempts, or interruption of reproduction.

Table 1. Pile Installation/Extraction, Drilling, and Down the Hole Hammer Activity

Facility	*Pile Type*	*Pile Diameter (inch)*	*Number of Piles*	*Method of Pile Driving/Extraction*	*Daily Production Rate*	*Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)*	*Impact Pile Driving (Strikes)*	*Total Production Days [1]*
Abandoned guide piles along bulkhead	Steel Pipe	12.0	3	Vibratory Extraction	3 piles/day	30	n/a	1
Floating dock demolition (Timber Guide Piles)	Timber	12.0	4	Vibratory Extraction	4 piles/day	30	n/a	1
Bulkhead construction (Combination Pipe/Z-pile)	Steel Pipe Pile	18.0	115	Vibratory / Impact	8 piles/day	30	1,000 strikes/pile	15
			12	Mono-hammer DTH [2, 3]	1 hole/day	300	13 strikes/second	12
	Steel Sheet pile Z26-700	18.0 deep	230 (115 pairs)	Vibratory	8 pair/day	30	n/a	15
	Template Steel Pipe Pile	16.0	60 (4 x 15 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	30
Trestle (Bents 1-18)	Steel Pipe Pile	18.0	36	Vibratory / Impact	2 piles/day	30	1,500 strikes/pile	18
			4	Rotary Drilling [4]	1 hole/day	300	n/a	4
	Template Steel Pipe pile	16.0	72 (4 x 18 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	36
Trestle (Bent 19)	Steel Pipe Pile	30.0	2	Vibratory / Impact	2 piles/day	45	2,000 strikes per pile	1
	Template Steel Pipe pile	16.0	4 (4 x 1 move)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2
Pier	Steel Pipe Pile	30.0	120	Vibratory / Impact	4 piles/day	45	2,000 strikes/pile	30
			12	Rotary Drilling [4]	1 hole/day	300	n/a	12
	Template Steel Pipe Pile	16.0	120 (4 x 30 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	60

Table 1. Pile Installation/Extraction, Drilling, and Down the Hole Hammer Activity

Facility	*Pile Type*	*Pile Diameter (inch)*	*Number of Piles*	*Method of Pile Driving/Extraction*	*Daily Production Rate*	*Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)*	*Impact Pile Driving (Strikes)*	*Total Production Days (1)*
Fender Piles	Steel Pipe Pile	16.0	201	Vibratory	4 piles/day	20	n/a	50
	Template Steel Pipe Pile	16.0	96 (4 x 24 moves)	Vibratory Installation / Extraction	4 pile/day	30	n/a	48
Gangway support piles (small boat floating dock)	Steel Pipe Pile	18.0	4	Vibratory / Impact	2 piles/day	30	1,000 strikes/pile	2
Small Boat Floating Dock	Steel Casing w/ Rock Socket (Guide Pile)	36-inch shaft	2	Vibratory / Impact	1 pile/day	60	1,000 strikes/pile	2
			2	Mono-hammer DTH (2, 3, 5)	1 hole/day	300	13 strikes/second	2
	Template Steel Pipe Pile	16.0	4 (4 x 1 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2

Notes:
n/a=not applicable
*Pile installation at bulkhead and trestle may be concurrent
**Pile installation of pier, fender, gangway, and floating dock may be concurrent
(1) Total production days for template piles includes the time to install and the time to extract the piles.
(2) Down-the-hole hammer (DTH) may be used to clear boulders and other hard driving conditions for pipe piling at the bulkhead. DTH will only be used when obstructions or refusal (hard driving) occurs that prevents the pile from being advanced to the required tip elevation using vibratory/impact driving. The DTH is placed inside of the steel pipe pile and operates at the bottom of the hole to clear through rock obstructions, hammer does not "drive" the pile but rather cleans the pile and removes obstructions such that the piles may be installed to "minimum" tip elevation.
(3) DTH uses both impulsive (strikes/second) and continuous methods (minutes).
(4) Rotary drilling may be used to clear boulders/obstructions for trestle and pier. Core barrel will be lowered through the pile and advanced using rotary methods to clear the obstruction. After the obstruction is cleared, the piling will be advanced to the required tip elevation using impact driving methods.
(5) DTH will be used to create a rock socket at each of the 36-inch shafts for the floating dock.

Fish

Sound exposure guidelines for sturgeon were based on the *American National Standards Institute (ANSI) Sound Exposure Guidelines* technical report (Popper et al., 2014) and used to calculate distance to thresholds as presented in Table 2 below.

Table 2. Maximum Range to Sturgeon Sound Thresholds from Impact Pile-Driving

Section	Pile Size	Sturgeon (Fishes with a Swim Bladder Involved in Hearing)				
		Onset of Mortality		Onset of Injury		TTS (Behavioral)
		207 SEL_{cum}	> 207 SPL_{peak}	203 SEL_{cum}	>207 SPL_{peak}	>186 SEL_{cum}
Bulkhead	18-inch steel pipe	112 ft (34 m)	39 ft (12 m)	207 ft (63 m)	39 ft (12 m)	1,775 ft (541 m)
Trestle, Pier, Gangway	18-inch steel pipe pile	59 ft (18 m)	39 ft (12 m)	108 ft (33 m)	39 ft (12 m)	1,470 ft (448 m)
	30-inch steel pile	154 ft (47 m)	59 ft (18 m)	282 ft (86 m)	59 ft (18 m)	3,825 ft (1,166 m)
Small Boat Floating Dock	36-inch steel casing	82 ft (25 m)	46 ft (14 m)	151 ft (46 m)	46 ft (14 m)	2,070 ft (631 m)

Notes: Fish sound thresholds based on Popper et al., 2014.
ft = feet; m = meters; SEL_{cum} = Cumulative sound exposure level (decibel referenced to 1 microPascal squared seconds [dB re 1 μPa^2-s]); SPL_{peak} = Peak sound pressure level (decibel referenced to 1 microPascal [dB re 1 μPa]); “>” indicates that the given effect would occur above the reported threshold;
TTS = Temporary Threshold Shift > indicates that the given effect would occur above the reported threshold.
Distances are based on maximum number of pile strikes per day for any given pile type installed (Table 1).
Source: NAVFAC, 2022.

Consistent with this technical report, dual metric sound exposure criteria are utilized. It is assumed that a specified effect would occur when either metric (cumulative SEL [SEL_{CUM}] or peak SPLs [SPL_{peak}]) is met or exceeded. Guidelines were developed for mortality and the lowest level where injury was found (recoverable injury). For sturgeons, these guidelines were determined to be 207 dB cumulative SEL/> 207 dB peak SPL for onset of mortality and 203 dB cumulative SEL/207 dB peak SPL for recoverable injury.

There is little data on the behavioral response of fish to loud sounds in general and to pile driving specifically (Popper et al., 2014). NOAA Fisheries, in some but not all of their Biological Opinions addressing underwater sound, has used a fish behavioral threshold criterion of 150 dB rms. This value is based on studies that did not evaluate some critical aspects of behavioral responses, including how long animals responded to the sound sources, whether their responses habituated over time, and whether animals would have moved away from the source had the sounds continued (Popper et al., 2019). None of the current research available on fish behavioral response to sound contains recommendations for a behavioral threshold. Therefore, a 186 dB cumulative SEL based on the lake sturgeon, closely related to the Atlantic and shortnose sturgeon, was used to evaluate behavioral impacts in sturgeon based on the *ANSI Sound Exposure Guidelines* (Popper et al., 2014). This value was selected as it is considered to be most appropriate for the species evaluated here.

Due to the lack of studies on fish supporting injury or behavioral disturbance from vibratory pile-driving methods, the range of effects on fish focused on impact pile-driving

The Transmission Loss formula below was used for determining distance to the thresholds.

$$Transmission\ Loss\ =\ 15 * Log10[radius]$$

Using this formula, the maximum distance to the 207 dB SEL_{CUM} onset of mortality threshold was calculated for each of the three sections – Bulkhead; Trestle, Pier, Gangway; and Small Boat Floating Dock – for each size pile used.

The maximum ranges to sound thresholds are listed in Table 2 for impact pile driving. Figures showing the sound propagation distances for each of the three sections of the project are provided in Enclosures 3 to 5. The predicted sturgeon impact distances from driving 18-inch (46-centimeter) steel pipe at the bulkhead is provided in Enclosure 3. The 30-inch (76-centimeter) steel pipe impact is provided for the combined trestle, pier, gangway sections to show the maximum impact distances for this work (Enclosure 4), this area also covers the areas impacted by installation of 18-inch (46-centimeter) steel pipes at the bulkhead (Enclosure 3) and installation of 36-inch (91-centimeter) steel pipes at the small boat floating dock (Enclosure 5).

The maximum distance to sturgeon sound thresholds is based on individual fish exposed to impact pile-driving sounds of 186 dB cumulative SEL or higher from 30-inch (76-centimeter) steel pipe installation at the trestle, pier, and gangway section. The effect range is 3,825 feet (1,166 meters) (Table 2), as shown in Enclosure 4. The area of impact is located in Coddington Cove and sturgeon present in this area may experience temporary, localized disturbances due to pile installation. Fish within or near this range could modify their behavior by avoiding the area or moving further away.

Injury to sturgeon is possible within 282 feet (86 meters) from this sound source, but it is unlikely that a fish would remain in the sound field long enough to accumulate injurious levels of sound pressure. The potential for injury would be further reduced by the routine use of a “soft start” or system of “warning strikes” where impact pile driving will begin at only 25 to 40 percent of its total energy.

If a sturgeon were present, it is likely that it would move out of the ensonified action area when pile driving or extraction begins and move away to other, quieter areas of the bay. Construction noise would be intermittent and elevated levels would be limited to Coddington Cove (Enclosures 3 to 5). The temporary daytime noise would not prevent sturgeon from moving to other areas of Narragansett Bay to forage. Potential acoustic impacts associated with pile driving on sturgeon are considered to be too small to be meaningfully measured or detected, and therefore, insignificant.

Sea Turtles

Unweighted peak pressure thresholds for a permanent loss of hearing (Permanent Threshold Shift [PTS]) and Temporary Threshold Shift (TTS) were developed for sea turtles (NAVFAC, 2020) based on auditory sensitivity in marine mammals (Navy, 2017b; Navy, 2018). Sea turtle behavioral criteria was derived from impact pile driving based on exposure to air guns where 175 dB 1 μPa SPL rms is the expected sound level at which sea turtles would actively avoid exposure to pile driving noise (Navy, 2017b). Table 3 presents the adjusted weighted SELs and behavioral threshold for sea turtles from impulsive sounds used for this project (NAVFAC, 2022). Modeled distances to these thresholds are presented in Tables 4 and 5 for impulsive and non-impulsive sounds, respectively.

The maximum range to effects on sea turtles from impulsive noise from steel pipe installation is 23 feet (7.0 meters) for PTS, 229 feet (70 meters) for TTS, and 1,119 feet (341 meters) for behavioral effects during impact driving (NAVFAC, 2022) (Table 4), as shown in Enclosures 6 to 8 for 18-inch (46-centimeter), 30-inch (76-centimeter) , and 36-inch (91-centimeter) steel pipe installation, respectively.

The maximum range of sea turtle noise effects from vibratory pile driving/extraction and rotary drilling is 33 feet (10 meters) (Table 5).

If a sea turtle were present in Coddington Cove, it is likely that it would move out of the ensonified action area when pile driving or extraction begins and go to other, quieter areas of the bay. In addition, pile installation and extraction would be paused if any sea turtles were observed in the area. Potential acoustic impacts associated with pile driving on sea turtles are considered too small to be meaningfully measured, detected, or evaluated and therefore, insignificant.

Table 3. Thresholds for Sea Turtles Exposed to Impulsive and Non-Impulsive Sounds

Non-Impulsive Sound		***Impulsive Sound***				***Behavioral (unweighted re 1 µPa)***
TTS (weighted SPL Threshold re µPa2-s)	***PTS (weighted SPL Threshold re µPa2-s)***	***TTS (weighted SPL Threshold re µPa2-s)***	***TTS Peak SPL (unweighted SPL Threshold re 1 µPa)***	***PTS (weighted SPL Threshold re µPa2-s)***	***PTS Peak SPL (unweighted SPL Threshold re µPa)***	
200 dB SEL	220 dB SEL	189 dB SEL	226 dB Peak	204 dB SEL	232 dB Peak	175 dB rms

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift, SEL = sound exposure level, SPL = sound pressure level, SEL_{cum} = cumulative SEL over 24 hours.
Source: NAVFAC, 2022.

Table 4. Maximum Range to Sea Turtle Sound Thresholds from Impulsive Noise

Structure	***Pile Size and Type***	***Total Production Days***	***PTS Weighted (SEL_{cum}) Threshold 204 dB re µPa²-s***	***TTS Weighted (SEL_{cum}) Threshold 189 dB re µPa²-s***	***Behavioral Unweighted (rms) Threshold 175 dB re 1 µPa***
Bulkhead construction	18-inch steel pipe	15	23 ft (7.0 m)	229 ft (70 m)	207 ft (63 m)
Trestle, Pier, Gangway	18-inch steel pipe	18	2.3 ft (0.7 m)	22 ft (6.7 m)	207 ft (63 m)
	30-inch steel pipe (trestle)	1	5.9 ft (1.8 m)	57 ft (18 m)	823 ft (251 m)
	30-inch steel pipe (pier)	30	9.2 ft (2.8 m)	91 ft (28 m)	823 ft (251 m)
Small Boat Floating Dock	36-inch steel casing w/rock socket guide pile	2	3.0 ft (0.9 m)	31 ft (9.4 m)	1,119 ft (341 m)

Notes: Modeled distances to peak thresholds for PTS and TTS are less than 0.1 meters and are not included in the table; dB re 1 µPa = dB referenced to a pressure of 1 microPascal (measures underwater SPL); dB re µPa²-s = microPascal squared per second; PTS = Permanent Threshold Shift; m = meter; rms = root mean square; SEL_{cum} = cumulative SEL over 24 hours.
Source: NAVFAC, 2022.

Table 5. Maximum Range to Sea Turtle Sound Thresholds from Vibratory Pile Driving/Extracting and Rotary Drilling

Structure	Pile Size and Type	Total Production Days	TTS (Unweighted SPL Threshold 200 dB re μPa^2-s)	PTS (Weighted SPL Threshold 220 dB re μPa^2-s)	Behavioral (Unweighted Threshold 175 dB re 1 μPa)
Abandoned guide piles along bulkhead	12-inch steel pipe	1	0 ft (0 m)	0 ft (0 m)	0 ft (0 m)
Floating dock demolition (Timber Guide Piles)	12-inch timber	1	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
Bulkhead construction (Combination Pipe/Z-pile)	18-inch steel pipe	15	0.7 ft (0.2 m)	0 ft (0 m)	3.3 ft (1 m)
	Steel sheet Z26-700	15	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
	16-inch steel pipe template piles	30	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
Trestle	18-inch steel pipe	18	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
	18-inch steel pipe hole (rotary drill)	4	0 ft (0 m)	0 ft (0 m)	0 ft (0 m)
	16-inch steel pipe template piles	36	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
	30-inch steel pipe	1	1 ft (0.3 m)	0 ft (0 m)	10 ft (3 m)
Pier	30-inch steel pipe	30	1.3 ft (0.4 m)	0 ft (0 m)	10 ft (3 m)
	30-inch hole (rotary drill)	12	0 ft (0 m)	0 ft (0 m)	0 ft (0 m)
	16-inch steel pipe template piles	60	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
Fender Piles	16-inch steel pipe	50	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
	16-inch steel pipe template piles	48	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
Gangway support piles (small boat floating dock)	18-inch steel pipe	2	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)
Small Boat Floating Dock	36-inch Steel Casing w/Rock Socket Guide Pile	2	2.3 ft (0.7 m)	0 ft (0 m)	33 ft (10 m)
	16-inch steel pipe template piles	2	0.3 ft (0.1 m)	0 ft (0 m)	3.3 ft (1 m)

Notes: dB re 1 μPa = dB referenced to a pressure of 1 microPascal (measures underwater SPL); dB re μPa2-s = microPascal squared per second; m = meter; SPL = Sound Pressure Level; TTS = Temporary Threshold Shift

Source: NAVFAC, 2022.

Conclusions

Based on the analysis that all effects of the proposed action would be insignificant and/or discountable, NOAA has determined that the Relocation of NOAA Research Vessels to NAVSTA Newport, Newport RI is not likely to adversely affect any listed species or critical habitat under NOAA Fisheries' jurisdiction. We certify that we have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

Sincerely,

GEORGE.MARK.S.1365873786 Digitally signed by GEORGE.MARK.S.1365873786 Date: 2022.07.13 16:12:29 -06'00'

Mark George

Enclosures:
1. Project Site Map
2. Bulkhead, Pier, and Floating Dock Plan
3. Predicted Distances to Fish Noise Thresholds During Impact Pile Driving of 18-inch Steel Piles – Bulkhead
4. Predicted Distances to Fish Noise Thresholds During Impact Pile Driving of 36-inch Steel Piles – Trestle, Pier, and Gangway
5. Predicted Distances to Fish Noise Thresholds During Impact Pile Driving of 30-inch Steel Piles – Small Boat Floating Dock
6. Predicted Distances to Sea Turtle Noise Thresholds During Impact Pile Driving of 18-inch Steel Piles - Bulkhead
7. Predicted Distances to Sea Turtle Noise Thresholds During Impact Pile Driving of 36-inch Steel Piles – Trestle, Pier, and Gangway
8. Predicted Distances to Sea Turtle Noise Thresholds During Impact Pile Driving of 36-inch Steel Piles – Small Boat Floating Dock

Copy to:
Sarah Bowman, NAVFAC MIDLANT

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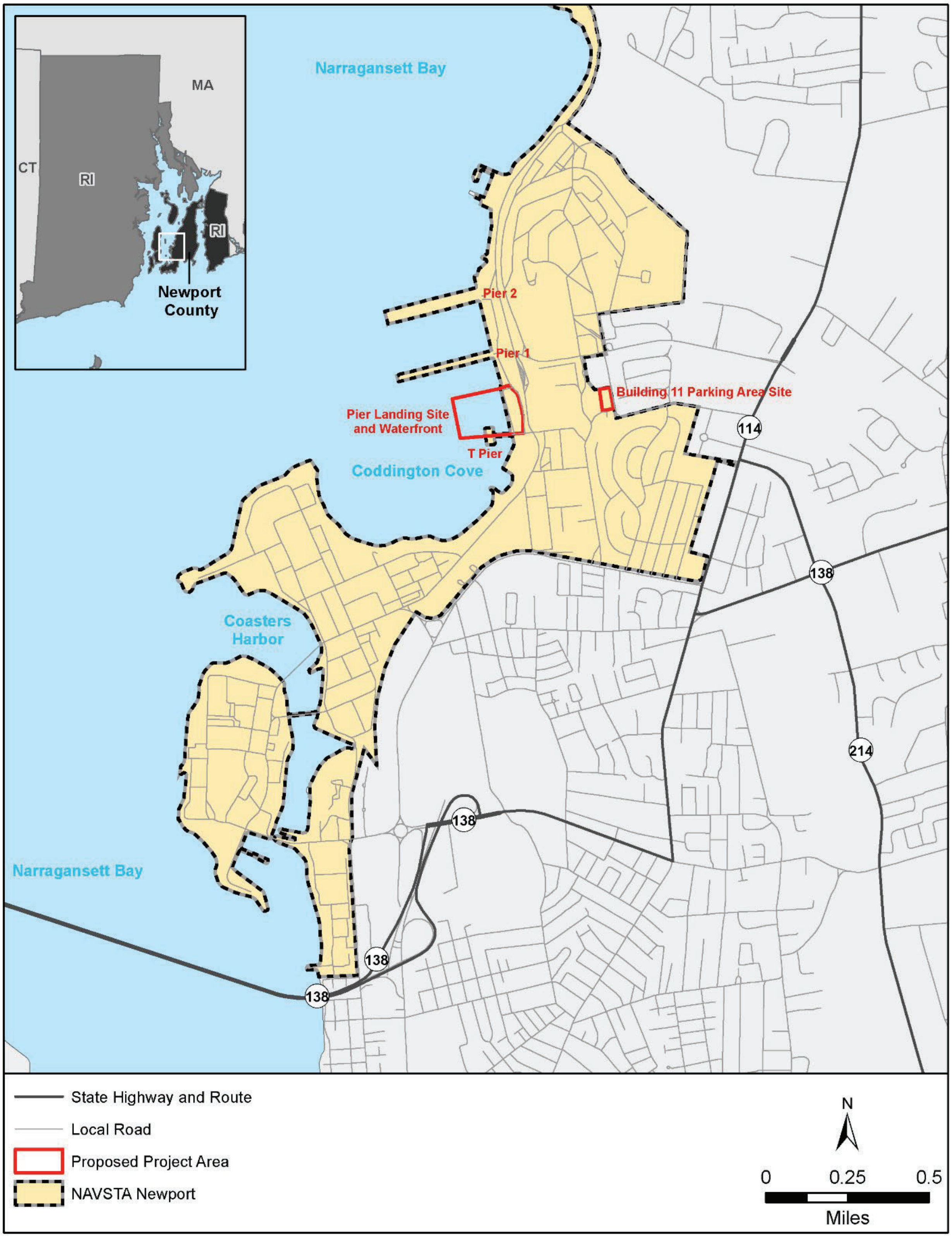
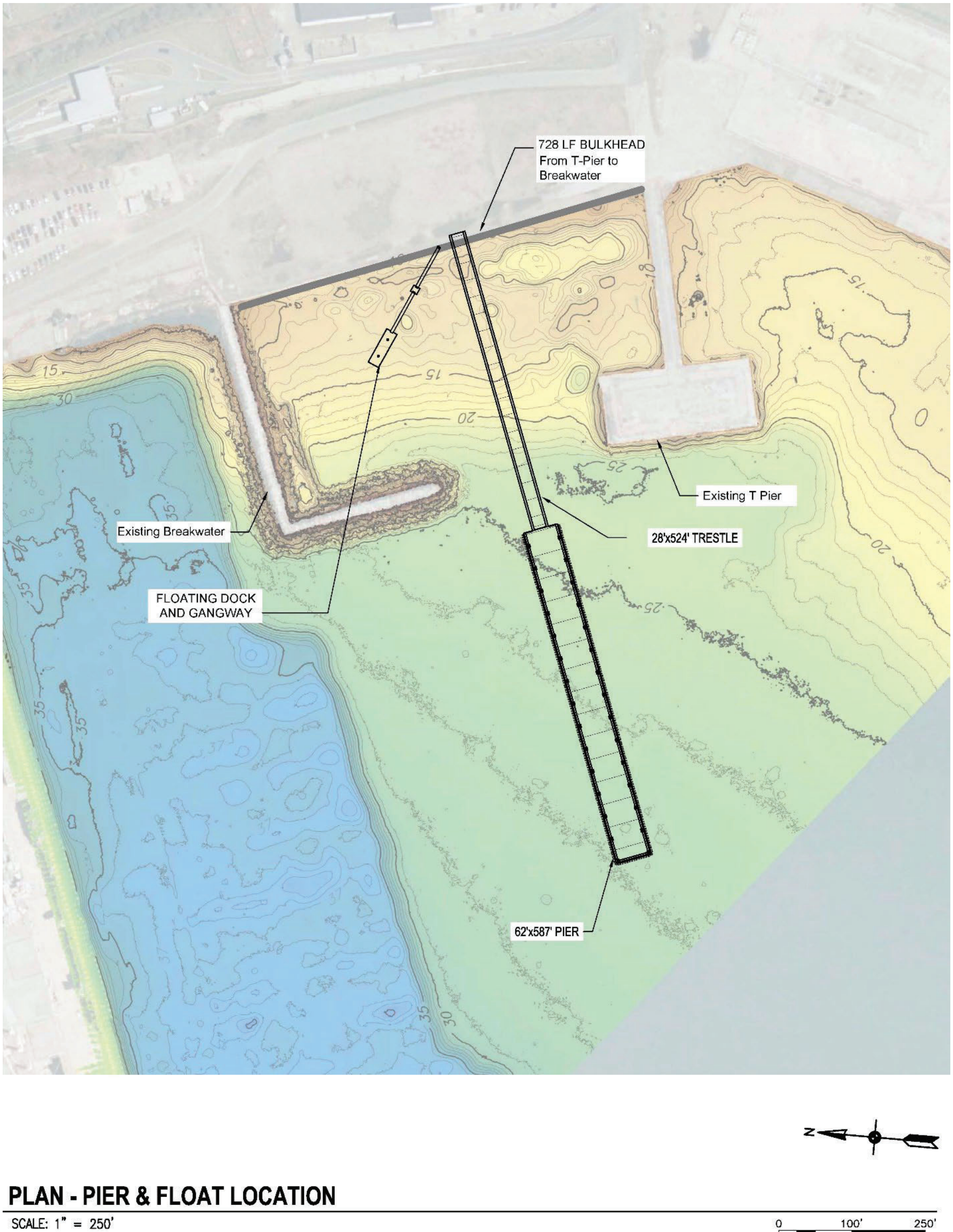
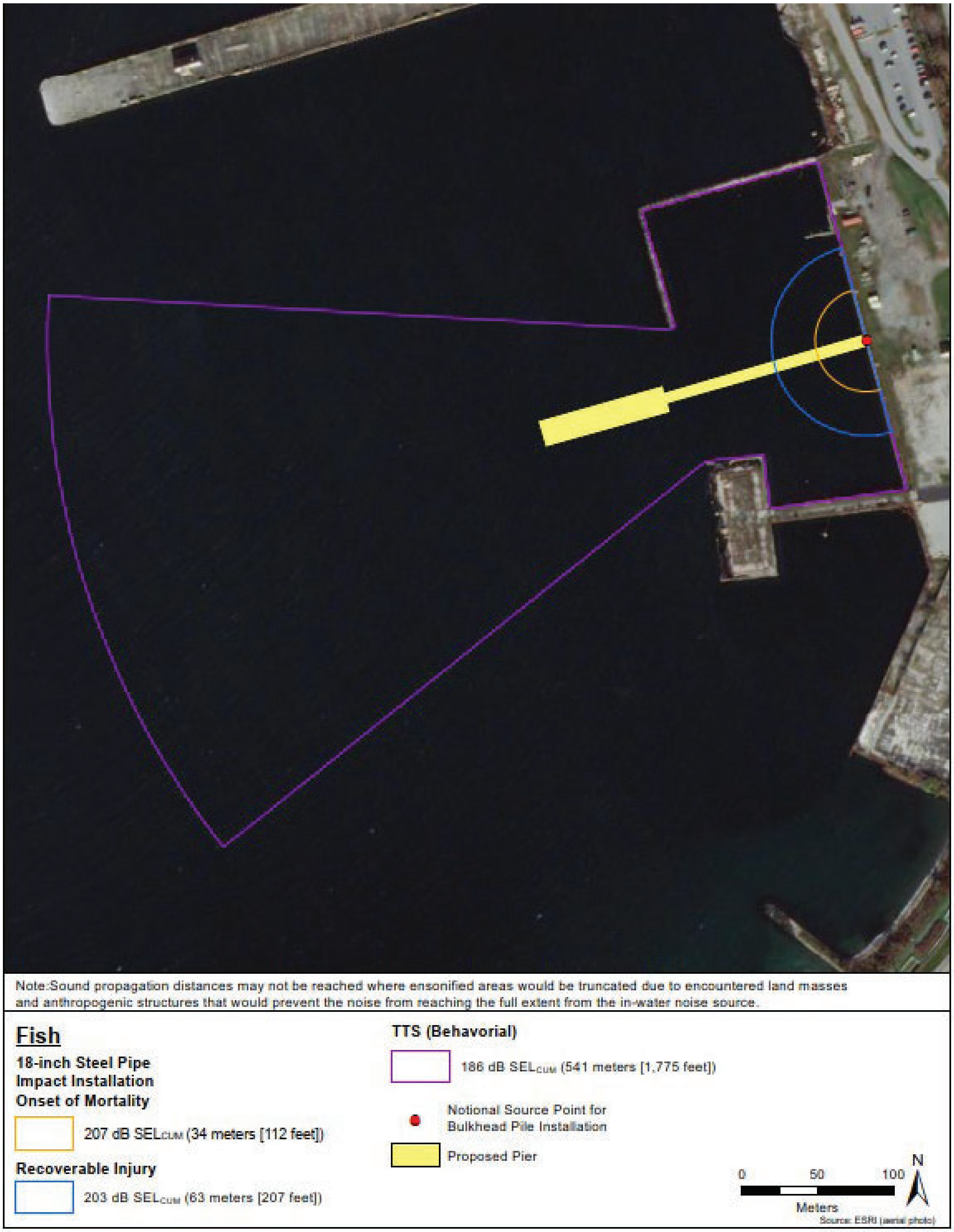
Enclosures



Enclosure 1. Project Site Map



Enclosure 2. Bulkhead, Pier, and Floating Dock Plan

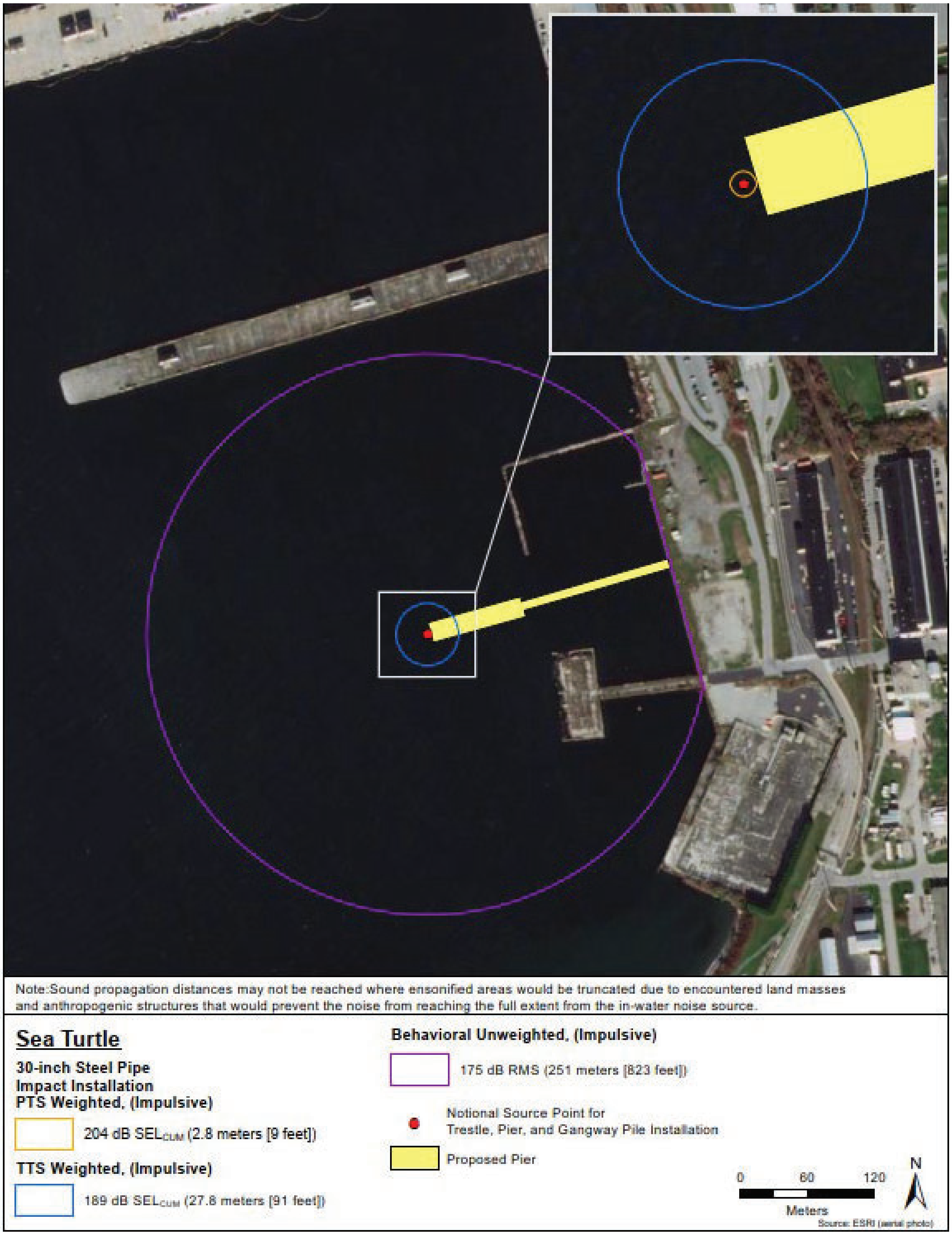


Enclosure 3. Predicted Distances to Fish Noise Thresholds During Impact Driving of 18-inch Steel Piles – Bulkhead

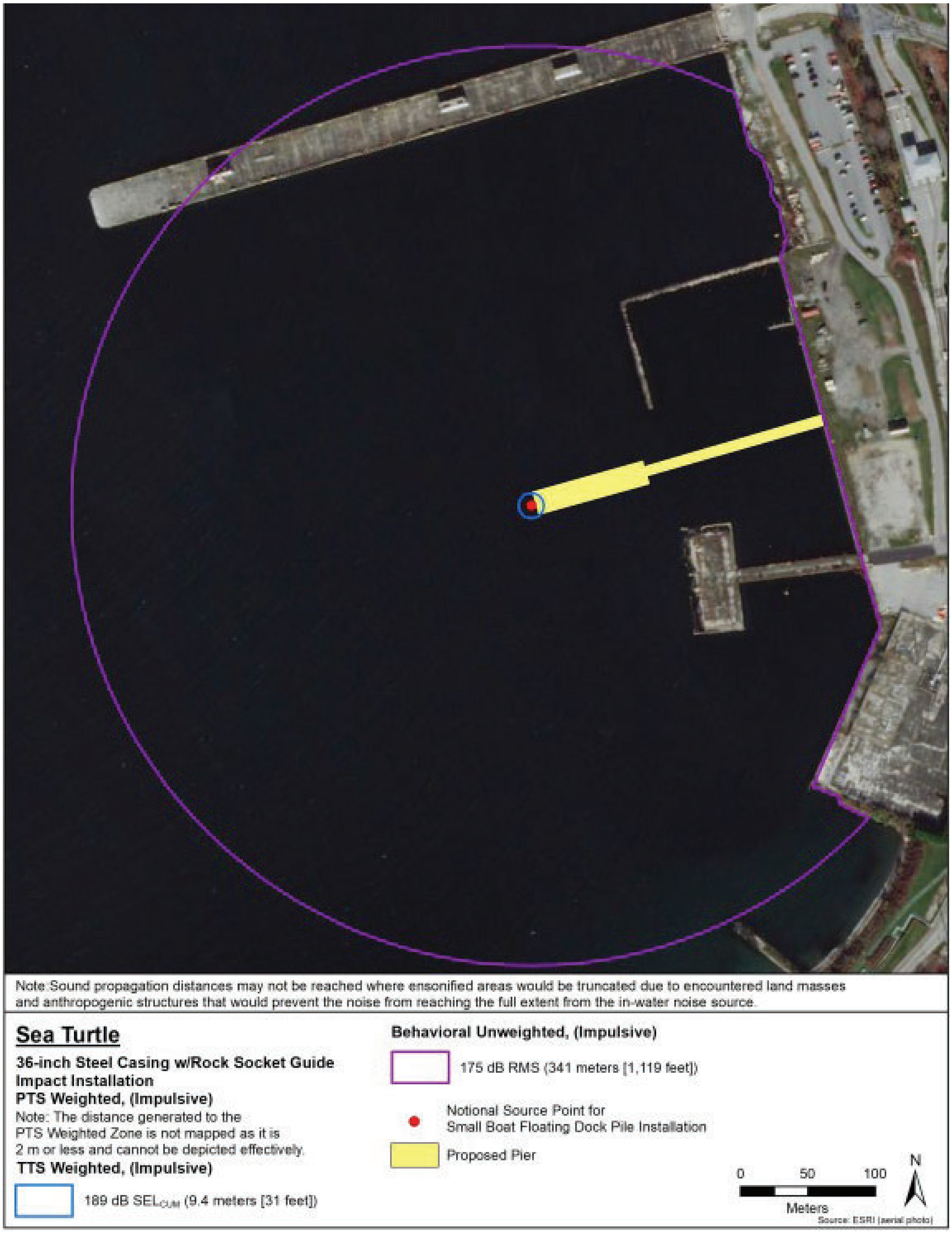
Enclosure 4. Predicted Distances to Fish Noise Thresholds During Impact Installation of 30-inch Steel Pile Driving –Trestle, Pier, and Gangway

Enclosure 5. Predicted Distances to Fish Noise Thresholds During Impact Installation of 36-inch Steel Pile Driving – Small Boat Floating Dock

Enclosure 6. Predicted Distances to Sea Turtle Noise Thresholds During 18-inch Steel Pipe Impact Pile Driving – Bulkhead



Enclosure 7. Predicted Distances to Sea Turtle Noise Thresholds During 30-inch Steel Pipe Impact Pile Driving – Trestle, Pier and Gangway



Enclosure 8. Predicted Distances to Sea Turtle Noise Thresholds During Impact Installation of 36-inch Steel Pile Driving – Small Boat Floating Dock

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

August 4, 2022

Mark George
Regional Environmental Compliance Officer
NOAA Global Monitoring Lab – Safety Program
U.S. Department of Commerce

Re: Construction and Relocation of NOAA Research Vessel at the Naval Station (NAVSTA) Newport in Newport, Rhode Island

Dear Mr. George:

We have completed our consultation under section 7 of the Endangered Species Act (ESA) in response to your letter received on July 22, 2022, regarding the above-referenced project. We reviewed your consultation request document and related materials. Based on our knowledge, expertise, and the materials provided, we concur with your conclusion that the proposed action is not likely to adversely affect any National Marine Fisheries Service (NMFS) ESA-listed species. At this time, no further consultation pursuant to section 7 of the ESA is required.

We would like to offer several clarifications to complement your incoming request for consultation. In the Alteration of the Sea Floor section of your Biological Assessment (BA), you state that the area disturbed would be small relative to available habitat. To clarify, the area that will be disturbed is small relative to the habitat available within the action area. Therefore, we concur with your determination that effects of habitat modification (i.e., sea floor alteration) will be insignificant. We also concur with your determination that effects to prey availability will be insignificant because benthic organisms are expected to recolonize after the project construction is completed.

Regarding your analysis of vessel strike risk to ESA-listed species, after considering: (1) The existing baseline conditions, (2) the action and what it adds to existing baseline conditions, and (3) new baseline conditions (the existing baseline conditions and the action together), we concur that the vessels added to baseline conditions as a result of the proposed project is not likely to adversely affect ESA-listed species for the following reasons. Adding project vessels to the existing baseline will not increase the risk that any vessel in the area will strike an individual, or will increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured or detected. The baseline risk of a vessel strike within Narraganset Bay is unknown. The increase in traffic associated with the project vessels (i.e., 10) is extremely small and will be temporary. As such, any increased risk of a vessel strike caused by the project will be too small to be meaningfully measured or detected. Therefore, we agree with your determination that the effects from increased vessel traffic during project construction are insignificant. In addition to the ten project vessels, you also state that there will be two vessels added to the baseline as a result of the project. The new construction will increase the vessel capacity of the facility and, as a result, two additional vessels will transit through the action area in the future. As discussed above, the baseline risk of vessel interaction is unknown. Increases in vessel capacity may not directly correlate to more vessels in the action area since active vessels in the action area may move elsewhere, or be retired from use. At this time, we assume there will only be a slight increase in risk from the addition of two vessels to baseline activity in the action area and that any associated increase in risk of a vessel strike would be insignificant.

For the purposes of this consultation, we considered whether the substantive analysis and its conclusions regarding the effects of the proposed action articulated in the Letter of Concurrence would be any different under the 50 CFR part 402 regulations as they exist now, following the U.S. District Court for the Northern District of California's July 5, 2022, vacatur of the 2019 Rule, compared to the regulations as revised by the 2019 Rule. We have determined that our analysis and conclusions would not be any different.

Reinitiation of consultation is required and shall be requested by the Federal agency or by us, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If 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 this consultation; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, reinitiation would be required. Should you have any questions about this correspondence please contact Meagan Riley at (978) 281-9339 or by email at meagan.riley@noaa.gov. For questions related to Essential Fish Habitat, please contact Sabrina Pereira with our Habitat and Ecosystem Services Division at (978) 675-2178 or sabrina.pereira@noaa.gov.

Sincerely,

Jennifer Anderson

Jennifer Anderson
Assistant Regional Administrator
for Protected Resources

CC: Pereira, NMFS HESD; Kam, Navy
ECO: GARFO-2022-01772
File Code: H:\Section 7 Team\Section 7\Non-Fisheries\NOAA\NAVSTA Newport RI

United States Fish and Wildlife Service Biological Assessment

In Support of the Environmental Assessment for

Relocation of National Oceanic and Atmospheric Administration Research Vessels at Naval Station Newport, Newport, Rhode Island

Prepared for:

National Oceanic and Atmospheric Administration

Prepared by:

AECOM

June 2022

Executive Summary

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (RI). The project is located within the known range of the threatened[1] northern long-eared bat (*Myotis septentrionalis*), endangered roseate tern (*Sterna dougallii*), and the candidate threatened monarch butterfly (*Danaus plexippus*). Construction activities would be limited to open water and the developed shoreside area of NAVSTA Newport.

There is no suitable habitat for the northern long-eared bat, roseate tern, or monarch butterfly in the project area and therefore they would not forage, roost, or nest in the vicinity of the project. No critical habitat for any of these species is found in the project area. Potential project-related disturbances, such as noise, would not extend to areas where protected species are likely to be found. Therefore, the proposed action would have "no effect" on the northern long-eared bat, roseate tern, and monarch butterfly.

[1] On 23 March 2022, the USFWS issued a proposed rule to reclassify the northern long-eared bat from a threatened species to an endangered species under the ESA (87 Federal Register 16442).

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1. Project Purpose

The Navy and the National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the long-term homeporting of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (RI) (Figure 1). The Proposed Action includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove and construction of parking.

The proposed location of the pier and shoreside facilities would be at the former site of the Robert E. Derecktor Shipyard, also known as Environmental Restoration Program Site 19, in Coddington Cove, herein referred to as Pier Landing Site (Figure 1). Additional parking facilities would be constructed on a vacant site located near Building 11, approximately one quarter mile east of Pier Landing Site, herein referred to as Building 11 Parking Area (Figure 1).

NOAA's Office of Marine and Aviation Operations operates a wide assortment of hydrographic survey, oceanographic research, and fisheries survey vessels. Currently, two Atlantic region NOAA research vessels, the *Henry B. Bigelow* and *Okeanos Explorer*, are located in Rhode Island at Pier 2 at NAVSTA Newport. Pier 2 does not meet NOAA requirements for NOAA vessels because it does not meet the operational requirement for exclusive use of the pier, priority use berthing for NOAA vessels, and there would be competing use of shoreside areas. The other two vessels that would be relocated and homeported at NAVSTA Newport would be part of NOAA's existing Atlantic fleet currently located in New Hampshire, Virginia, South Carolina, or Mississippi.

Because many of NOAA research cruises are conducted in the Northeast, the permanent relocation of vessels to this area presents logistical advantages, as well as operational efficiencies. An analysis of operational performance, mission effectiveness, lifecycle costs, and risk to mission and operational performance resulted in the identification of NAVSTA Newport as the preferred location for NOAA research vessels (Cardno, 2016a; 2016b).

1.1 Proposed Action

1.1.1 Pier and Trestle

Under the Preferred Alternative, a new four-berth pier would be constructed approximately 450 feet (137 meters) north of the existing T-pier in Coddington Cove for the berthing of four NOAA research vessels. The new pier would be approximately 62-feet (19-meters) wide and 587-feet (179-meters) long (approximately 36,400 square feet [3,380 square meters]). The pier would be accessed by a 28-foot (8.5-meter) wide by 525-foot (160-meter) long trestle (portion over water would be 506 feet (154 meters) and approximately 14,200 square feet (1,320 square meters). A plan view of the pier and trestle is provided in Figure 2.

The new pier and trestle would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that connects to shore utilities. Fueling of ships would be conducted using a tanker truck.

The pier would be a pile-supported concrete deck. Structural support piles for the new pier would consist of 120 steel pipe piles measuring 30 inches (76 centimeters) in diameter. The piles would be driven into the cove bottom from the mudline to depths required to achieve bearing capacity by vibratory and impact hammers. Fender piles would be installed along the perimeter of the pier and would consist of 201, 16-inch (40-centimeter) diameter steel pipe piles.

The access trestle would span over two existing bulkheads: a U-pile wall with an internal wale that was noted as existing circa 1950, and a sheet pile (MZ 32) bulkhead with an external double channel wale placed circa 1980. The trestle access would be located upland and the trestle would span the existing and new bulkhead and provide access (i.e., bridge) to the pier. The pier begins where there is adequate water depth (-25 feet mean lower low water [MLLW]). Structural support piles for the trestle concrete deck would consist of 36 steel pipe piles with permanent high-density polyethylene grouted jackets measuring 18-inches (46-centimeters) in diameter and 2 steel pipe piles measuring 30-inches (76-centimeters) in diameter. The piles would be driven to depths required to achieve bearing capacity.

Pile installation would occur using barge-mounted cranes and land-based cranes equipped with vibratory and impact hammers. Piles would be installed initially using vibratory means and then finished with impact hammers, as necessary. Impact hammers would also be used where obstructions or sediment conditions do not permit the efficient use of vibratory hammers. If obstructions, such as glacial boulders, are encountered, a rotary drill may be used to clear the obstruction.

Trestle and pier piles would be installed using a template that would be secured by four, 16-inch (41-centimeter) pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of pier/trestle construction. The use of the template would require the driving and removal of the template piles approximately 19 times for the trestle (72 piles) and 30 times for the pier (196 total installation/extraction moves of pipe piles). Pile installation is estimated to occur within one calendar year.

The small boat floating dock would be constructed northwest of the main pier and trestle structures. The floating dock is positioned at a location where the water depth is approximately -15 feet MLLW. The floating system would consist of a single heavy duty 19.7-foot (6-meter) by 65.6-foot (20-meter) concrete float (approximately 1,300 square feet [121 square meters]) and two 80-foot (24-meter) long and 5.5-foot (1.7-meter) wide gangway segments (approximately 440 square feet [41 square meters] each) to the floating pier directly from land, with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway would be supported by four 18-inch (46-centimeter) diameter and 85-foot (26-meter) long steel pipe piles. The floating dock would provide berthing on three sides. Two 36-inch (91-centimeter) diameter, steel pipe guide piles would provide lateral support to the floating dock. The guide piles would be rock socketed into bedrock. The small floating dock would be equipped with electrical shore power, lighting, communications, and potable water, but would not have fueling or sewage pump out capabilities.

Demolition would be required at the proposed site of the floating dock to remove an existing abandoned dock. This would require vibratory extraction of three 12-inch (30-centimeter) diameter steel pipe piles and four 12-inch (30-centimeter) timber piles.

1.1.2 Bulkhead Reinforcement

Approximately 728 feet (222 meters) of bulkhead would be constructed at the Pier Landing Site to reinforce and stabilize the existing deteriorating bulkhead and to support the new facilities. A combination of approximately 115, 18-inch (46-centimeter) diameter pipe piles (king piles) and 230 steel Z-shaped, intermediate sheet piles would be installed along the face of the existing bulkhead. Piles would be installed in front of the existing double channel wale, which extends approximately 12 inches (30 centimeters) from the existing bulkhead face. The existing bulkhead wale cannot be removed to place the new bulkhead closer because such disturbance could cause collapse of the existing bulkhead. Thus, the bulkhead would project a total of approximately 30 inches (76 centimeters) into the water beyond the existing bulkhead. This space would be filled with pea gravel. The new bulkhead would be topped with a concrete cap and concrete facade that would extend to just below mean high water.

The pipe piles would be driven into the cove bottom from the mudline to weathered bedrock and sheet piles would be driven into dense glacial till by vibratory and impact hammers. If obstructions, such as boulders or debris are encountered, pile installation may require use of a “down-the-hole” hammer to break up rock or may require moving the obstruction aside using mechanical means with incidental sediment disturbance. Debris would be pulled from the water and disposed of appropriately. Rock would be stockpiled during pile driving and then reset as close to the original position as possible.

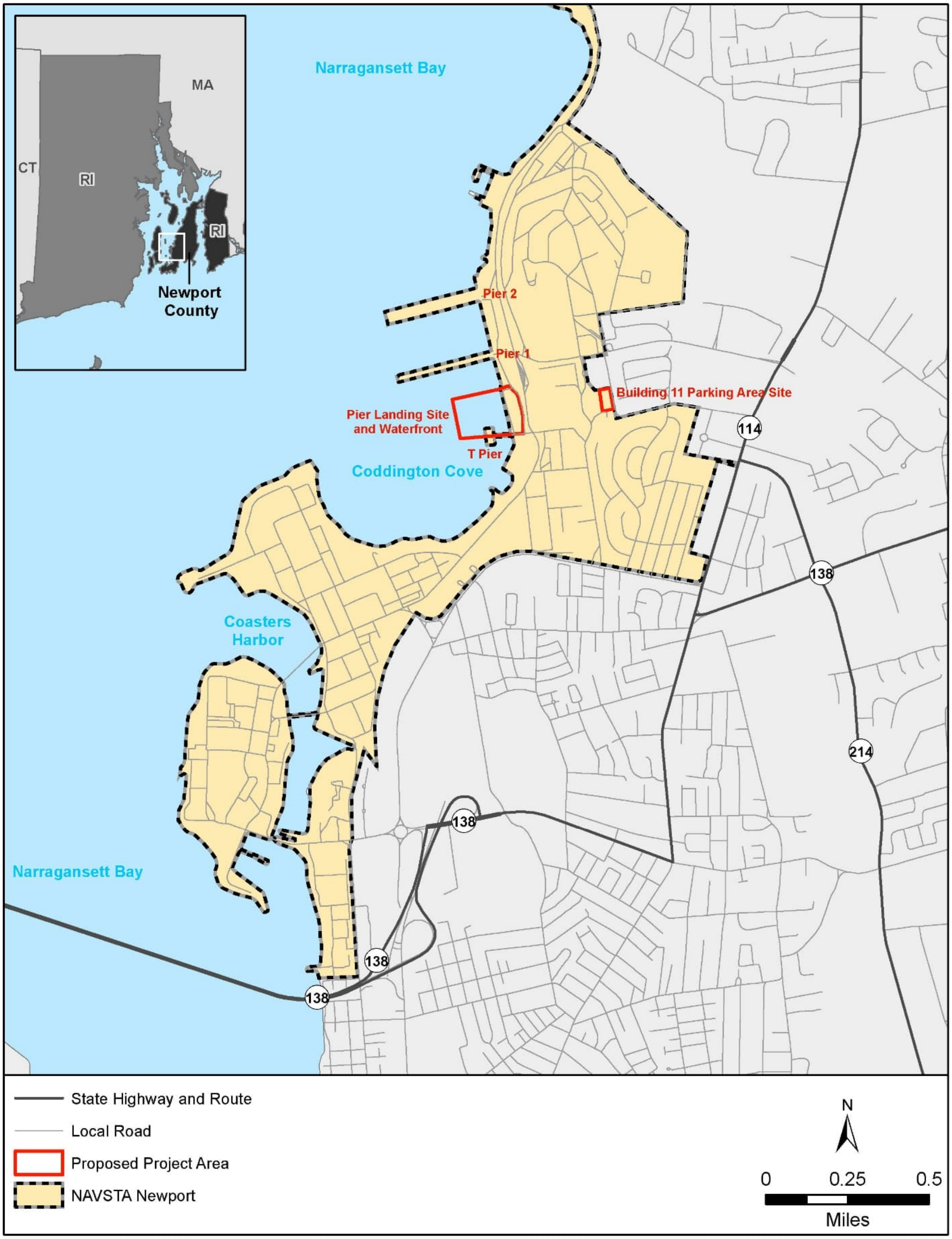

Figure 1. Project Area

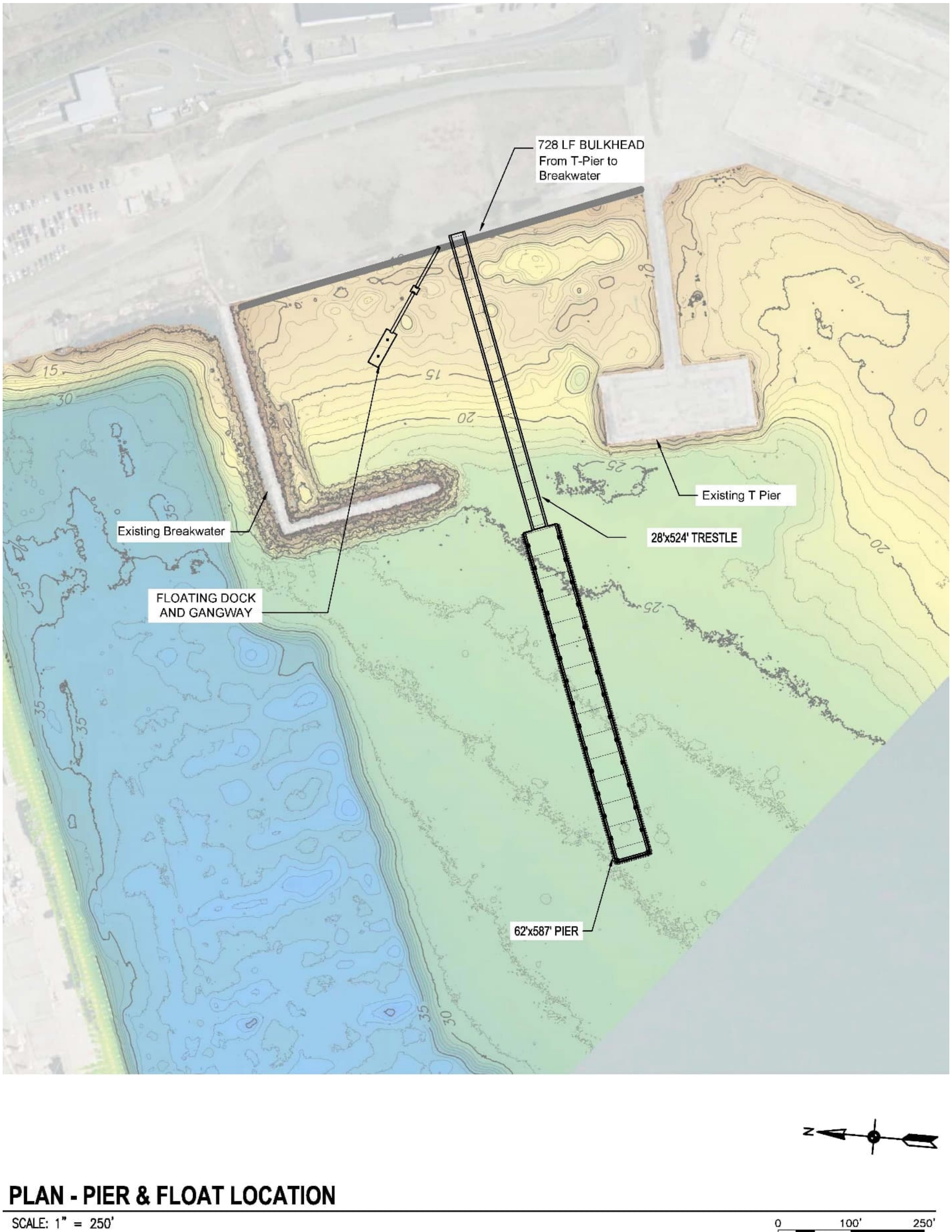

Figure 2. Plan View of Bulkhead, Proposed Pier, and Small Boat Floating Dock

Minimal demolition would be required along the existing bulkhead. No demolition would occur in the water. The existing concrete sheet pile cap would be removed along with several feet of the steel sheet piles to enable construction of the new combination bulkhead. To tie in the ends of the new bulkhead, a portion of the existing revetment rock at the north and south ends would be removed and salvaged.

1.1.3 Shoreside and Support Facilities

Under the Proposed Action, the Pier Landing Site would be developed with a new administration building and warehouse. The administration building would consist of 16,584 square feet (1,540 square meters) first floor with 5,394 square feet (501 square meters) of second floor space and an attached, single-story, 11,190 square feet (1,040 square meter) warehouse. In addition, 43,560 square feet (4,047 square meters) of exterior storage area, and associated parking would be constructed (Figure 3). The plan includes a 30-space bituminous concrete parking lot located adjacent to the building and a separate, 45-space parking lot located north of the exterior storage area (Figure 4). Additionally, four small boat tie-down locations, eight connex boxes, a pre-fabricated hazardous materials storage container, a 300-square foot (28-square meter) boat washdown area, and a 1,500-square foot (139-square meter) small boat repair building would be constructed on the site. An access road would be constructed between the new pier and existing Anderson Avenue Extension.

The exterior storage area would be separated from the administration and warehouse building by the pier accessway which connects the new pier to the existing access road (Anderson Avenue Extension) parallel to Burma Road.

Building 11 Parking Area is located approximately 1,500 feet (457 meters) east of Pier Landing Site between the parking lot serving Building 11 and the installation perimeter along Chases Lane. The area is open lawn space with remnants of a basketball court and would be developed to contain a 50-space parking lot.

Due to restrictions prohibiting stormwater infiltration at Pier Landing Area, stormwater management would consist of traditional catch basin and storm sewer collection networks, and two bioretention filter basins, discharging to existing storm sewers directly to Coddington Cove via two new stormwater outfalls in the bulkhead. Alternate stormwater treatment and control methods include installing sump catch basins, a shallow extended detention basin, vegetated bioretention filter basins, and landscaped bioretention filter basins with impermeable liners. The 45-space parking lot located north of the exterior laydown area would direct runoff via sheet flow to an adjacent bioretention filter basin. This basin would capture runoff and filter stormwater through 2 feet (0.6 meters) of planting soil medium to improve water quality. The basin would include an impermeable liner to prevent infiltration of stormwater into the surrounding subsoils. The basin would be drained through a perforated underdrain and a high-level basin overflow. Accumulated sediments within the bioretention filter basin would be removed periodically to maintain water quality.

Landscaping at the Pier Landing Site and Building 11 Parking Area would include shade trees, microclimate specific vegetation emphasizing coastal and pollinator habitats, and pedestrian pathways. Plantings would comply with the Rhode Island Coastal Resources Management Council approved plant list. At the Building 11 Parking Area, an existing memorial tree and plaque dedicated to a former employee would be relocated to the corner of the site.

1.2 Project Timeframe

Project implementation is planned to begin in 2024 and take approximately two years to complete.

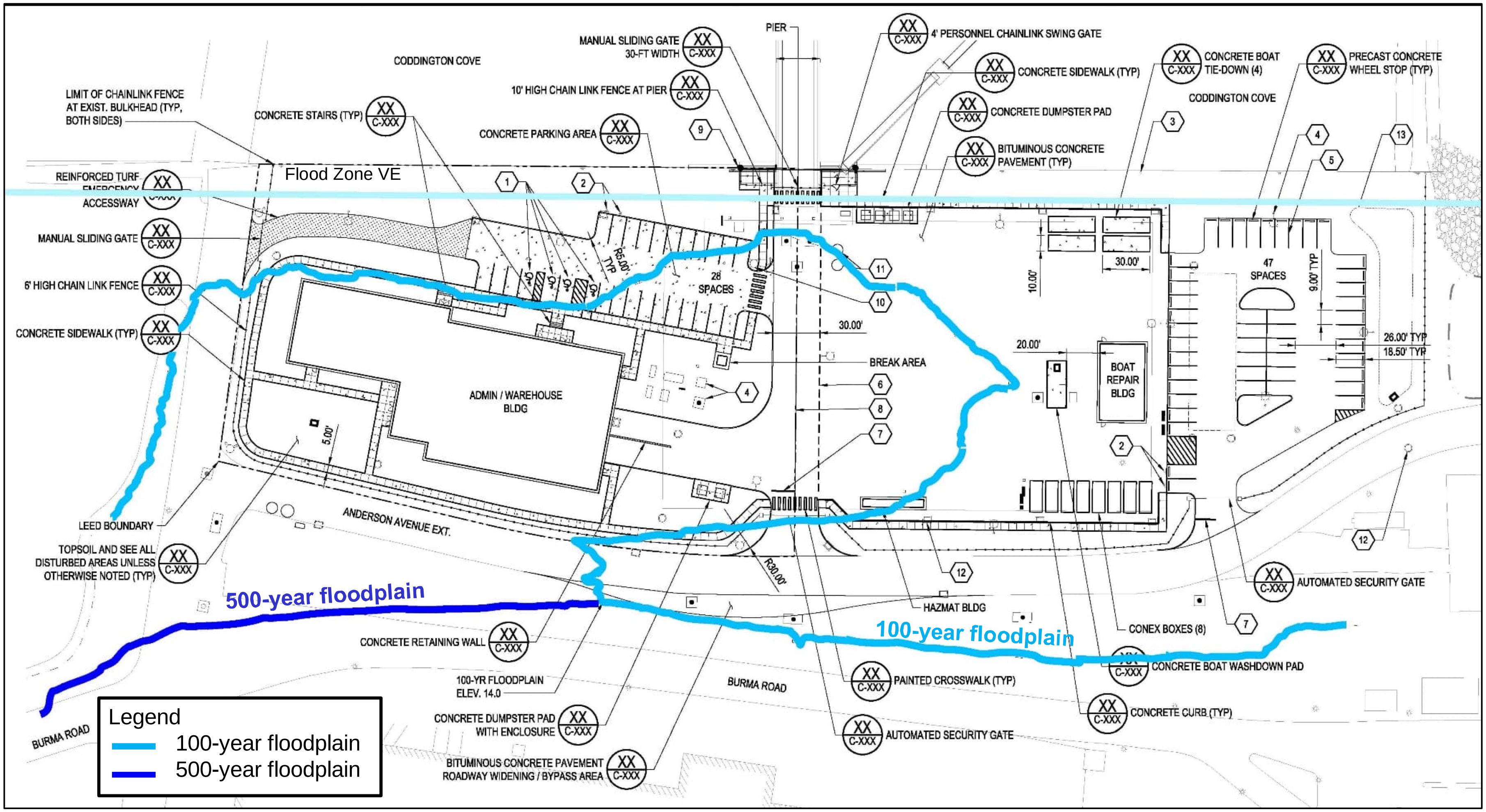

Figure 3. Shoreside Support Facilities at Pier Landing Site

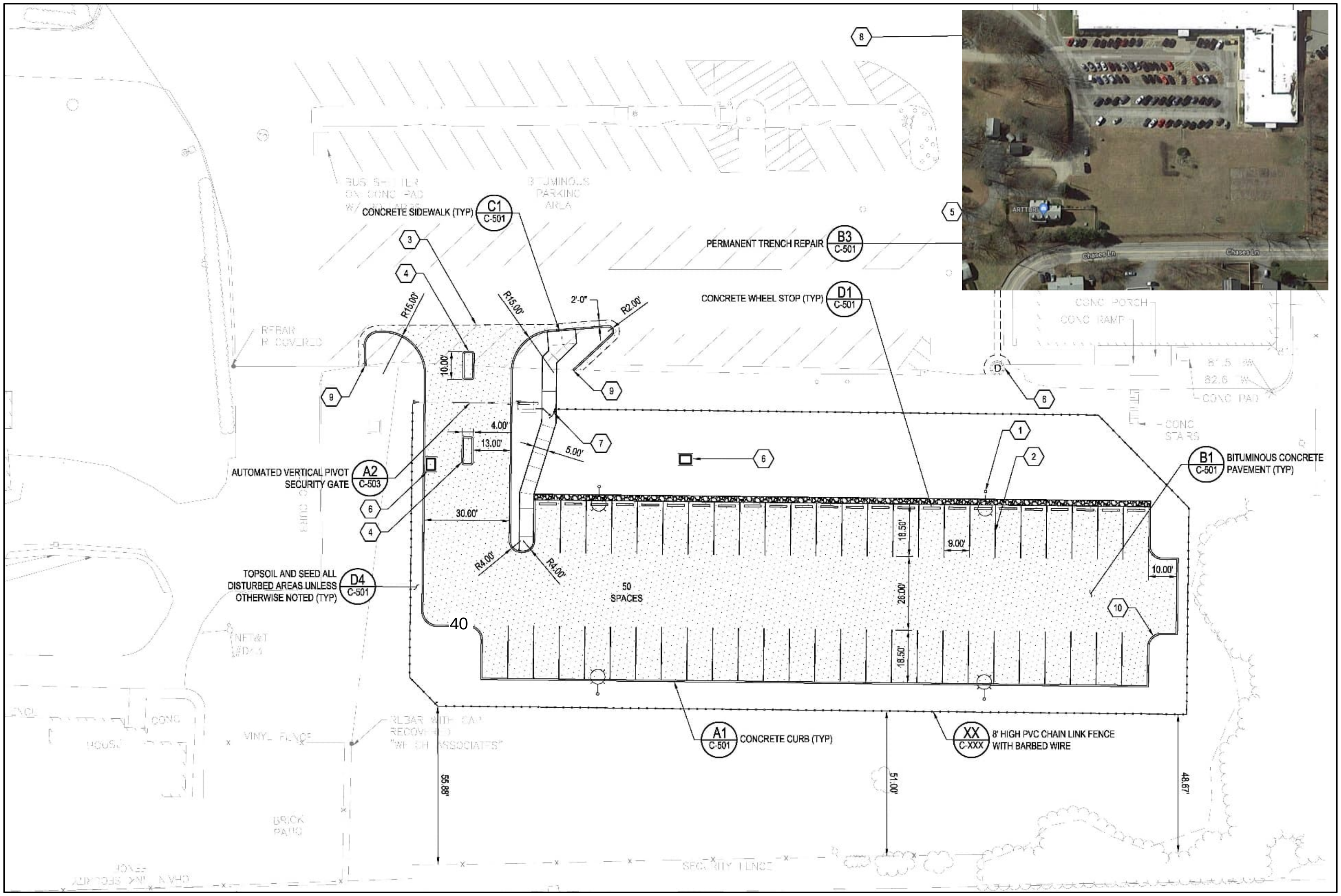

Figure 4. Building 11 Parking Area

2. Description of the Action Area

The action area is defined as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action” (50 CFR §402.02). The action area includes the project footprint of the new pier, shoreside, and support facilities in NAVSTA Newport at Coddington Cove (41°31′41″N 71°18′43″W) (Figure 1). This Biological Assessment focuses on the area and associated activities where Endangered Species Act (ESA) species under jurisdiction of the United States Fish and Wildlife Service (USFWS) may be present. The action area and activities where ESA species under the jurisdiction of NOAA Fisheries may be present is covered in a separate Biological Assessment prepared for NOAA Fisheries.

The majority of the land area at NAVSTA Newport is developed with the action area located in the heavily developed southern end of NAVSTA Newport (Figure 5). Vegetation occurs throughout the installation, with the most extensive vegetated areas occurring within five defunct tank farms in the north portion of the main installation, well away from the action area. There is also a large tract of undeveloped land on the east side of the Naval Undersea Warfare Center.

The Pier Landing Site where the pier, shoreside, and support facilities would be located is an industrialized waterfront with little vegetation. Any vegetation present would be common, weedy species that can tolerate frequent disturbance. The Building 11 Parking Area is vegetated with maintained lawn grasses and landscaped trees and shrubs and also has the remnants of a basketball court in the planned area (Figure 4).

An Integrated Natural Resources Management Plan (INRMP) was prepared for NAVSTA Newport in 2014 (NAVFAC MIDLANT, 2014) and updated in 2021 (NAVFAC MIDLANT, 2021a) to provide for the conservation and rehabilitation of natural resources. The INRMP is a long-term planning document that guides implementation of the Natural Resource Program to help ensure consistency with the installation’s military mission, while protecting and enhancing natural resources, to the extent practicable.

A comprehensive natural resources survey was conducted from July 2020 to June 2021 at NAVSTA Newport (NAVFAC MIDLANT, 2021b). The primary objective of the survey was to update the results of the Naval Station Newport Natural Heritage Inventory performed by the Rhode Island Natural History Survey (RINHS) in 2006 (RINHS, 2006). Secondary objectives included documenting all species and habitat community types observed on NAVSTA Newport with a particular focus on threatened and endangered species, providing an updated delineation of community types, and developing recommendations related to proposed ecological Special Interest Areas and opportunities for future habitat improvement activities. The action area was classified as developed area as shown in Figure 5 (NAVFAC MIDLANT, 2021b).

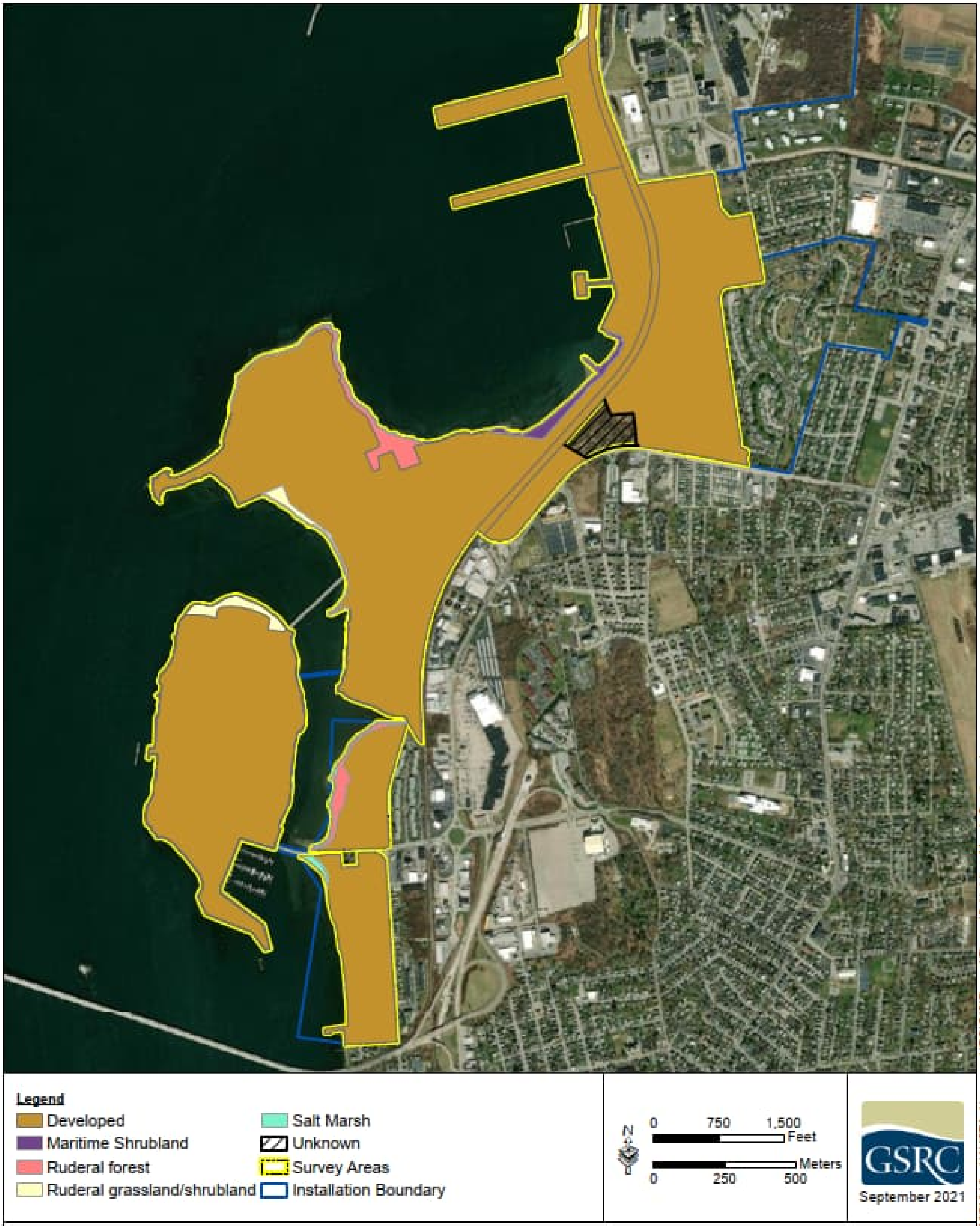

Figure 5. Ecological Communities – Project Area

3. ESA-Listed Species in the Project Area under USFWS Jurisdiction

A list of threatened and endangered species that potentially occur in the project area was generated using the USFWS Information for Planning and Consultation (IPaC) System (USFWS, 2022a). According to the IPaC system, the endangered roseate tern *(Sterna dougallii),* the threatened northern long-eared bat *(Myotis septentrionalis*), and the candidate threatened monarch butterfly (*Danaus plexippus)* may occur in the project area. No critical habitat for any of these species is present in the project area. The Rhode Island Natural Heritage database was checked to determine if there are any records of Rhode Island endangered species in the project area. There are no Rhode Island Natural Heritage Data points for rare, threatened, or endangered species in the vicinity of the project (Jordan, 2022).

3.1 Northern Long-eared Bat

The northern long-eared bat is listed by the USFWS as threatened (79 Federal Register 68657). It was proposed for reclassification as an endangered species on March 23, 2022 (87 Federal Register 16442). The range of the northern long-eared bat includes much of the eastern and north central United States, all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory, and eastern British Columbia (USFWS, 2021).

The northern long-eared bat is found in dense forest areas and forages in a variety of habitats. It is an opportunistic insectivore feeding in the pre-dawn and dusk hours on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation or by gleaning motionless insects from vegetation and water surfaces (USFWS, 2021).

Northern long-eared bats spend the winter hibernating, typically using large caves or mines with large passages and entrances, constant temperatures, and high humidity with no air currents. Rhode Island does not host a large number of hibernating bats as there are no mines or natural caves in the state. Some man-made structures provide a similar environment and small numbers of bats utilize these structures for hibernation (RIDEM, 2016). There are no known hibernacula for northern long-eared bat in the project area. However, the numerous small storage areas and buildings on Tank Farm 3 (Figure 5) could support resident bat species (RINHS, 2006).

White-nose syndrome, a fungal disease known to affect bats, is currently the predominant threat to this bat, especially throughout the Northeast where the species has declined by up to 99 percent from pre-white-nose syndrome levels at many hibernation sites (USFWS, 2021). A recent study of northern long-eared bat in Rhode Island confirmed the presence of white-nose syndrome in Newport County (RIDEM, 2016).

Bat acoustic monitoring surveys were undertaken as part of the permitting process for a previously proposed project at NAVSTA Newport. Passive acoustic monitoring was performed from 2009 to 2013, active acoustic monitoring took place in 2013, and bat mist netting was done in 2013 (NAVFAC MIDLANT, 2014; NAVFAC MIDLANT, 2021). Passive acoustic monitoring conducted in 2011 and 2013 identified northern long-eared bat calls, but none were detected in 2009 and 2010. Calls were heard along forest edges and wetland habitats within NAVSTA Newport, a limited habitat type within the predominantly urban NAVSTA Newport landscape, and south of the project area at the Bishop Rock detector, a coastal detector surrounded on three sides by water.

In addition to the passive acoustic monitoring, active acoustic monitoring was performed in 2013, but no northern long-eared bat calls were recorded (NAVFAC MIDLANT, 2014). No northern-long eared bats were captured during mist nets placed in 2013 as part of the bat surveys.

Bat acoustic monitoring was continued in 2018 with a passive acoustic survey performed from May to December 2018 (Tetra Tech, 2019a). During this acoustic survey, 877 detector-nights were sampled over the course of 215 calendar nights between May 9 and December 10, 2018 at five sampling sites based on representative habitats within the installation and on potential high bat activity, potential forest clearing, and accessibility. Three detectors were located in the northern portion of the facility (one each near Tank Farms 2, 3, and 4), one in the southern end in the area managed as a bird sanctuary by the State of Rhode Island, and one on Gould Island. A total of 40,169 bat passes were recorded and identified to the species level or frequency group. Presence of six of the eight species of bats known to occur in Rhode Island were detected (big brown bat [*Eptesicus fuscus*], eastern red bat [*Lasiurus borealis*], hoary bat [L. cinereus], silver-haired bat [*Lasionycteris noctivagans*], little brown bat [*Myotis lucifugus*], and tri-colored bat [*Perimyotis subflavus*]). Activity was dominated by big brown bat, eastern red bat, and unidentified high frequency species with the highest rates of bat activity recorded at stations within or adjacent to a closed canopy (TetraTech, 2019a). The northern long-eared bat was not detected during this survey.

A low-level short term acoustic survey specifically targeted for the northern long-eared bat was conducted in 2018 during its maternity period (May 15 to August 15) to determine if it is present in suitable northern long-eared bat habitat at NAVSTA Newport (Tetra Tech, 2019b). All five locations were located in the northern portion of NAVSTA Newport, two near Tank Farm 2 and three near Tank Farm 3. The northern long-eared bat was not detected during this survey. No monitoring was performed in or near the currently proposed project area, as it is highly developed and there is no suitable bat habitat for foraging or roosting in the project area (Tetra Tech, 2019b; NAVFAC MIDLANT, 2021a). This presence/absence survey did not identify the presence of the federally threatened northern long-eared bat at NAVSTA Newport (Tetra Tech, 2019b).

3.2 Roseate Tern

The North American subspecies of the roseate tern is divided into two separate breeding populations, one in the northeastern United States and Nova Scotia and another in the southeastern United States and Caribbean. The northeastern population is listed by the USFWS as endangered, while the other population is listed as threatened (52 Federal Register 42064).

The roseate tern generally breeds in colonies on coastal islands and mainland coastlines, favoring protected areas. Their nests are often hidden under the protective cover of rocks or vegetation and consist of shallow scrapes in sand or gravel (USFWS, 2011).

In the northeast, roseate terns feed mostly on small fish, such as sand lance (USFWS, 2011). It is strictly a coastal species with colony sites located on rocky offshore islands, barrier beaches, and saltmarsh islands close to shallow-water foraging areas.

Migratory bird monitoring is ongoing at NAVSTA Newport occurring annually and including a special emphasis on detecting piping plovers, roseate terns, red knots, and American oystercatchers (NAVFAC MIDLANT, 2014; NAVFAC MIDLANT, 2021a). A point count survey, with an emphasis on migratory species and protected species, occurs every five years with sampling during all four seasons (NAVFAC MIDLANT, 2014).

Nesting habitat for the roseate tern is not found within Pier Landing Site or the industrialized shoreline and bulkhead area in the project area along Coddington Cove. The roseate tern may forage in other less developed areas of Narragansett Bay. Due to the lack of habitat and the absence of any roseate tern sightings at NAVSTA Newport (RIDEM, 2006; NAVFAC MIDLANT, 2014; NAVFAC MIDLANT, 2021b), this species is not likely to be present within the project area and is not discussed further.

3.3 Monarch Butterfly

On December 17, 2020 the USFWS announced a 12-month finding to list the monarch butterfly as threatened species under the ESA (85 Federal Register 81813). Eastern North American monarch butterflies undergo long-distance migration. In the fall, monarchs begin migrating to their overwintering sites, a migration that can take monarchs distances up to 2,500 miles (over 4,000 kilometers) and last for over two months (Watt, 2021).

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic (USFWS, 2022b). During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), and larvae emerge after two to five days. Sufficient nectar is needed for adult feeding throughout the breeding and migration seasons (USFWS, 2020).

Monarch butterflies forage on vegetation during their migration and were observed during summer surveys in old fields and other herbaceous habitats offering nectar sources on NAVSTA Newport (NAVFAC MIDLANT, 2021b). Common milkweed (*Asclepias syriaca*) and swamp milkweed (*Asclepias incarnata*), host plants for the monarch butterfly, were observed in natural areas. No monarch caterpillars (larvae) were observed.

The vegetation at the Pier Landing Site is limited and consists of common, weedy species that can tolerate frequent disturbance. The Building 11 Parking Area is vegetated with maintained lawn grasses and landscaped trees and shrubs. These areas contain low quality habitat with no recorded milkweed that the monarch butterflies could use in the absence of higher quality habitat. As higher quality vegetation is found in other areas of the installation, the likelihood of monarch butterflies foraging in the project area is considered to be low.

4. Project Habitat

The area where the proposed action would take place at NAVSTA Newport is developed (NAVFAC MIDLANT, 2014; NAVFAC MIDLANT, 2021a; NAVFAC MIDLANT, 2021b). The most extensive vegetated areas occurring within the five defunct tank farms on the northern half of the installation and a separate, large tract of undeveloped land occurs on the east side of the Naval Undersea Warfare Center, north of the project area. Natural resource inventories and assessments conducted at NAVSTA Newport were concentrated within the vegetated portions of the property, which included the tank farms, segments of a railroad right-of-way, and sections of the shoreline along Narragansett Bay (RINHS, 2006; NAVFAC MIDLANT, 2021b).

The project would be located in two areas, both characterized as developed. The Pier Landing Site is an industrialized waterfront with little vegetation (Figure 5). The vegetated portion of the Building 11 Parking Area consists of maintained lawn grasses and landscaped trees and shrubs (Figure 5).

5. Assessment of Impacts

Project related activities that have the potential to cause adverse effects include loss of vegetation, increase in impervious surfaces, increased noise, and an increase in vehicle traffic, as discussed below.

5.1 Loss of Vegetation

The areas where construction would occur are largely developed or have low value habitat, such as mowed lawn. Construction at the Pier Landing Site would result in 180,000 square feet (16,723 square meters) of disturbance and work at the Building 11 Parking Area would result in an additional 60,000 square feet (5,574 square meters) of disturbance. Areas adjacent to construction activities that are disturbed would be replanted with native vegetation, including appropriate trees, shrubs, and/or grasses once construction is completed to minimize loss of vegetated areas. Revegetation would cover 60,000 square feet (5,574 square meters) at the Pier Landing Site and 20,000 square feet (1,858 square meters) at the Building 11 Parking Area. These areas would be revegetated with native and landscape appropriate trees, shrubs, and/or grasses. The INRMP (NAVFAC MIDLANT, 2021a) contains a species list for native plantings.

The areas that would be disturbed at the Pier Landing Site and Building 11 Parking Area do not attract the northern long-eared bat, nor provide preferred habitat for insect prey. The proposed project is not within the vicinity of any known northern long-eared bat hibernacula or maternity roosting habitat. Therefore, impacts to the species habitat associated with limited tree clearing, are not anticipated to occur. Impacts on vegetation are too small to be meaningfully measured or detected and, therefore, insignificant.

The monarch butterfly is unlikely to be attracted to the low quality habitat areas where the project would be located, such as mown lawns, as higher quality habitat is available nearby. After construction is completed, the area will be revegetated with native vegetation, providing improved foraging habitat for monarch butterflies. Impacts on the existing vegetation are too small to be meaningfully measured or detected, and therefore, insignificant.

5.2 Increase in Impervious Surfaces

The proposed project would result in the addition of up to 120,000 square feet (11,148 square meters) of impervious surfaces at the Pier Landing Site from the construction of buildings, parking areas and sidewalks and up to an additional approximately 40,000 square feet (3,716 square meters) of impervious surface from the construction of parking areas and sidewalks at the Building 11 Parking Area. Adjacent areas disturbed by construction activities, approximately 20,000 square feet (1,858 square feet), would be revegetated with native and landscape appropriate trees, shrubs, and/or grasses once construction is completed.

Best management practices will be used during construction and will follow conditions set forth in the Rhode Island Pollution Discharge Elimination System General Permit for Storm Water Discharge Associated with Construction Activity pursuant to Section 402 of the CWA (33 U.S. Code §1342).

The areas where there would be an increase in impervious surfaces are developed areas where the northern long-eared bat and monarch butterfly would be extremely unlikely to occur. The increase in impervious surfaces would have no effect on the northern long-eared bat or the monarch butterfly.

5.3 Noise

Project-related construction noise would arise from the construction of the pier including pile driving/extraction and construction of shoreside and support facilities. The project site is an active waterfront and support facility with associated noise levels. Suitable roosting or foraging habitat for the northern long-eared bat is not present in the area. Monarch butterflies are not anticipated to be present in the project area due to lack of suitable habitat.

Airborne noise levels generated by construction equipment (or by any point source) decrease at a rate of approximately 6 dB per doubling of distance away from the source and would be reduced to typical background waterfront industrial area levels by the time they reach areas where the northern long-eared bat may be roosting, such as the tank farms.

Roosting monarch butterflies have not been shown to be sensitive to noise (Calvert, 1994) and project-related noise is unlikely to have any effect on butterflies foraging in the area.

The noise effects from construction activities would be intermittent, temporary, and would occur only during daytime hours. After construction, noise levels would return to those characteristic of current operations at NAVSTA Newport as the homeporting of additional NOAA research is not anticipated to result in a significant increase in existing noise levels. The effects of the short-term, temporary increases in daytime noise due to construction activities would be too small to be meaningfully measured, detected, or evaluated, and therefore, insignificant.

5.4 Increase in Traffic

The relocation of NOAA research vessels at NAVSTA Newport would necessitate a slight increase in support staff at the station. This would result in a small increase in the number of vehicles at the station. The additional traffic would not be located in areas where the northern long-eared bat or monarch butterfly potentially roosts or forages. The slight increase in traffic would be too small to be meaningfully measured, detected, or evaluated and, and therefore, insignificant.

6. Summary of Effects

The proposed project area is located in an industrial waterfront area with a small amount of low value habitat (mowed lawn, ornamental trees). There is no suitable habitat available for the northern long-eared bat or roseate tern in the project area. The existing low quality habitat in the project area is also unlikely to attract the monarch butterfly. All three species are unlikely to roost, nest, or forage in the project area.

The impacts from construction and operation activities on local resources would be insignificant and would not extend to the areas where the northern-longed bat may be present. The northern long-eared bat, roseate tern, and monarch butterfly are not expected to be present at the project area during construction and their habitat would not be impacted. Some impacted areas would be revegetated with native species, providing higher quality habitat for foraging monarch butterflies. The proposed project would have no effect on any ESA species or candidate ESA species under USFWS jurisdiction potentially present in the project area, as summarized in Table 1.

Table 1. Effects Determination Summary

Species (Common Name)	Scientific Name	Listing Status	Present In Action Area	Effect Determination
Northern long-eared bat	*Myotis septentrionalis*	Threatened[1]	Unlikely	No effect
Roseate tern	*Sterna dougallii dougallii*	Endangered	Unlikely	No effect
Monarch butterfly	*Danaus plexippus*	Candidate – Threatened	Unlikely	No effect

Notes: [1] Proposed for reclassification as endangered.

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RHODE ISLAND
NATURAL HISTORY SURVEY
Providing Ecosystem Science and Information

August 4, 2017

David D. Dorocz, Head
Environmental Division
Naval Station Newport
Newport, RI 02841-1522

Dear Mr. Dorocz:

I am in receipt of your letter and accompanying plans describing the Navy's intended construction in and near Coddington Cove of a new wharf and support facilities for NOAA ships (ref 5090 Ser PRNP4/505). After reviewing the plans as described in the provided materials I consulted with our database of localities known to support species listed as endangered, threatened, or concern by the state of Rhode Island. This database is compiled from observations made across many years and submitted to the Natural History Survey from diverse sources I can find no information indicative of any such species having been reported to be in or to utilize the project area. According to our records, neither are there rare species nearby to the site that would likely be affected by the type of activity you describe.

My conclusions are limited by the information provided to the Natural History Survey and this assessment should not be taken as conclusive evidence that there are no rare species present in the project area at any particular time. This is particularly true of marine and coastal habitats where species can be highly mobile. This is also not an expert assessment of the site or any specific or general ecological impacts of the proposed activities.

Sincerely yours,

David W. Gregg, Ph.D.
Executive Director

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P.O. Box 1858
Kingston, RI 02881
401-874-5800
info@rinhs.org; www.rinhs.org

AUG 10 2017

Appendix G Coastal Consistency Determination

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE of the CHIEF ADMINISTRATIVE OFFICER
Safety and Environmental Compliance Office

July 26, 2022

Mr. Dan Goulet
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road
Wakefield, RI 02879

Dear Mr. Goulet:

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (RI). The Proposed Action includes the construction of a new pier, small boat floating dock, bulkhead, and shoreside facilities in Coddington Cove (Pier Landing Site) and construction of a parking lot near Building 11 to the east of Pier Landing Site. The proposed location of the pier and shoreside facilities would be at the former site of Derecktor Shipyard in Coddington Cove. Construction is planned to begin in 2024, and take approximately two years.

Enclosed is the Federal Consistency Determination. An electronic copy of the enclosures will be provided to cstaff1@crmc.ri.gov. NOAA has prepared a Draft Environmental Assessment, which was released for a 30-day pubic comment period from June 26 to July 26,2022 and is available at: https://www.noaa.gov/administration/draft-environmental-assessment.

In accordance with Title 15 of the Code of Federal Regulations, Part 930 Subpart C, Consistency for Federal Activities, NOAA has determined that this action is consistent to the maximum extent practicable with the Rhode Island Coastal Resources Management Plan.

If you have any questions or require additional information, please contact me at 303-497-3064 or mark.george@noaa.gov.

Sincerely,

GEORGE.MARK.S.1365873786 Digitally signed by GEORGE.MARK.S.1365873786 Date: 2022.07.27 16:54:10 -06'00'

Mark George, P.E.
NOAA Environmental Compliance Division

Enclosures: (1) Federal Consistency Determination
(2) Project Drawings

Copy to: David Dorocz, Naval Station Newport
Sarah Bowman, Naval Facilities Engineering Systems Command, Mid-Atlantic

Coastal Zone Management Act
Federal Consistency Determination
Relocation of NOAA Research Vessels at Naval Station Newport
Newport, Rhode Island

PROJECT DESCRIPTION

The National Oceanic and Atmospheric Administration (NOAA) proposes to establish adequate pier, shoreside, and support facilities to support the permanent relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport in Newport, Rhode Island (Figure 1). The proposed location of the pier and shoreside facilities would be at the Former Robert E. Derecktor Shipyard site in Coddington Cove, herein referred to as Pier Landing Site (Figure 1). Additional parking facilities would be constructed on a vacant site located approximately one quarter mile east of Pier Landing Site, herein referred to as Building 11 Parking Area (Figure 1).

Structures that would be constructed at Pier Landing Site would be located outside of the Federal Emergency Management Agency (FEMA)-designated 100-year floodplain but would be within the FEMA-designated 500-year floodplain. Portions of the parking lots and exterior storage area would be located within the limits of the 100-year floodplain. The additional parking facilities at Building 11 Parking Area would not be located within any FEMA-designated floodplains. Construction is planned to begin in 2024 and take approximately 2 years to complete.

The purpose of the Preferred Alternative is to provide facilities and functions to meet the operational requirements necessary to support the relocation of four NOAA Atlantic Fleet research vessels at NAVSTA Newport. The need for the Preferred Alternative is due to the insufficiency of current research vessel locations, including deteriorating conditions of Pier 2 at NAVSTA Newport. The Proposed Action would also gain efficiencies by co-locating NOAA vessels in support of NOAA's mission and operational requirements consistent with the NOAA/U.S. Coast Guard Fleet Plan and Cooperative Maritime Strategy. The landside area of the project area is periodically used by United States Coast Guard and the Navy as a temporary storage and laydown area. The new bulkhead would be designed to provide adequate shoreline stabilization and protection for proposed NOAA warehouse, laydown/loading and exterior storage. Additionally, the new parking area and associated infrastructure would be designed to accommodate construction/installation of supporting utilities in the waterfront area.

NOAA prepared this Federal Consistency Determination in accordance with Section 307 of the Coastal Zone Management Act and the Rhode Island Coastal Resources Management Program Federal Consistency Manual.

Preferred Alternative

The Preferred Alternative is to construct at a new four-berth pier at a new location approximately 450 feet north of the existing T-pier in Coddington Cove. Approximately 728 feet of new bulkhead would be installed at the proposed new pier location to stabilize the existing deteriorating bulkhead (Figure 2).

Pier, Trestle, and Small Boat Floating Dock

The new pier would be approximately 62-feet wide and 587-feet long (approximately 36,400 square feet) and would be accessed by a 28-foot wide by 524-foot long trestle (approximately 14,200 square feet). A 20-feet wide and 66-feet long small floating dock would be constructed just north of the trestle (Figure 3).

The new pier and trestle would be pile-supported structures and would be equipped with electrical service, pier lighting, communications, cable, telephone, fire suppression water, sewer, and potable water that would be connected to shore utilities. Fueling activities would be conducted using a tanker truck. Structural support piles for the new pier would consist of 120 steel pipe piles measuring 30 inches in diameter. The piles would be driven into the cove bottom from the mudline to depths required to achieve bearing capacity. Fender piles would be installed and would consist of 201, 16-inch diameter steel pipe piles. Structural support piles for the trestle would consist of 36, steel pipe piles measuring 18-inches in diameter and two steel pipe piles measuring 30-inches in diameter. Trestle and pier piles would be installed using a template that would be secured by four, 16-inch pipe piles. Once the pier or trestle piles are installed in the template, the template would be removed and relocated to the next section of pier/trestle construction. The use of the template would require the driving and removal of the template piles approximately 19 times for the trestle and 30 times for the pier (196 total installation/extraction moves). Installation of the support piles would occur within one calendar year, and fender piles would be installed the following year.

Construction of the new pier would occur in the 100-year floodplain. The pier would have a deck elevation of 15.25 feet (North American Vertical Datum 1988), sloping down to 12 feet at grade level at the bulkhead. Critical equipment located on the pier deck, such as electrical transformers, would be elevated 3 feet above base flood elevation (Zone VE on the coastline, elevation 16.0 North American Vertical Datum 1988) to the elevation of 19.0 feet. Constructing the pier deck at 19.0 feet is not possible as it would negatively impact pier-side vessel operations The lifespan of the pier would be 50 years.

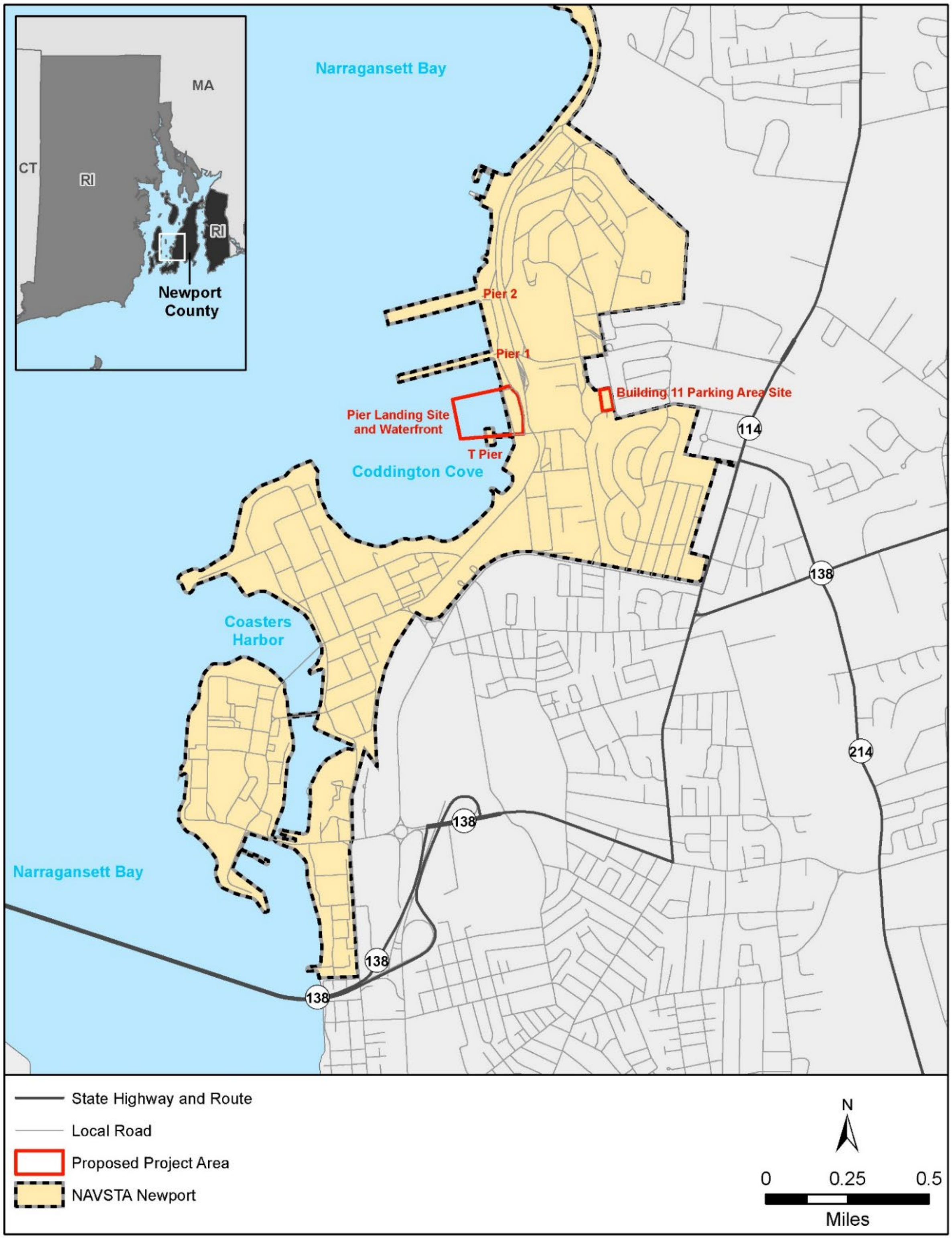


Figure 1: Project Site Map

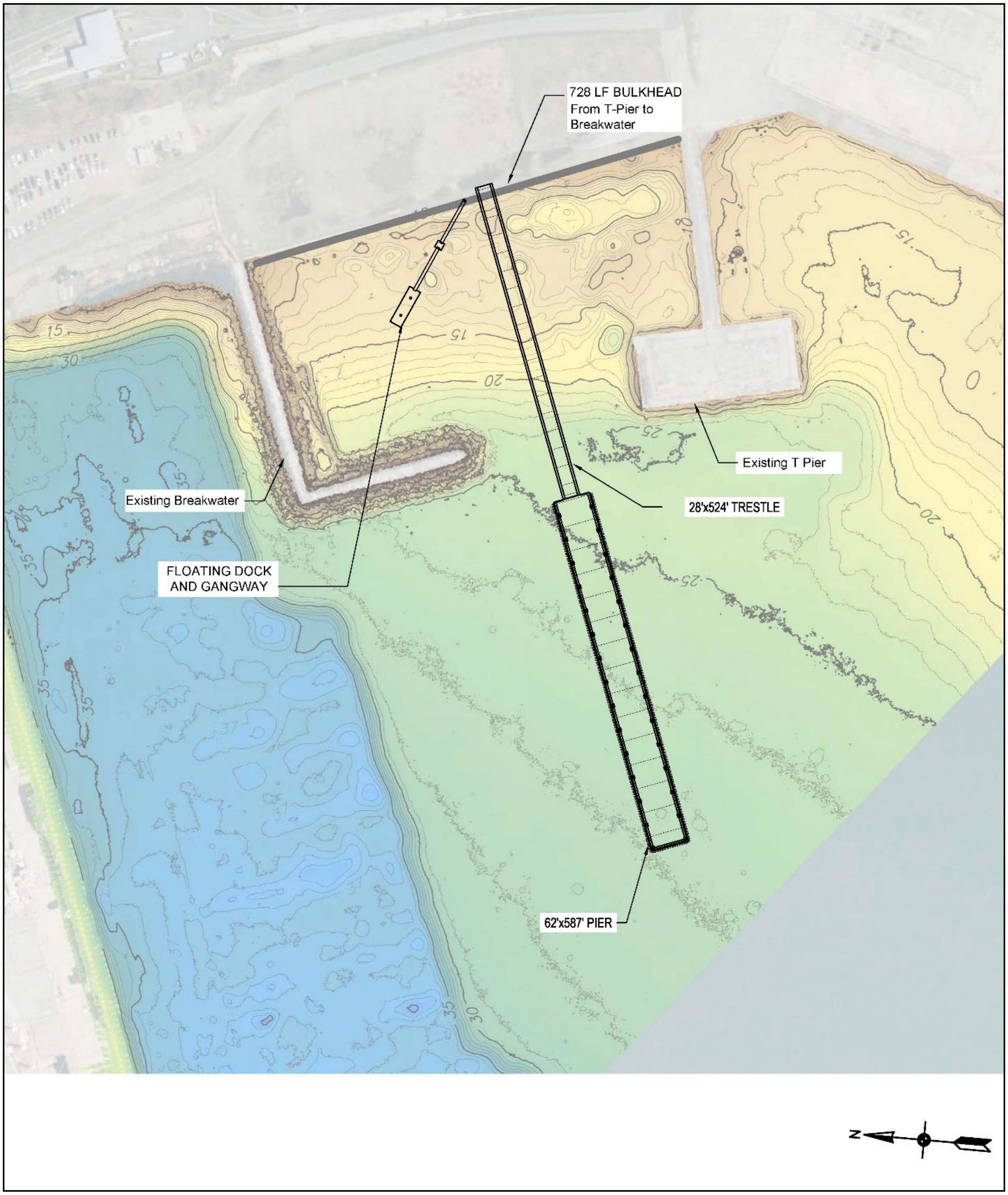


Figure 2: Proposed Pier Location

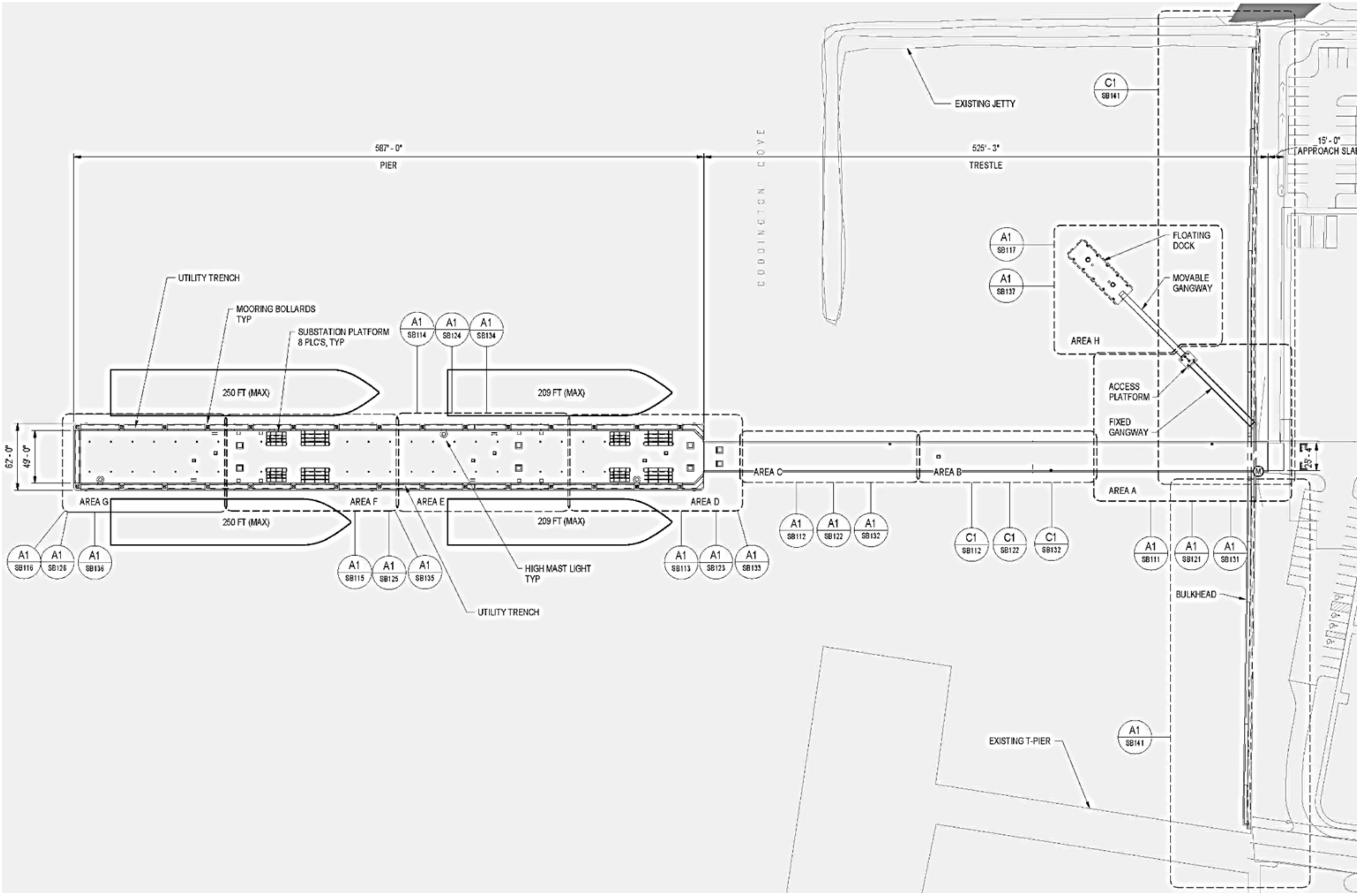


Figure 3. Plan View of Pier, Trestle, Floating Dock, and Bulkhead (Proposed Action)

The small floating dock would be constructed northwest of the main pier and trestle structures (Figure 2). The floating system would consist of a single heavy duty 20-foot by 66-foot concrete float (approximately 1,300 square feet) with a continuous pre-installed waler system and two, 80-foot long gangway segments (approximately 440 square feet). Access to the floating pier would be provided directly from land with one end of the gangway supported on the new bulkhead concrete cap just to the north of the new pier. The gangway would be supported by four, 18-inch diameter steel pipe piles and would be fully compliant with the Americans with Disabilities Act. The floating pier would provide berthing on two sides. Two 36-inch diameter, steel pipe guide piles would provide lateral support to the floating dock. The guide piles would be rock socketed into bedrock. The floating dock would be equipped with electrical shore power, lighting, communications, and potable water, but would not have fueling or sewage pump out capabilities.

Demolition would be required at the proposed site of the floating dock to remove an existing abandoned dock. Demolition would require vibratory extraction of three 12-inch diameter steel pipe piles and four 12-inch timber piles.

Bulkhead

Approximately 728 feet of bulkhead would be constructed near the proposed new pier location to reinforce and stabilize the existing deteriorating bulkhead. The deterioration includes corrosion of the steel sheet piles and sinkholes in the fill behind the concrete cap. This project would improve the existing bulkhead resulting in a stable shoreline and eliminating ongoing erosion and deterioration of the existing shoreline.

The new bulkhead would be constructed in front of the existing bulkhead from the T-pier to the existing breakwater (Figure 2). Piles would be installed in front of the existing double channel wale, which extends approximately 12 inches from the existing bulkhead face. The existing bulkhead wale cannot be removed to place the new bulkhead closer because such disturbance could cause collapse of the existing bulkhead. A combination of approximately 115, 18-inch diameter pipe piles (king piles) and 230 steel Z-shaped, intermediate steel sheet piles would be installed along the face of the existing bulkhead (Figure 4). Thus, the bulkhead would project a total of approximately 30 inches into the water beyond the existing bulkhead. The combination bulkhead would provide sufficient support so that anchors on land would not be required, thus avoiding disturbance of the existing shoreline anchoring system and soils. The new bulkhead would be topped with a concrete cap and concrete facing that would extend to just below mean high water.

The piles would be driven into the cove bottom from the mudline to weathered bedrock and sheet piles would be driven into dense glacial till by vibratory and impact hammers. If obstructions, such as solid bedrock, boulders, or debris are encountered, pile installation may require use of a “down-the-hole” hammer to break up rock or may require moving the obstruction aside using mechanical means with incidental sediment disturbance. Debris would be pulled from the water and disposed of appropriately. Rock would be stockpiled during pile driving and then reset as close to the original position as possible.

Minimal demolition would be required along the existing bulkhead. No demolition would occur in the water. The existing concrete sheet pile cap would be removed along with several feet of the steel sheet piles to enable construction of the new combination bulkhead. To tie in the ends of the new bulkhead, a portion of the existing revetment rock at the north and south ends would be removed and salvaged.

The stormwater system for the new bulkhead along Coddington Cove would require extending and improving the existing storm drain piping and outfalls located in the adjacent area to accept additional

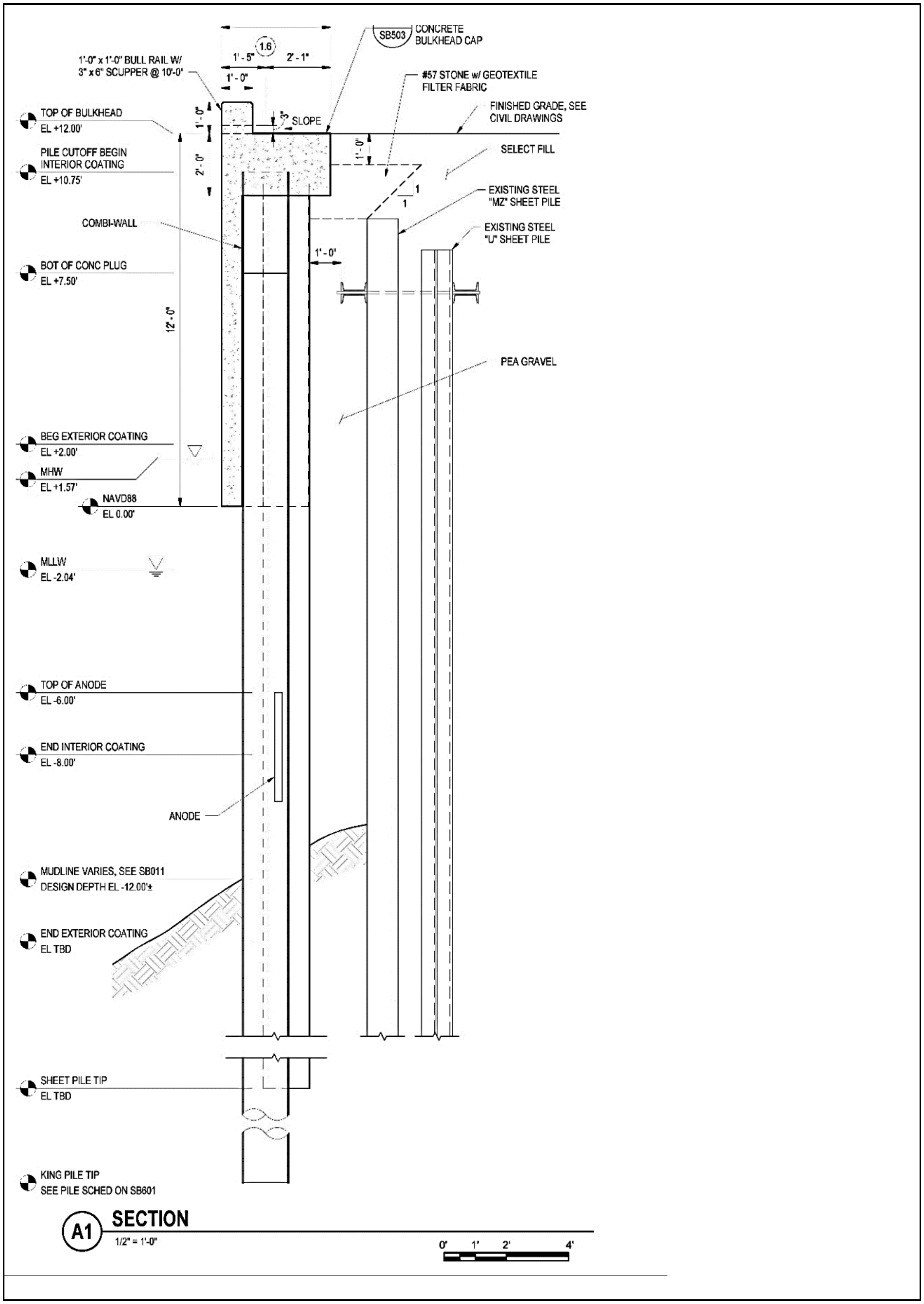


Figure 4. Bulkhead Cross Section (Typical

draining from the newly constructed impervious surfaces, to address existing deterioration of the drains, and/or prevent future maintenance issues.

Shoreside and Support Facilities

Pier Landing Site would be developed with a new administration and warehouse building (22,182 square feet), 43,560 square feet of exterior storage area, and associated parking. The plan includes a 30-space parking lot located adjacent to the building and a separate, 45-space parking lot located north of the exterior storage area. Additionally, four small boat tie-down locations, eight Connex boxes, a pre-fabricated hazardous materials storage container, a 300 square feet boat washdown area, and a 1,636 square feet small boat repair building would be constructed on the site (Figure 5).

The administration and warehouse building would be sited outside of the 100-year floodplain (Zone AE Elevation 14.0 North American Vertical Datum of 1988) but would be within the 500-year floodplain. Portions of the parking lots and exterior storage area would be located within the limits of the 100-year (Zone AE at the Pier Landing Area, elevation 14.0 feet)) floodplain. It is anticipated the administration and warehouse building would be constructed at Elevation 17 feet, 3 feet above base flood elevation, to account for potential storm surges. The lifespan of the building would be 25 years. Structures would be sited and constructed in accordance with applicable laws and regulations, and necessary permits would be obtained prior to construction activity.

The exterior storage area would be separated from the administration and warehouse building by the pier accessway which connects the new pier to the existing access road (Anderson Avenue Extension) parallel to Burma Road.

Due to restrictions prohibiting stormwater infiltration at Pier Landing Site, stormwater management would consist of catch basins, two bioretention filter basins, and storm sewer collection networks discharging to existing storm sewers and new stormwater outfalls. The stormwater system would include methods to improve water quality and detain flows as close as possible to pre-development levels.

Building 11 Parking Area is located approximately 1,500-feet east of Pier Landing Site between the parking lot serving Building 11 and the installation perimeter along Chases Lane. The area is open lawn space with remnants of a basketball court and would be developed to contain a 50-space parking lot (Figure 6). Building 11 Parking Area is not within a Federal Emergency Management Agency-designated flood zone.

At Building 11 Parking Area, a bioretention area would be constructed along the western perimeter of the parking lot to manage stormwater runoff and maintain pre-development hydrology. All stormwater discharges would be monitored for compliance with applicable state and federal permits.

The project would not result in higher erosion rates and would incorporate best management practices outlined in the Rhode Island Soil Erosion and Sediment Control Handbook.

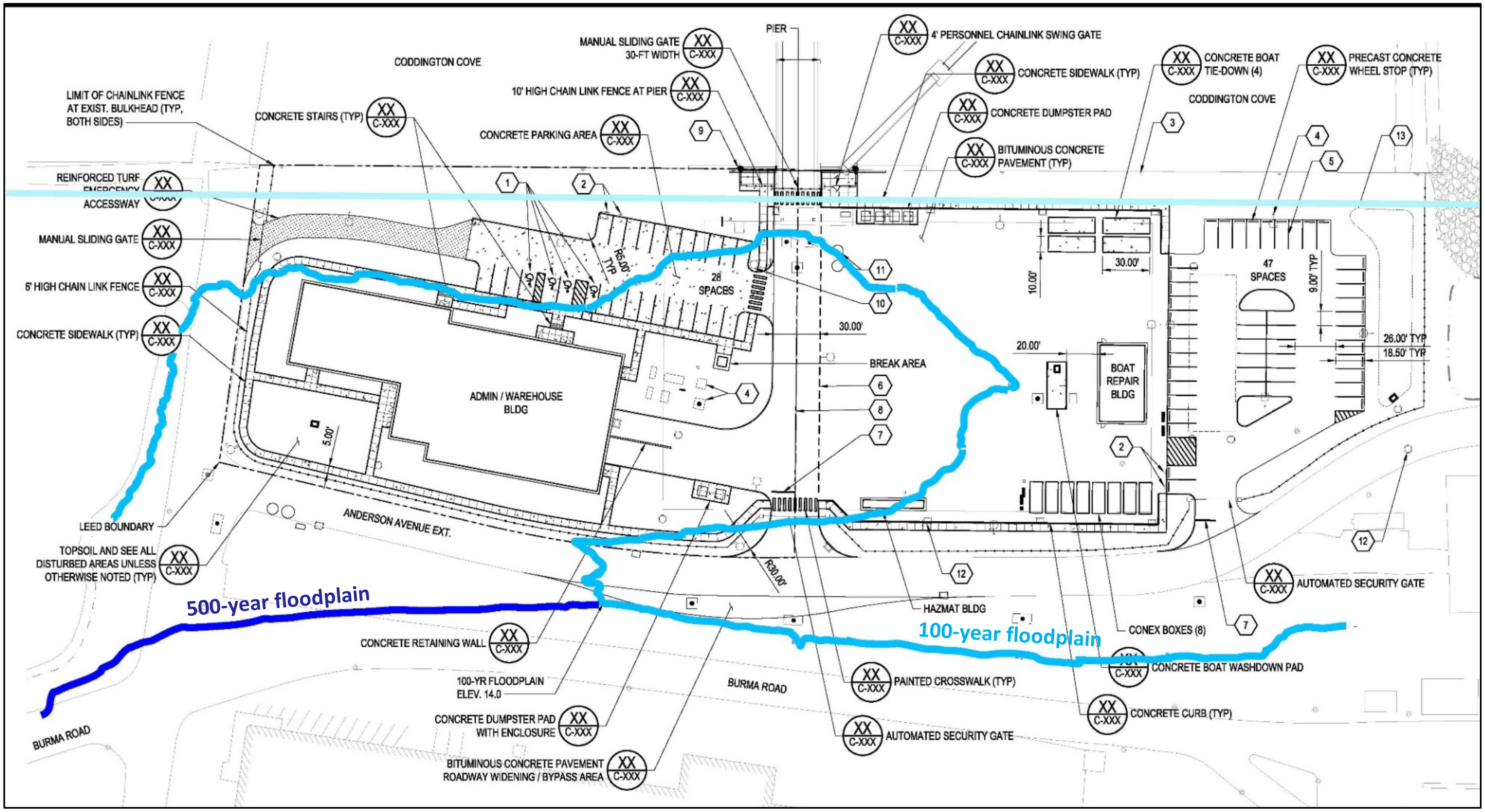


Figure 5: Proposed Development of Pier Landing Site and Location of Floodplains

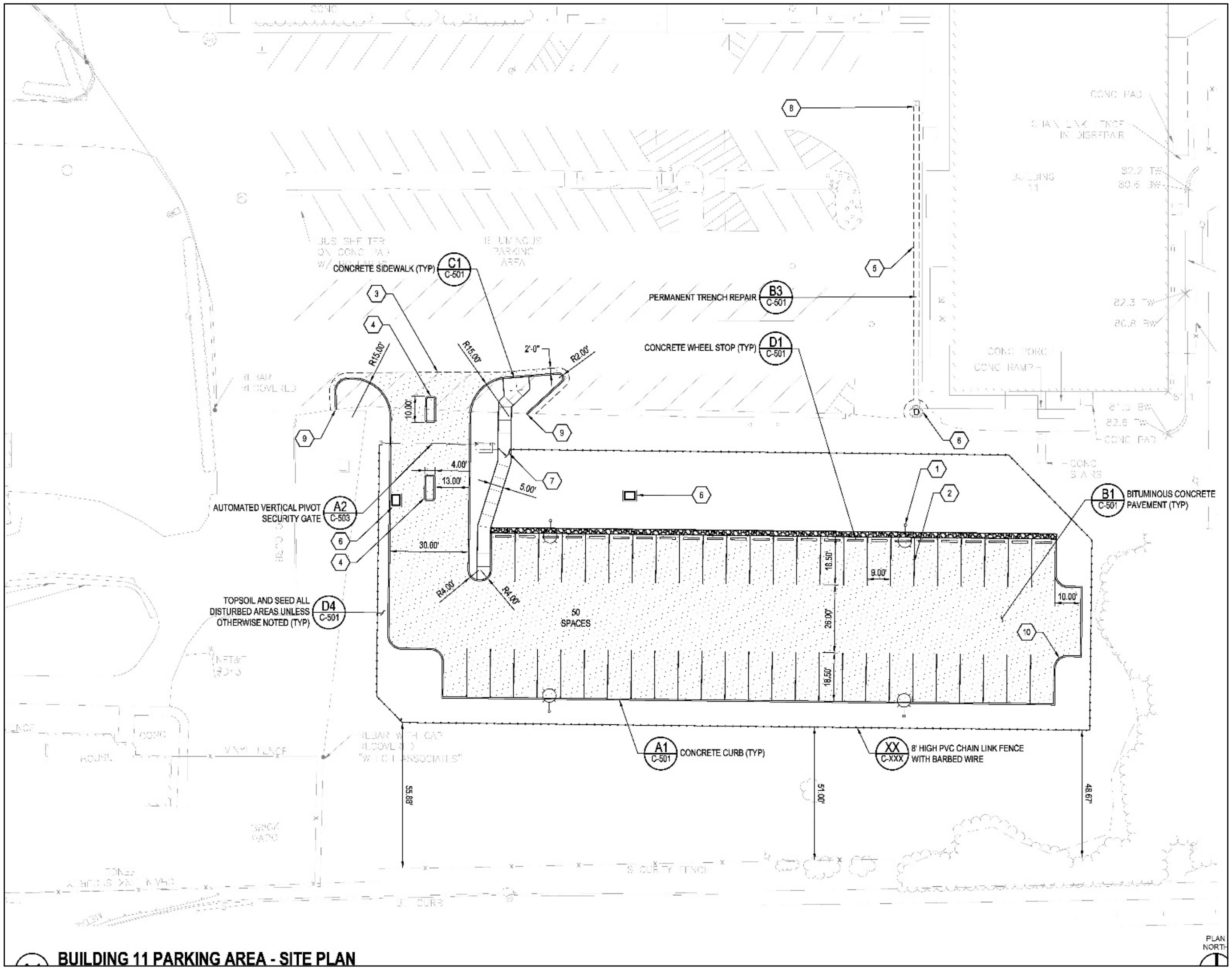


Figure 6. Building 11 Parking Area Development Plan

APPLICABLE SECTIONS OF COASTAL RESOURCES MANAGEMENT PROGRAM

The Preferred Alternative would include the construction of commercial/industrial structures within a coastal community and within 200 feet of the coastline. Because the proposed project is a direct federal action, these activities must be consistent with the Rhode Island Coastal Resources Management Program (RICRMP). Shoreline associated with the Preferred Alternative is classified as manmade shoreline and Type 6 waters. A project location map and site plans are provided in Figures 1 through 6. The applicable sections for the water use and project type are addressed in detail in the following sections.

Section 1.2.1G: Type 6 Industrial Waterfronts

Policy Compliance

a. This project is located in Type 6 waters and would support the modernization of the waterfront structure and benefit federal oceanic research operations that supports commercial fisheries management and deep-sea exploration.

b. This project will restore the shoreline area to its original operational condition and provide berthing as well as the ability to load and unload ships used for federal oceanic research that support commercial fisheries management and deep-sea exploration.

c. This project would restore, improve and modernize the established industrial waterfront in Coddington Cove for long term use by NOAA.

d. Not applicable. The proposed project is not located in Providence Harbor.

Section 1.2.2F: Manmade Shorelines

Policy Compliance

a. This project would repair and improve an existing, structurally compromised bulkhead and eliminate current ongoing erosion problems.

b. The long-term use of the restored bulkhead by NOAA would ensure their long-term maintenance and use.

c. The Preferred Alternative would result in the restoration and/or improvement of currently deteriorated shoreline structures.

Section 1.2.3: Areas of Historic and Archaeological Significance

Policy Compliance

The proposed redevelopment of the site is consistent with this policy of the RICRMP. NOAA has initiated consultation with the State Historic Preservation Office on NOAA's findings that the undertaking would result in a finding of no adverse effect on historic properties.

Section 1.3.1B: Filling, Removing, or Grading of Shoreline Features

Policy Compliance

a. Agricultural practices are not applicable.

b. The Preferred Alternative would adhere to applicable best management practices as set forth in the Rhode Island Soil Erosion and Sediment Control Handbook.

c. An erosion and sediment control plan will be prepared for the proposed project. This plan would be strictly followed.

d. The Rhode Island Soil Erosion and Sediment Control Handbook and Rhode Island Storm water Design and Installation Standards Manual would be used in preparing design plans.

e. The Preferred Alternative would not create a bulk transfer facility. There would be no handling or movement/grading of bulk materials at this site.

f. The Preferred Alternative would result in the grading of greater than two acres.

Section 1.3.1C: Residential, Commercial, Industrial, and Recreational Structures

Policy Compliance

a. All structures would comply with state building codes for construction in flood hazard areas.

b. The proposed project areas are within the boundaries of a secure naval installation and no public access is permitted. As such, the Preferred Alternative would have no impact on public access, and therefore, a variance from this policy is requested under Section 1.1.5 of the RICRMP.

Section 1.3.1F : Treatment of Stormwater and Sewage

Policy Compliance

a. The Preferred Alternative would incorporate low impact development strategies into its design to the extent practicable to reduce the volume of stormwater runoff to surface waters. The stormwater system would include methods to improve water quality and detain flows as close as possible to pre-development levels. Alternate stormwater treatment and control methods include installing 4-foot sump catch basins, a shallow extended detention basin, vegetated bioretention filter basins, and landscaped bioretention filter basins with impermeable liners.

b. The Preferred Alternative would utilize municipal sewage systems

c. Site redevelopment would be required to obtain necessary permits and conform with applicable stormwater management standards and requirements.

d. Project design and construction activities would comply with most recent version of the Rhode Island Stormwater Design and Installation Standards Manual for the preparation of stormwater management plans and the treatment of stormwater using low impact development practices and methods, where permitted.

e. A stormwater management plan would be prepared for the proposed project that would comply with most recent version of the Rhode Island Stormwater Design and

Installation Standards Manual for discharge of stormwater runoff into the coastal environment.

f. The low impact development would be planned, designed, and constructed in a manner that would minimize erosion and sediment loss; limit increases of impervious surface areas to the extent practicable, and limit the extent of soil disturbance. Additionally, stormwater management practices would be designed to maximize the use of natural features and native plant species.

g. The project would be designed to protect water quality of Coddington Cove and use low impact development methods and landscape amenities to reduce stormwater runoff.

h. The project would be designed to make all reasonable effort to meet local, state, and federal regulations and include all possible management measures appropriate to the site.

Section 1.3.1M: Public Roadways, Bridges, Parking Lots, Railroad Lines and Airports):

Policy Compliance

a. Increases in stormwater discharge volumes resulting from the Preferred Alternative would be managed in accordance with Section 1.3.1(F) of the RICRMP.

b. Roadways and parking areas associated with the proposed project would be planned, sited, and designed to protect areas that susceptible to erosion and sediment loss and to limit the disturbance of soil. The Preferred Alternative would not disturb any natural drainage features and natural features. Increases in impervious surfaces would be minimized to the extent practicable. There are no coastal wetlands or areas providing important water quality benefits in the project area. No freshwater wetlands were identified in the project area.

c. Not applicable. No bridges are proposed for this project.

Section 1.3.1N: Maintenance of Structures

Policy Compliance

a. Not Applicable. The Preferred Alternative does not involve maintenance of dredged channels, moorings, or mosquito control ditches.

b. Not applicable. Council Assent does not apply.

c. Bulkhead construction would be conducted in accordance with Section 1.3.1G of the RICRMP.

d. Not Applicable. The existing bulkhead has not been destroyed in excess of 50%.

e. Not applicable. Council Assent does not apply.

f. Not applicable. Council Assent does not apply.

g. Not applicable. The Preferred Alternative does not involve a commercial marina.

h. Not applicable. The Preferred Alternative does not involve a commercial boating facility.

i. Not applicable. No dwellings are proposed to be constructed.

Section 1.3.1R: Submerged Aquatic Vegetation and Aquatic Habitats of Particular Concern

Policy Compliance

a. Not applicable. There is no eelgrass in the proposed project area.

Section 1.4: Federal Consistency

1. The proposed project would be planned and implemented in accordance with the requirements of CZMA section 307(c)(1) and (2), 16 USC 1456 (c)(1) and (2), and 15 CFR part 930, subpart C.
2. Not applicable. The proposed project is a federal action.
3. Not applicable. The proposed project is a federal action and does not involve exploration of the outer continental shelf for development of production activities.
4. Not applicable. The proposed project is a federal action.
5. Except where superseded by federal regulations, the proposed project would be planned and implemented in accordance with the procedures provided in the most recent version of the Council's Federal Consistency Manual

DETERMINATION

The project will not alter future development of Rhode Island's coastal resources. In accordance with 15 CFR 930 Subpart C, Consistency for Federal Activities, NOAA has determined that the Proposed Action would likely affect a coastal use or resource. NOAA has determined that the Preferred Alternative would be undertaken in a manner that is consistent to the maximum extent practicable with the federally approved, enforceable policies RICRMP.

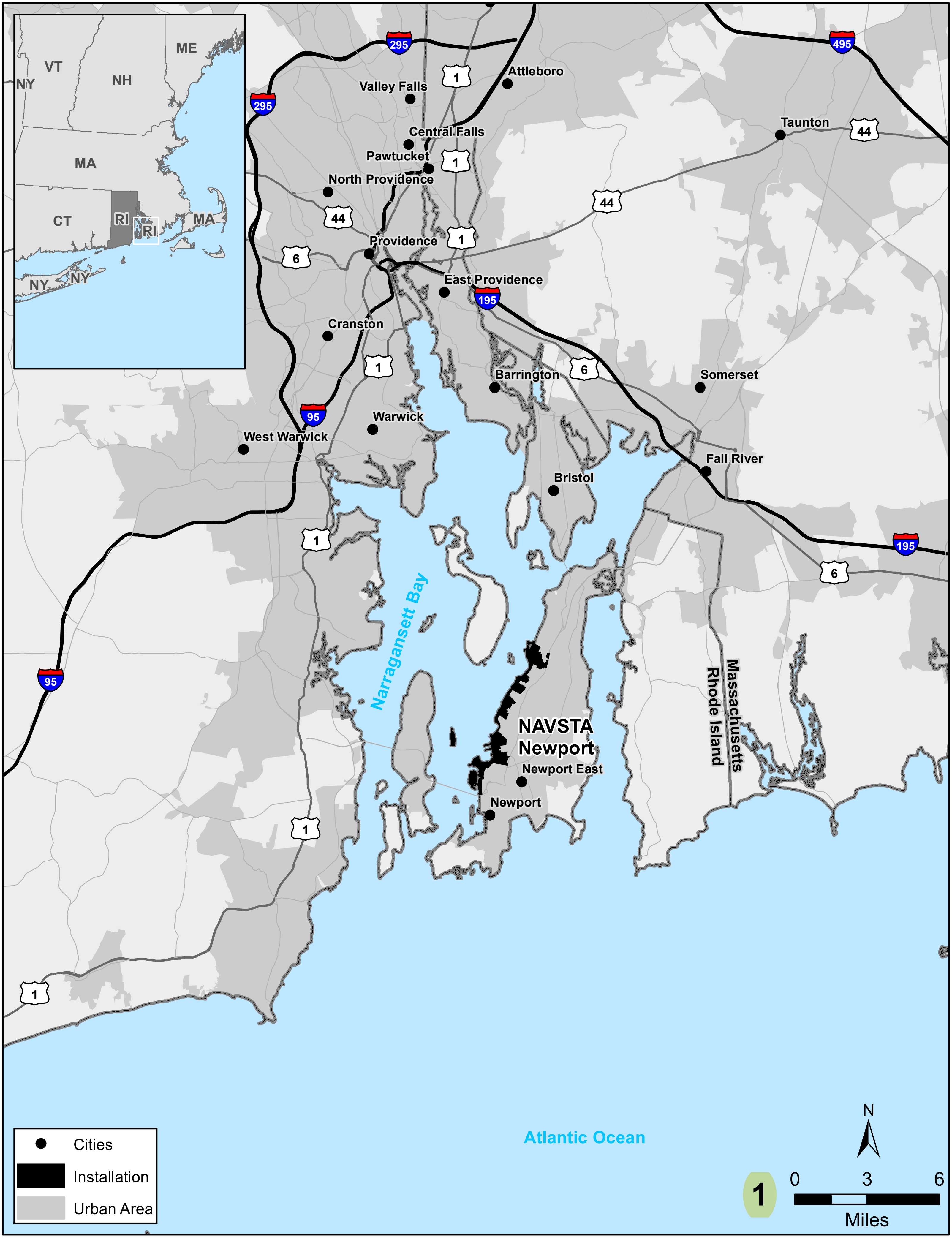
PROJECT DRAWINGS

Relocation of National Oceanic and Atmospheric Administration Research Vessels

At

Naval Station Newport, Newport, Rhode Island

CONTENTS



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Central Falls
Pawtucket
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North Providence
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Providence
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East Providence
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Cranston
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Barrington
Somerset
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Warwick
West Warwick
Fall River
Bristol
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Narragansett Bay
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NAVSTA
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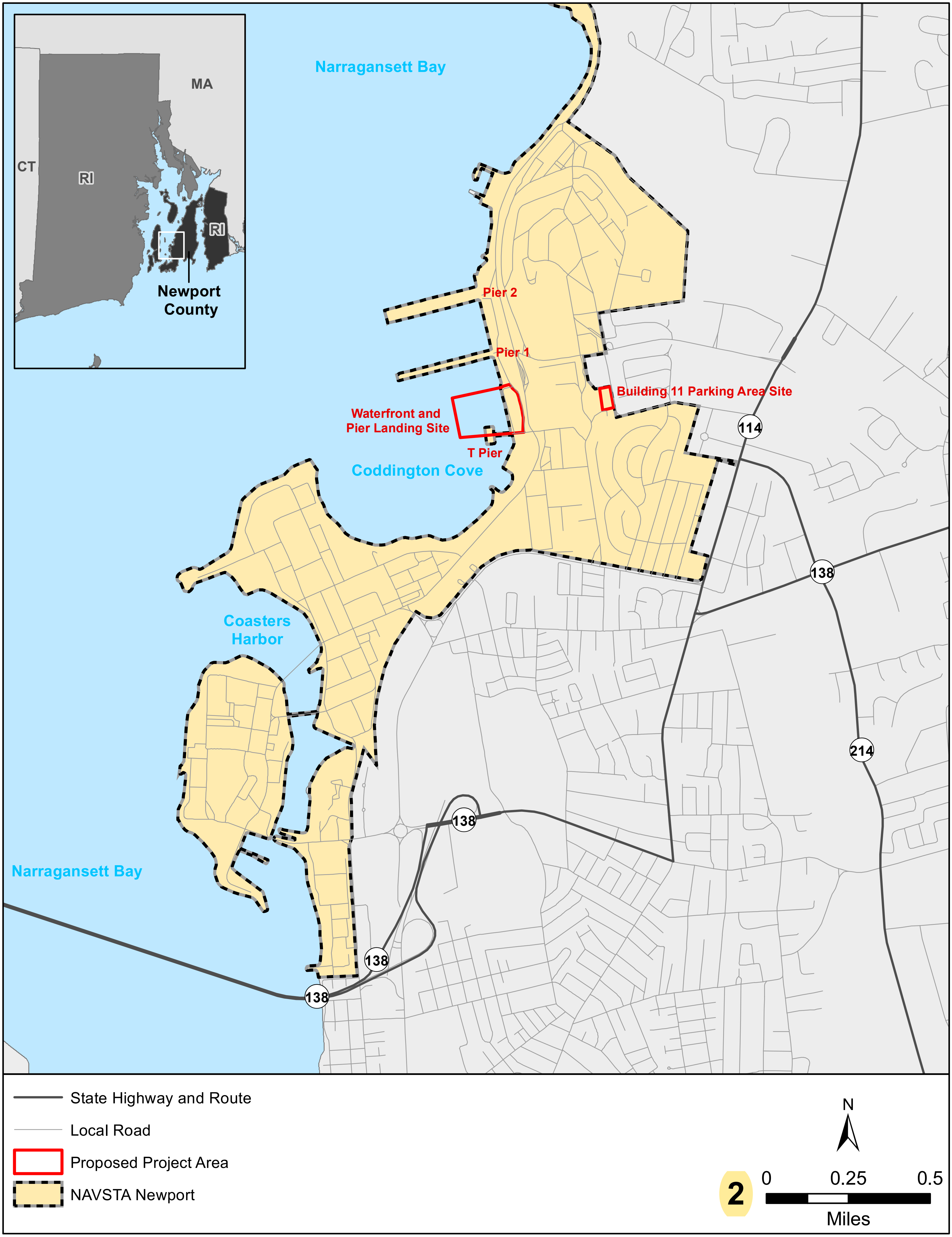
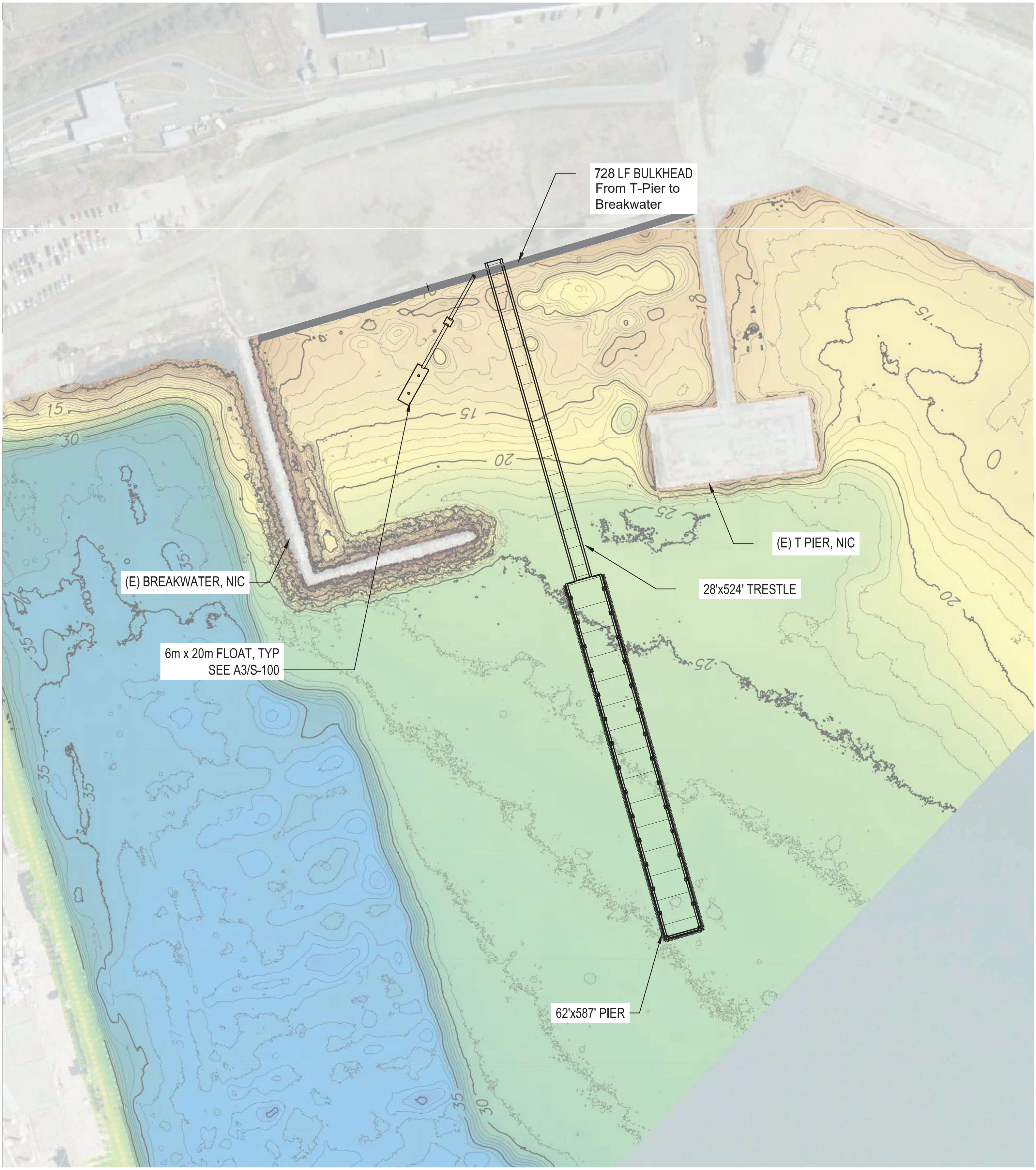


Narragansett Bay
MA
CT
RI
RI
Newport County
Pier 2
Pier 1
Building 11 Parking Area Site
Waterfront and Pier Landing Site
T Pier
Coddington Cove
114
138
Coasters Harbor
214
138
Narragansett Bay
138
138
State Highway and Route
Local Road
Proposed Project Area
NAVSTA Newport
N
0
0.25
0.5
Miles

2



SEE NOTE 1

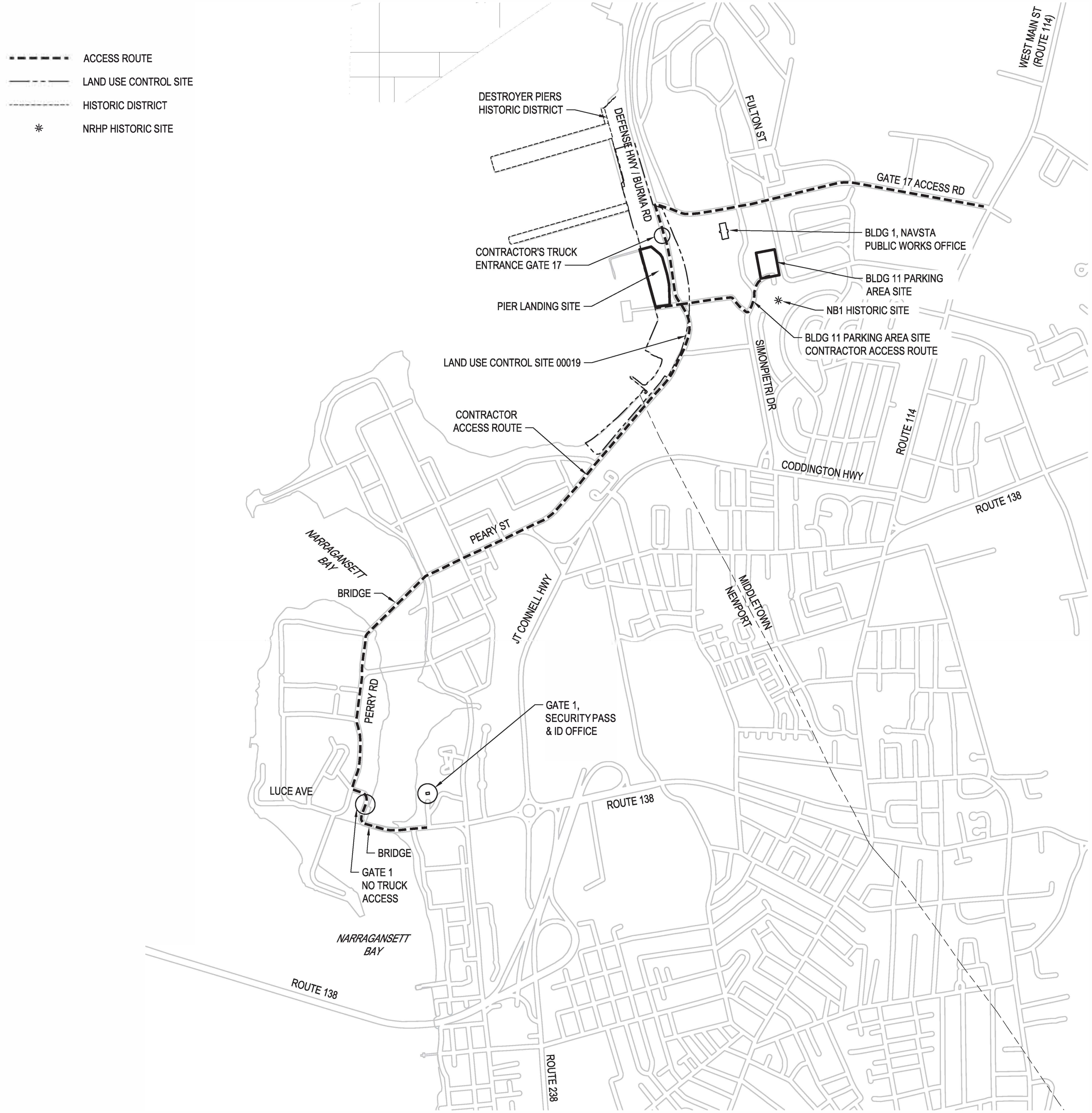
PLAN - PIER & FLOAT LOCATION

3

SCALE: 1" = 250'

SHEET NOTES

1. SEE DRAWING C-001 FOR LEGEND, ABBREVIATIONS & GENERAL NOTES.
2. ALL TRUCK ACCESS TO BE THROUGH GATE 17.
3. MATERIAL LAYDOWN AND STORAGE AREA TO BE WITHIN THE LIMITS OF CONSTRUCTION AND APPROVED BY THE CONTRACTING OFFICER.



A1 **SITE ACCESS AND LAYDOWN AREA PLAN**

SCALE: 1" = 800'

1" = 800' 0 800' 1600'

PLAN NORTH

SYM	DESCRIPTION	DATE	APPR
C	100% PRE-FINAL SUBMITTAL	04/07/2022	
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+ RMcD Joint Venture

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES RJS DRW RJS CHK DPA

PM/DM LE/RC

BRANCH MANAGER

CHIEF ENG/ARCH EJA

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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MID-ATLANTIC
NAVAL STATION NORFOLK - NORFOLK, VA

NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

SITE ACCESS & LAYDOWN AREA

SCALE:

EPROJECT NO. 1562331

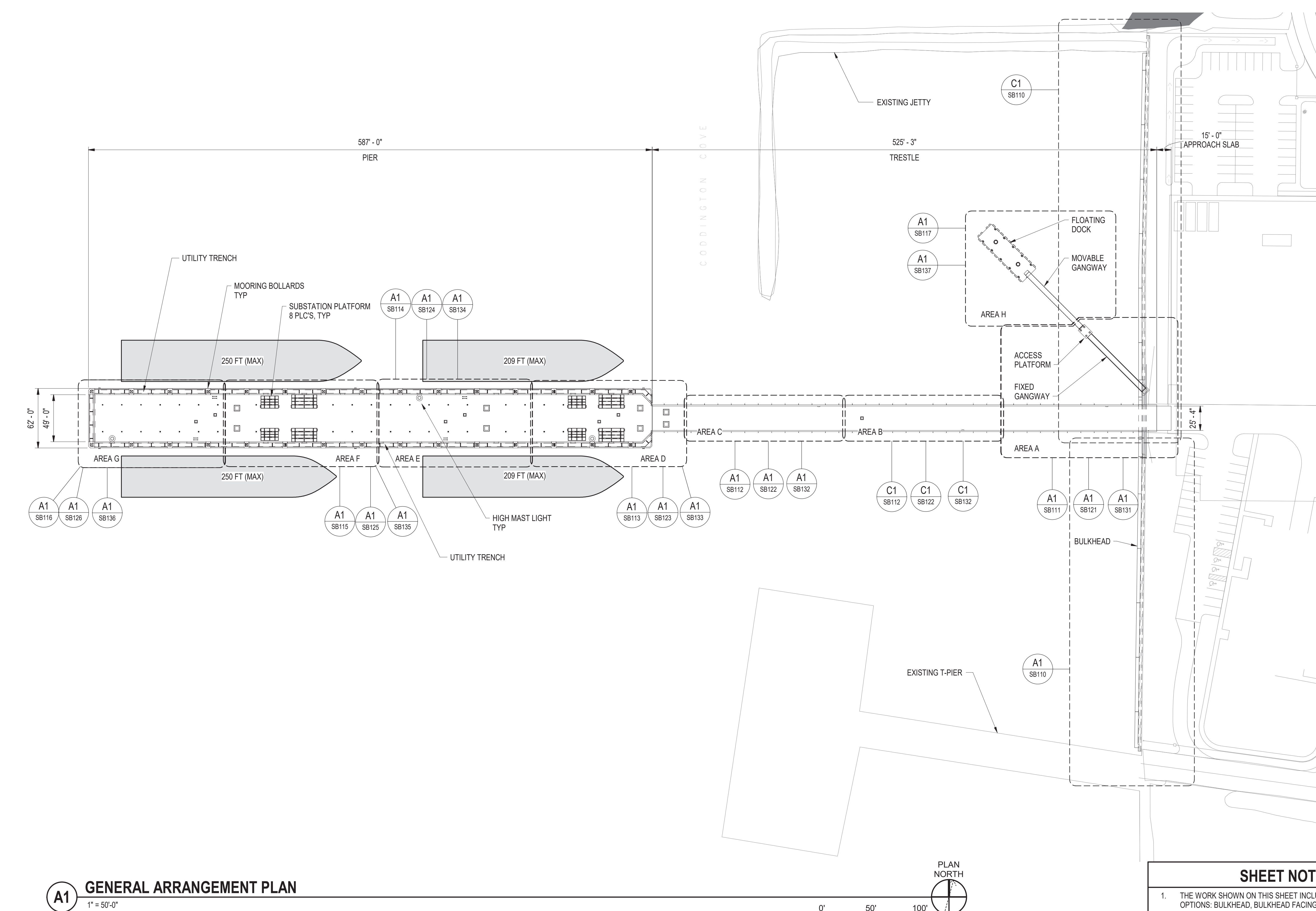
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.

SHEET - OF

4

C-003



A1 **GENERAL ARRANGEMENT PLAN**

1" = 50'-0"

SHEET NOTES

1. THE WORK SHOWN ON THIS SHEET INCLUDES THREE SEPARATE BID OPTIONS: BULKHEAD, BULKHEAD FACING, AND FLOATING DOCK SYSTEM. THESE BID OPTIONS WILL BE EXPANDED UPON ON THE SB SHEETS. THE BASE BID INCLUDES A 75.5' CENTER TO CENTER SECTION OF BULKHEAD BETWEEN PILES BH55 AND BH67, WITH THE TRESTLE CENTERED ON PILE BH61. THIS SECTION OF BULKHEAD WILL INCLUDE A BULKHEAD FACING. THE BULKHEAD AND BULKHEAD FACING IS ONLY A BID OPTION OUTSIDE OF THIS BASE BID AREA. OTHER DISCIPLINES WILL ALSO BE AFFECTED BY THE SELECTION OF THESE BID OPTIONS.

SYM	DESCRIPTION	DATE	APPR
C	100% PRE-FINAL SUBMITTAL	04/07/2022	
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

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CHIEF ENG/ARCH EJA

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC
MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA

NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

PIER - GENERAL ARRANGEMENT PLAN

SCALE: AS NOTED

EPROJECT NO.: 1562331

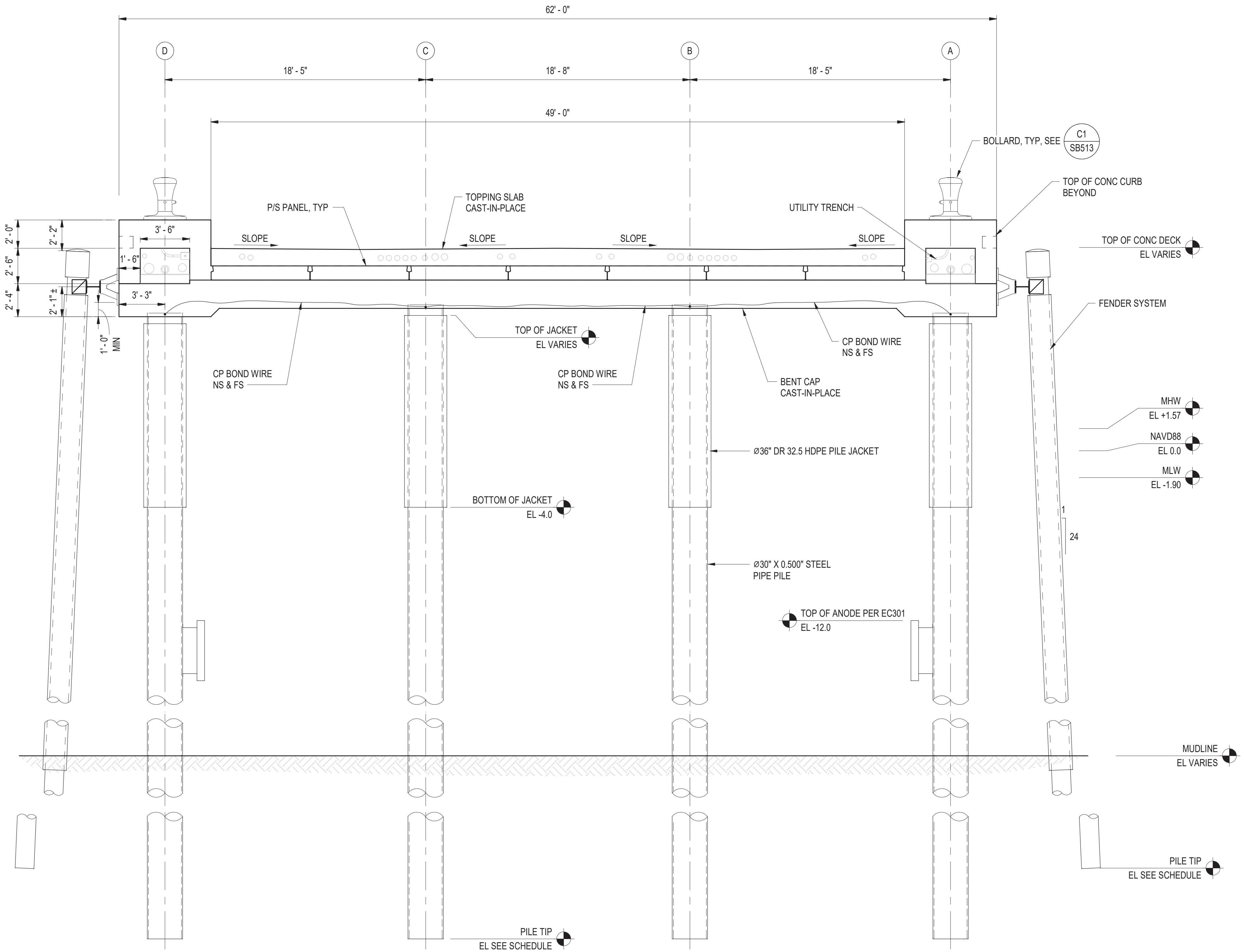
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.

SHEET OF 100

SB101

5



A1 TYPICAL PIER SECTION

1/4" = 1'-0"

0' 2' 4' 8'

SYM	DESCRIPTION	DATE	APPR
C	100% PRE-FINAL SUBMITTAL	04/07/2022	
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

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ACTIVITY

SATISFACTORY TO DATE

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PM/DM LE/RC

BRANCH MANAGER

CHIEF ENG/ARCH EJA

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NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

PIER - TYPICAL SECTIONS

SCALE: AS NOTED

EPROJECT NO.: 1562331

CONSTR. CONTR. NO.

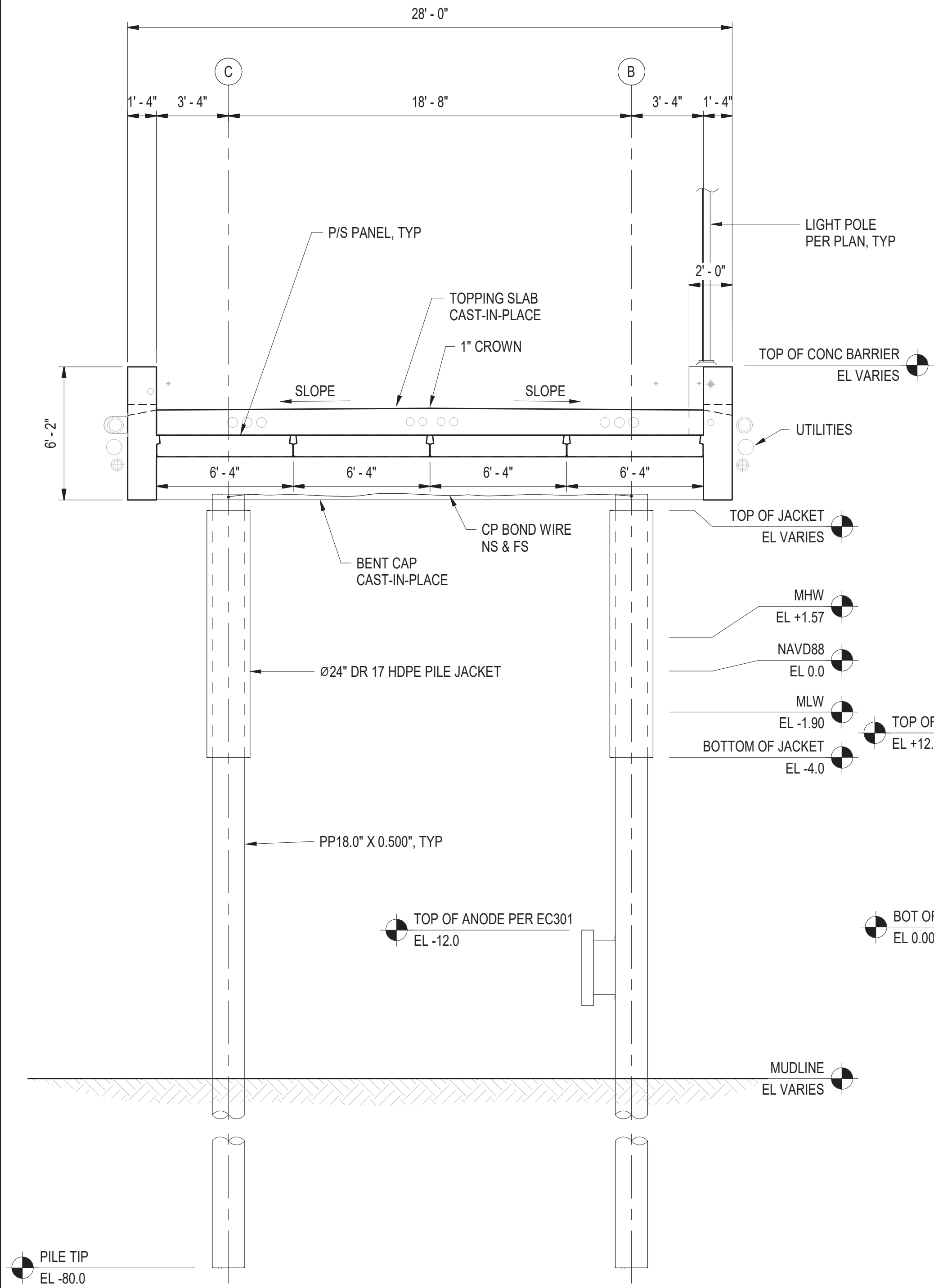
NAVFAC DRAWING NO.

SHEET OF 100

SB303

6

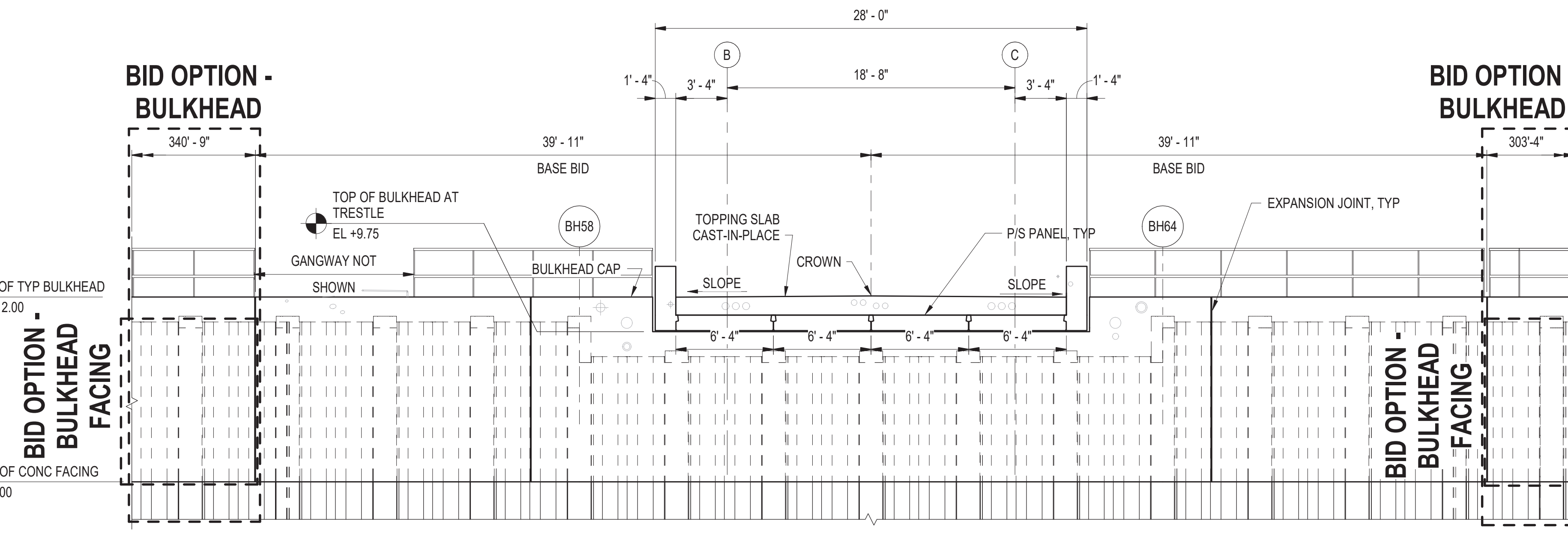
DRAWFORM REVISION: 20 AUGUST 2020



A1 TYPICAL TRESTLE SECTION

1/4" = 1'-0"

0' 2' 4' 8'



B3 SECTION AT BULKHEAD

3/16" = 1'-0"

0' 4' 8' 12'

SYM	DESCRIPTION	DATE	APPR
C	100% PRE-FINAL SUBMITTAL	04/07/2022	
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

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MIDLANT DCBL

NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

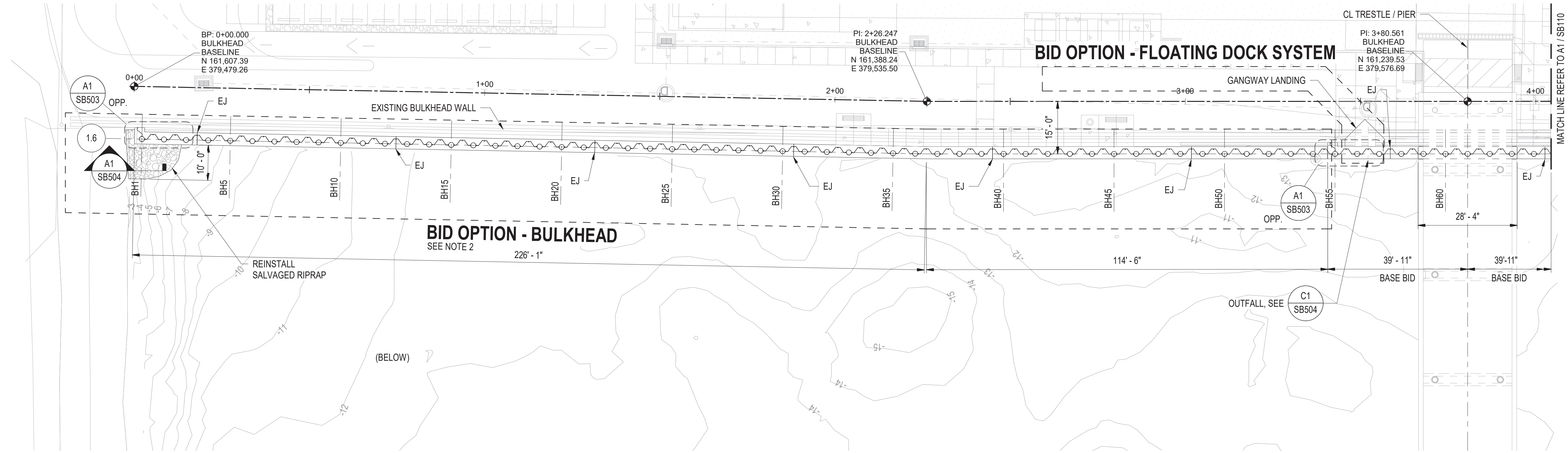
PIER - TYPICAL TRESTLE SECTIONS

SCALE: AS NOTED
EPROJECT NO.: 1562331
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
SHEET OF 100

7

SB302

DRAWFORM REVISION: 25 AUGUST 2020

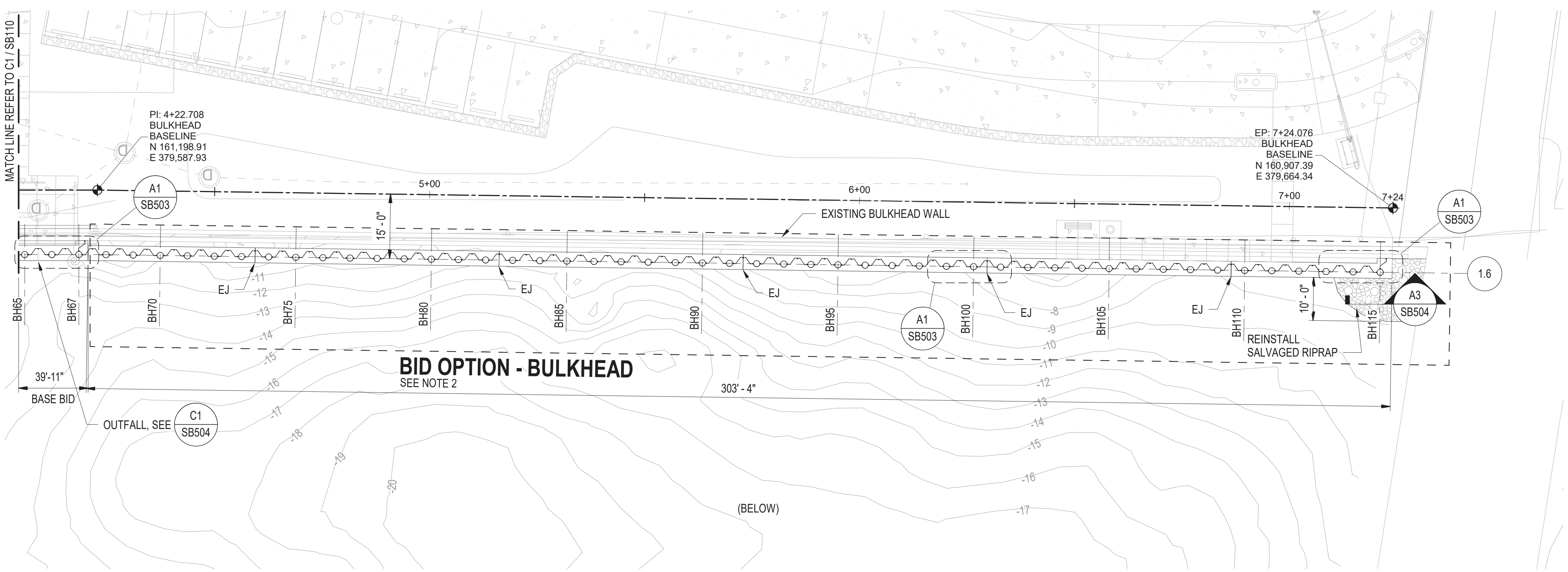


C1 BULKHEAD PILE PLAN - 1

1/16" = 1'-0"

PLAN NORTH

0' 8' 16' 32'



A1 BULKHEAD PILE PLAN - 2

1/16" = 1'-0"

PLAN NORTH

0' 8' 16' 32'

SHEET NOTES

1. SEE PILE SCHEDULE ON SB601 & SB602.
2. FOR CLOSURE IF BULKHEAD BID OPTION IS NOT SELECTED, SEE SB111.

SYM	DESCRIPTION	DATE	APPR
B	100% PRE-FINAL SUBMITTAL	04/07/2022	
A	65% SUBMITTAL	10/15/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+ BMcD Joint Venture

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JMM DRW CAM CHK PRG

PM/DM LE/RC

BRANCH MANAGER

CHIEF ENG/ARCH EJA

FIRE PROTECTION DSN

DEPARTMENT OF THE NAVY
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MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA

NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

PIER - BULKHEAD PILE PLAN

SCALE: AS NOTED

EPROJECT NO.: 1562331

CONSTR. CONTR. NO.

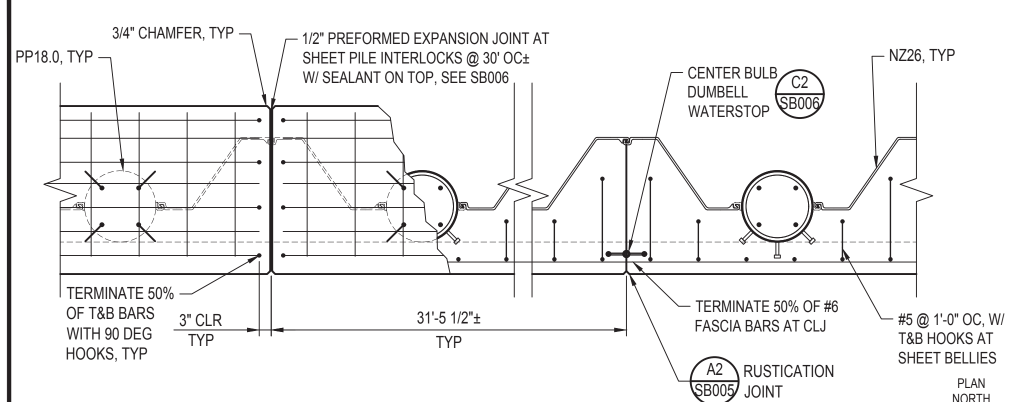
NAVFAC DRAWING NO.

SHEET OF 100

SB110

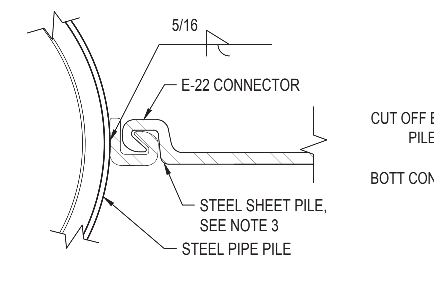
8

DRAWFORM REVISION: 20 AUGUST 2020



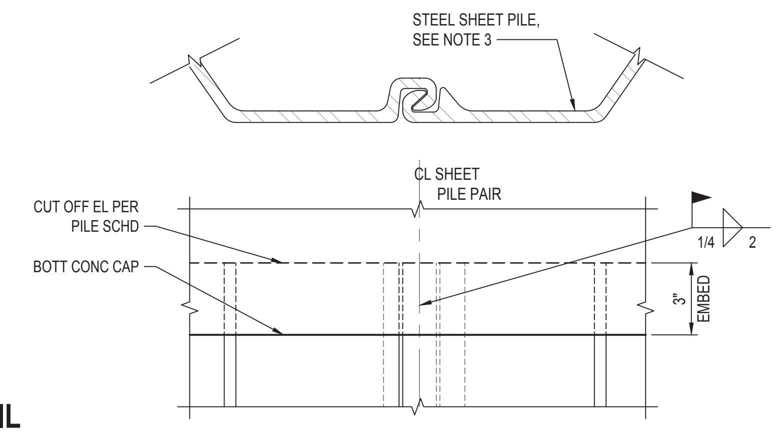
D1 **COMBI WALL SECTION PLAN**

SCALE: 1/2" = 1'-0"



D2 **TYPICAL CONNECTOR DETAIL**

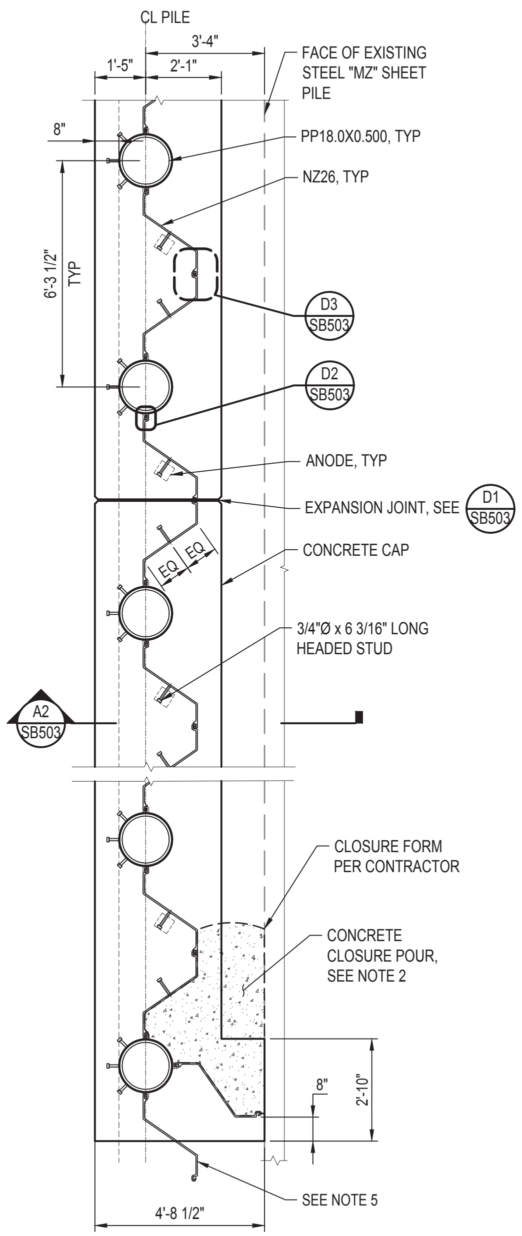
SCALE: 3" = 1'-0"



NOTE: PILE CAP REINFORCEMENT NOT SHOW FOR CLARITY.

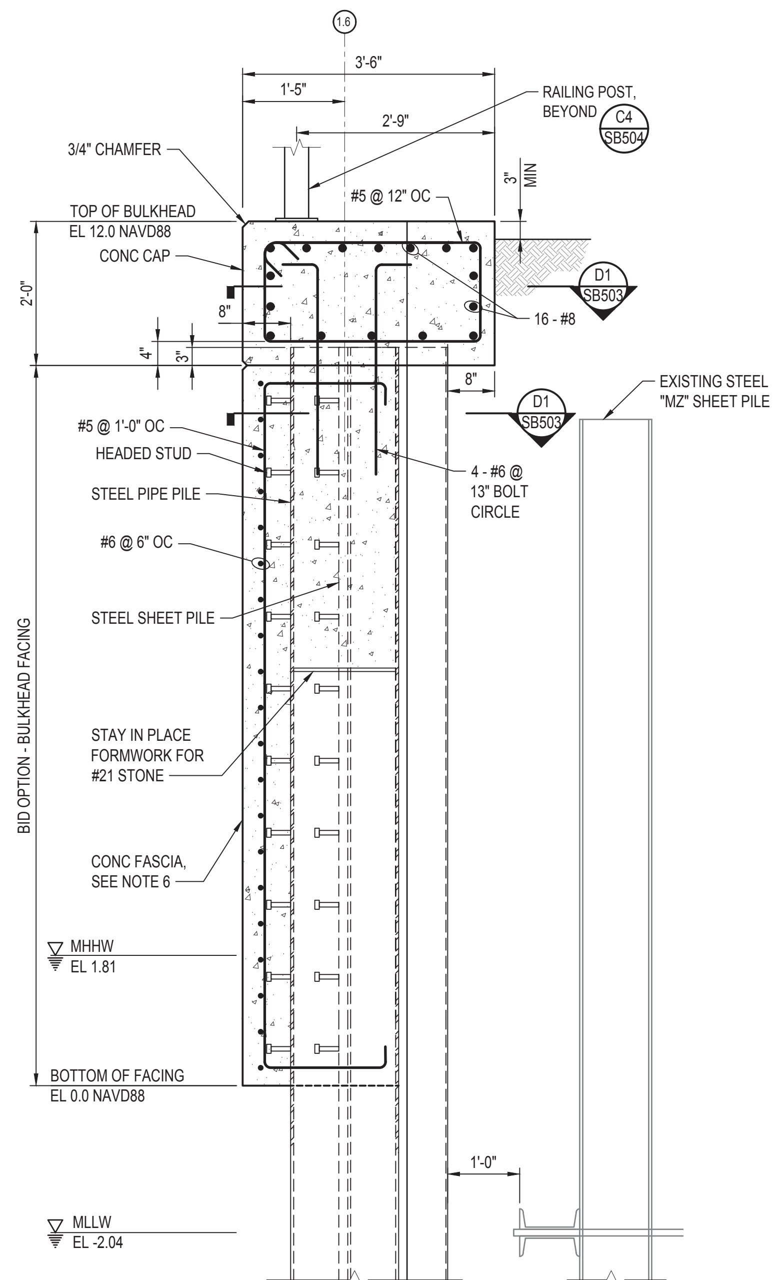
D3 **TYPICAL DETAIL**

SCALE: 3" = 1'-0"



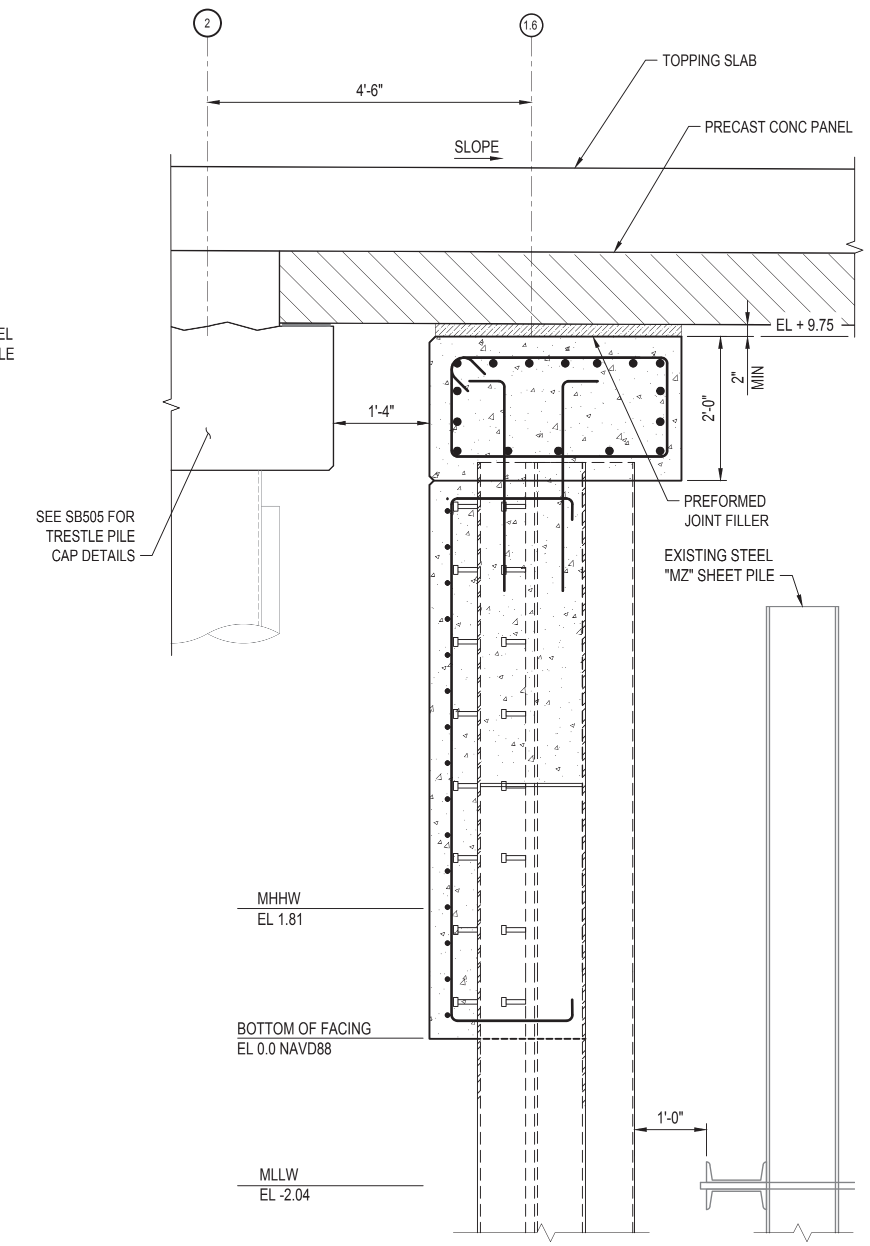
A1 **COMBI WALL PLAN**

SCALE: 3/8" = 1'-0"



A2 **SECTION**

SCALE: 3/4" = 1'-0"



A3 **SECTION AT TRESTLE**

SCALE: 3/4" = 1'-0"

SHEET NOTES

1. SECURE TOP OF PILE IN PROPER POSITION PRIOR TO PLACING PILE CAP.
2. POUR CONCRETE CLOSURE PLUG TO 3'-0" BELOW EXISTING MUDLINE TO PREVENT LOSS OF BACKFILL.
3. STEEL SHEET PILE NOTES:
   A. SECTION MODULUS OF NZ26 IS 48.50 CU IN./LF WITH A FLANGE THICKNESS = 0.50" AND WEB THICKNESS = 0.50".
   B. THE SIZES OF WELD SHOWN ARE MINIMUM. PROVIDE WELDING AS PER MANUFACTURER'S RECOMMENDATIONS.
4. SEE PILE SCHEDULE FOR PILE TIP ELEVATION.
5. IF BULKHEAD BID OPTION IS NOT FUNDED, THEN PILES S54B AND S67A ARE PROVIDED TO EXTEND BULKHEAD IN THE FUTURE, SEE PILE SCHEDULE.
6. BULKHEAD FACING IS PROVIDED WITH THE BASE BID BETWEEN PILES BH55 AND BH67 AND IS A BID OPTION ASSOCIATED WITH THE BULKHEAD BID OPTION.

SYM	DESCRIPTION	DATE	APPR
C	100% PRE-FINAL SUBMITTAL	04/07/2022	
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+ FMCD Joint Venture

SEAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	JMM	DRW	SA	CHK	PRG
PM/DM					LE/RC
BRANCH MANAGER					---
CHIEF ENG/ARCH					EJA
FIRE PROTECTION					DSN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MID-ATLANTIC
NAVAL STATION NORFOLK - NORFOLK, VA
MIDLANT DCBL
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION

BULKHEAD DETAILS 1 OF 2

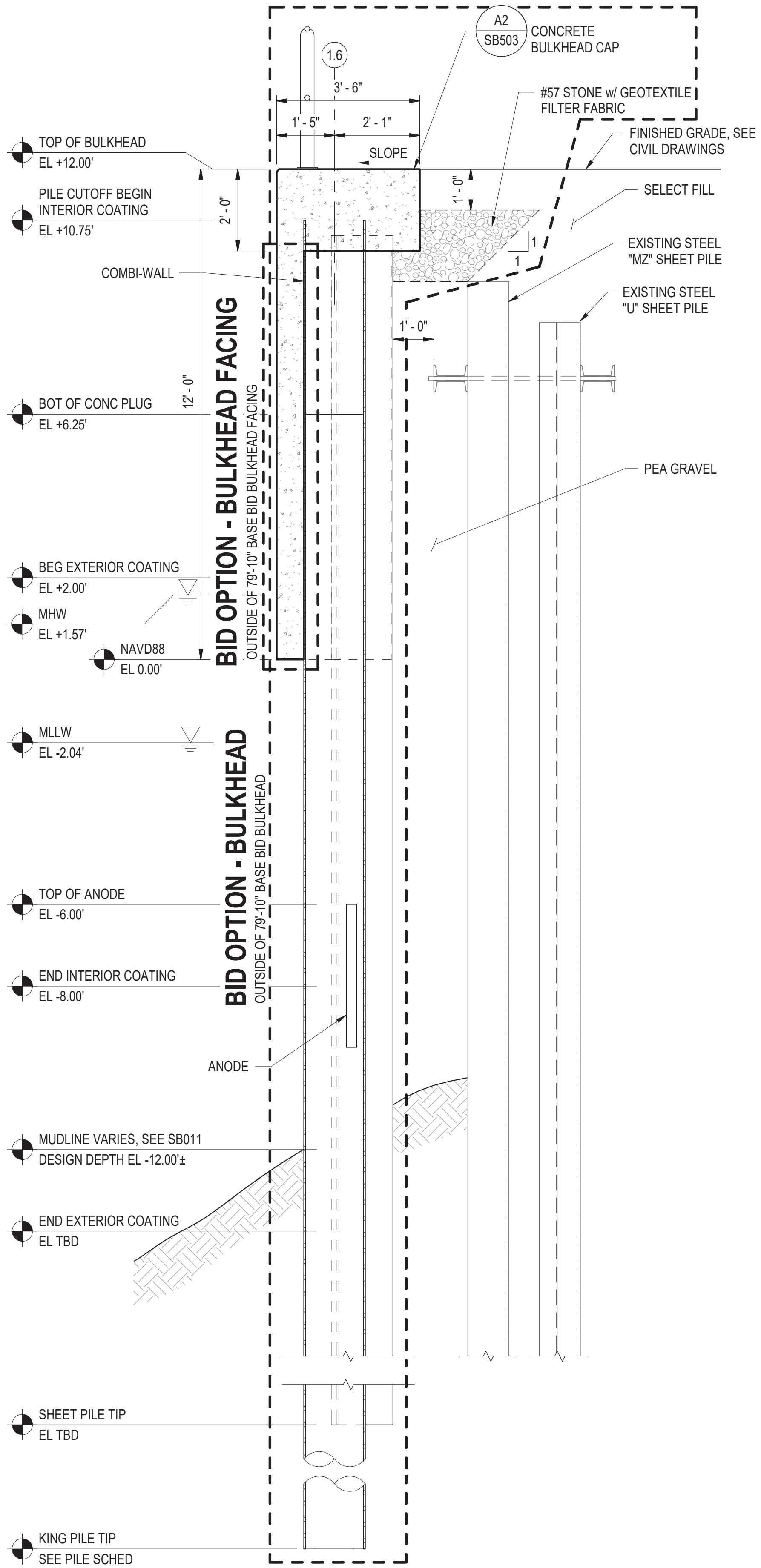
SCALE: AS NOTED
EPROJECT NO.: 1562331
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. ---
SHEET --- OF

8a

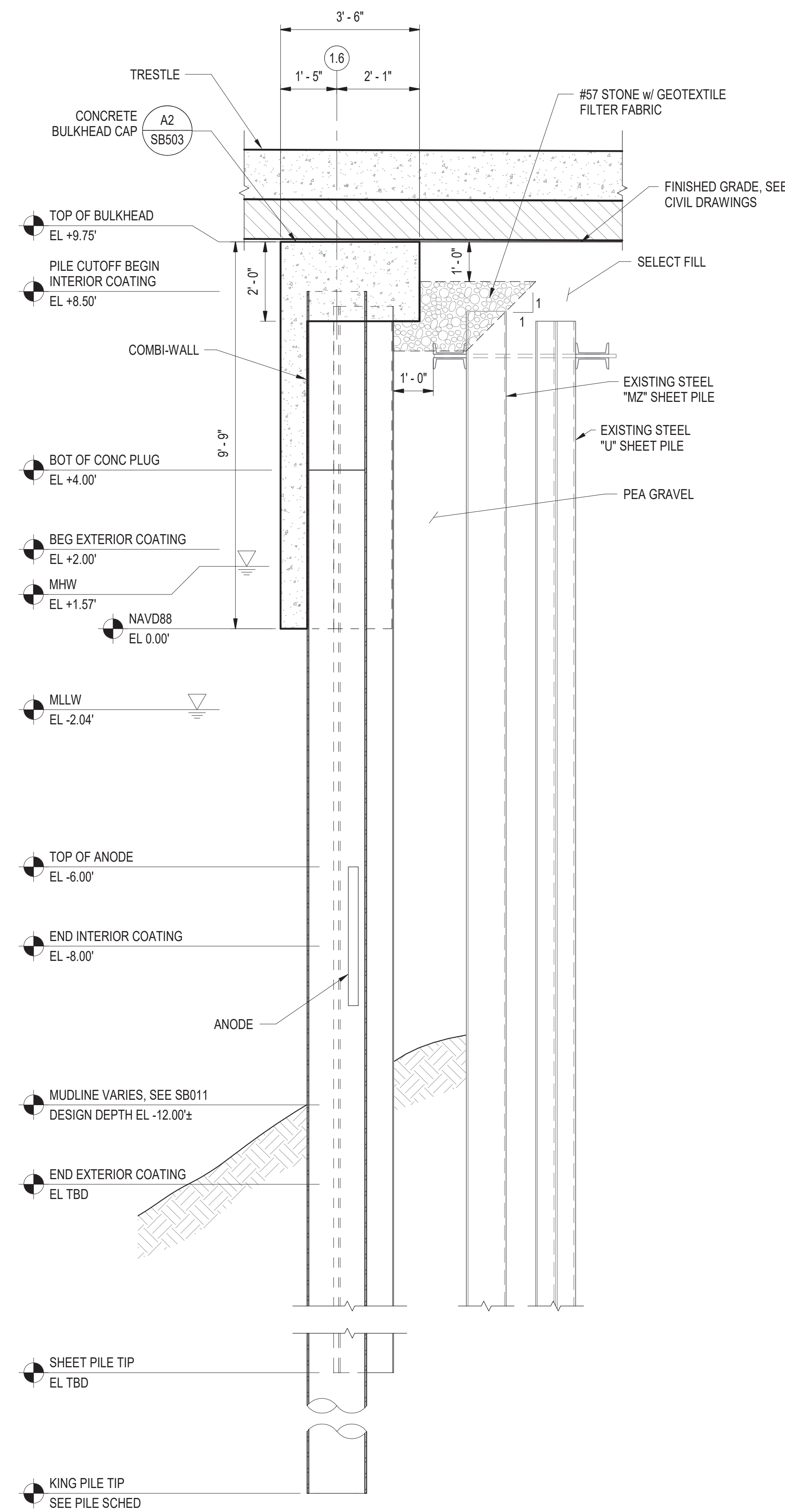
SB503

DRAWFORM REVISION: 25 AUG 2020

FILE NAME: Q:\NOR\10000-14\cad_Active_noaa omao relocation\PIER-1562331-SB503.dwg LAYOUT NAME: BULKHEAD DETAILS 1 OF 2 PLOTTED: Thursday, March 31, 2022 — 1:02pm USER: scorson



A1 SECTION - SEE NOTE 1
1/2" = 1'-0"
0' 1' 2' 4'



A3 SECTION
1/2" = 1'-0"
0' 1' 2' 4'

SHEET NOTES

1. THE FASCIA ON SECTION A1 MAY BE OMITTED BASED ON THE FOLLOWING BID OPTIONS - BULKHEAD AND FACING.

SYM	DESCRIPTION	DATE	APPR
C	100% PRE-FINAL SUBMITTAL	04/07/2022	
B	65% SUBMITTAL	10/15/2021	
A	35% SUBMITTAL	01/06/2021	

NAVFAC

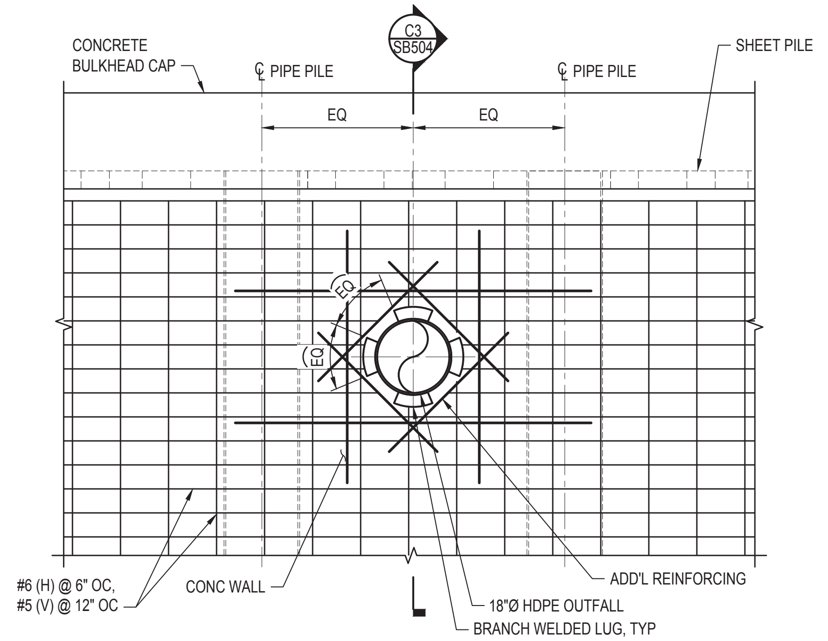
PRELIMINARY NOT FOR CONSTRUCTION

MN+ RMcD Joint Venture

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO DATE
DES JMM DRW CAM CHK PRG
PM/DM LE/RC
BRANCH MANAGER
CHIEF ENG/ARCH EJA
FIRE PROTECTION DSN

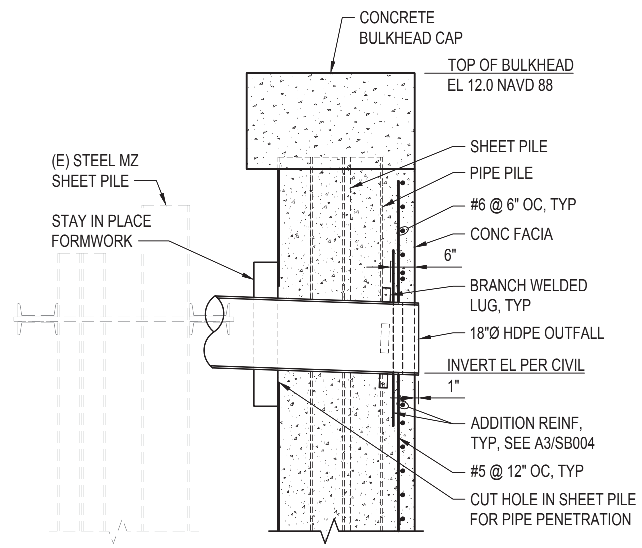
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ~ MID-ATLANTIC
MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
PIER - BULKHEAD SECTIONS

SCALE: AS NOTED
EPROJECT NO.: 1562331
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
SHEET 8b OF 100
SB301



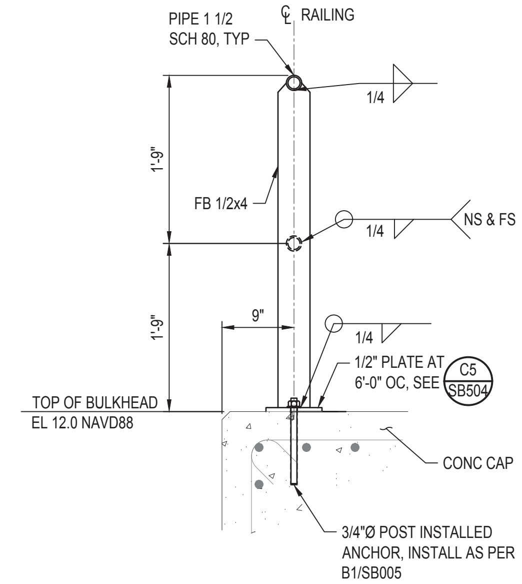
C1 OUTFALL ELEVATION

SCALE: 1/2" = 1'-0"



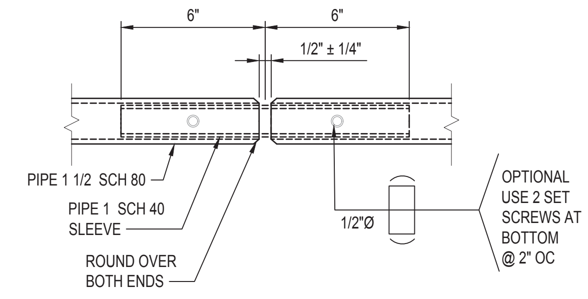
C3 OUTFALL SECTION

SCALE: 1/2" = 1'-0"



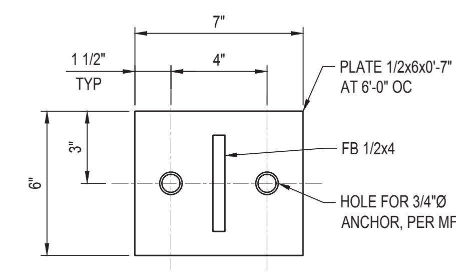
C4 DETAIL - GUARDRAIL POST

SCALE: 1" = 1'-0"



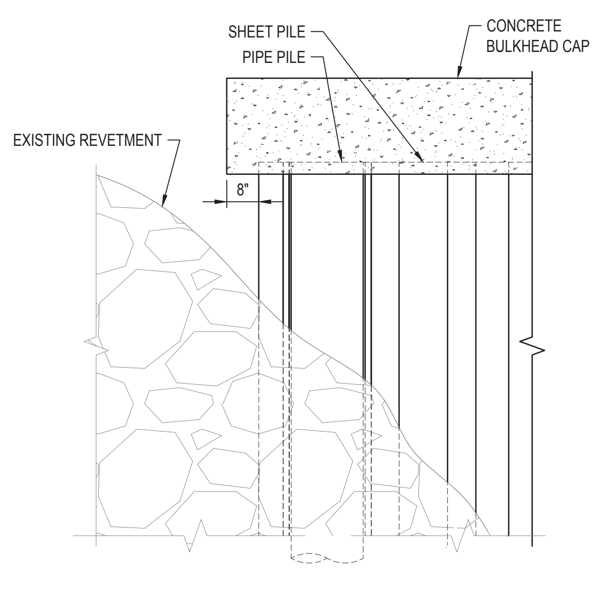
D5 DETAIL - EXPANSION JOINT (FIELD SPLICE SIM)

SCALE: 3" = 1'-0"



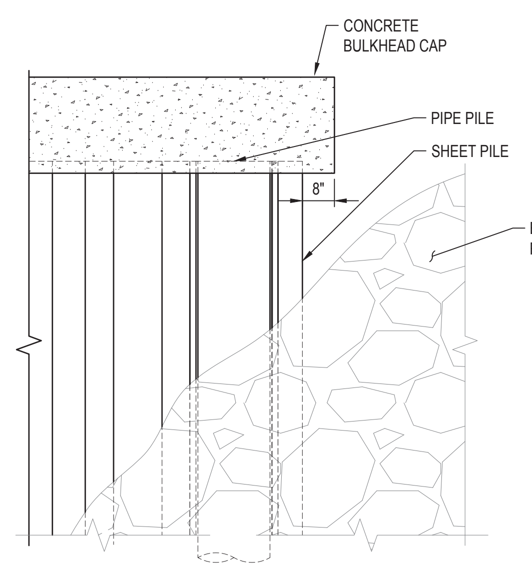
C5 DETAIL - BASE PLATE

SCALE: 3" = 1'-0"



A1 END OF BULKHEAD AT JETTY

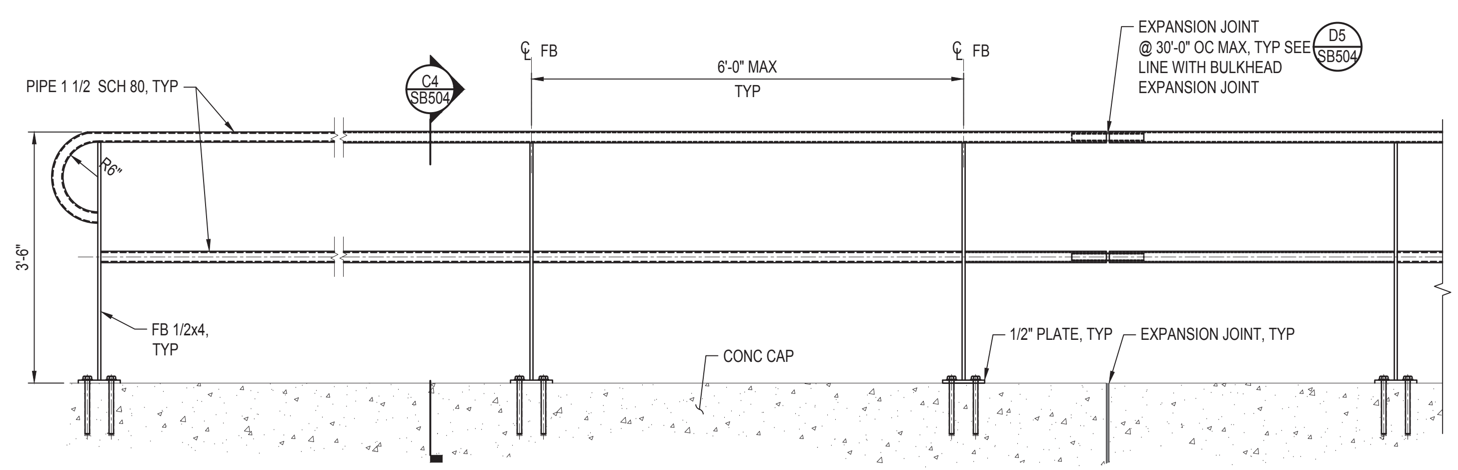
SCALE: 1/2" = 1'-0"



A3 END OF BULKHEAD AT T-PIER

SCALE: 1/2" = 1'-0"

BID OPTION - BULKHEAD



A4 ELEVATION - GUARDRAIL

SCALE: 3/4" = 1'-0"

SYM	DESCRIPTION	DATE	APPR
B	100% PRE-FINAL SUBMITTAL	04/07/2022	
A	65% SUBMITTAL	10/15/2021	

PRELIMINARY NOT FOR CONSTRUCTION

MN+FMCD Joint Venture

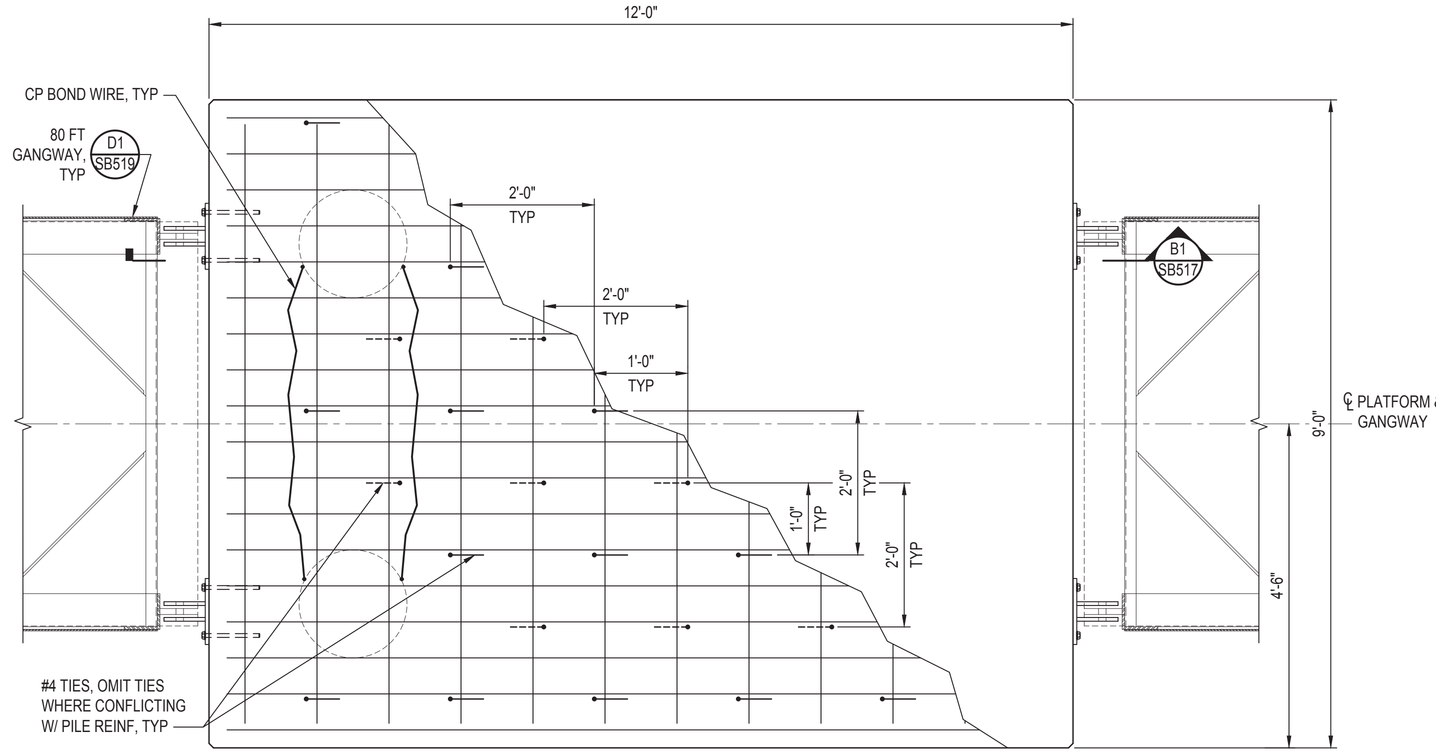
DES JMM | DRW SA | CHK PRG
PM/DM LE/RC
BRANCH MANAGER ---
CHIEF ENG/ARCH EJA
FIRE PROTECTION DSN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MID-ATLANTIC
NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
BULKHEAD DETAILS 2 OF 2

SCALE: AS NOTED
EPROJECT NO.: 1562331
NAVFAC DRAWING NO. ---
SHEET --- OF ---
SB504

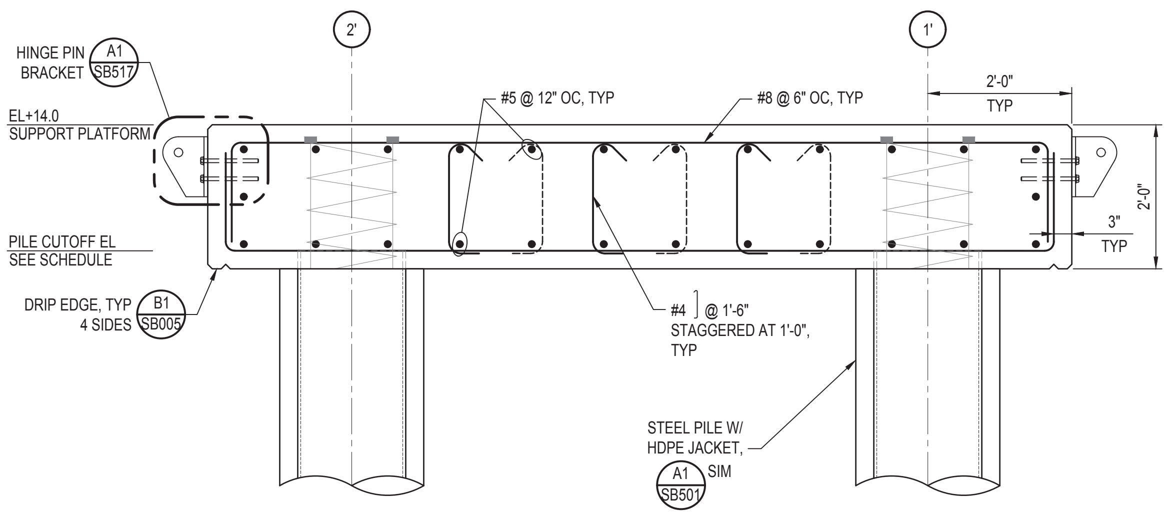
8c

FILE NAME: Q:\NOR\10000~14\cad_Active_noaa omao relocation\PIER-1562331-SB504.dwg LAYOUT NAME: BULKHEAD DETAILS 2 OF 2 PLOTTED: Thursday, March 31, 2022 - 1:02pm USER: scorson



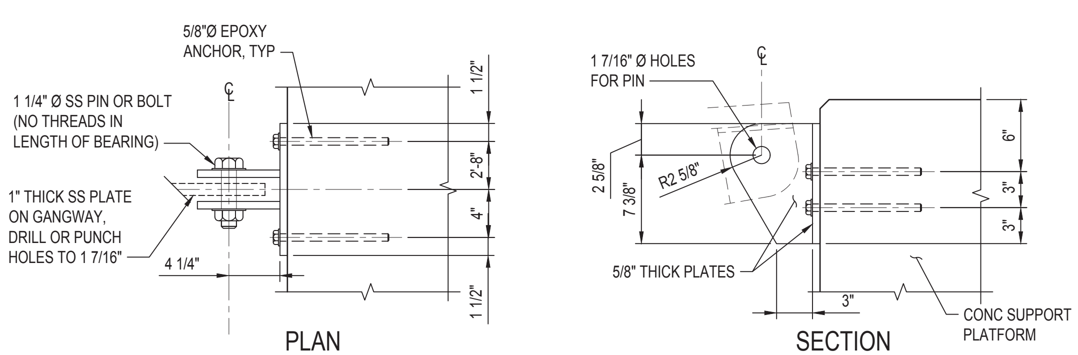
C1 **GANGWAY SUPPORT PLATFORM PLAN**

SCALE: 3/4" = 1'-0"



B1 **GANGWAY SUPPORT PLATFORM SECTION**

SCALE: 3/4" = 1'-0"



NOTE: VERIFY FIT TO GANGWAY BEFORE DETAILING AND FABRICATING.

A1 **HINGE PIN BRACKET**

SCALE: 1 1/2" = 1'-0"

ALL WORK THIS SHEET IS BID OPTION - FLOATING DOCK SYSTEM

9a

SYM	DESCRIPTION	DATE	APPR
B	100% PRE-FINAL SUBMITTAL	04/07/2022	
A	65% SUBMITTAL	10/15/2021	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

MN+ FMcD Joint Venture

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES JMM | DRW SA | CHK PRG

PM/DM LE/RC

BRANCH MANAGER ---

CHIEF ENG/ARCH EJA

FIRE PROTECTION DSN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MID-ATLANTIC
MIDLANT DOBL NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
APRON AND SUPPORT PLATFORM DETAILS

SCALE: AS NOTED

EPROJECT NO.: 1562331

CONSTR. CONTR. NO.

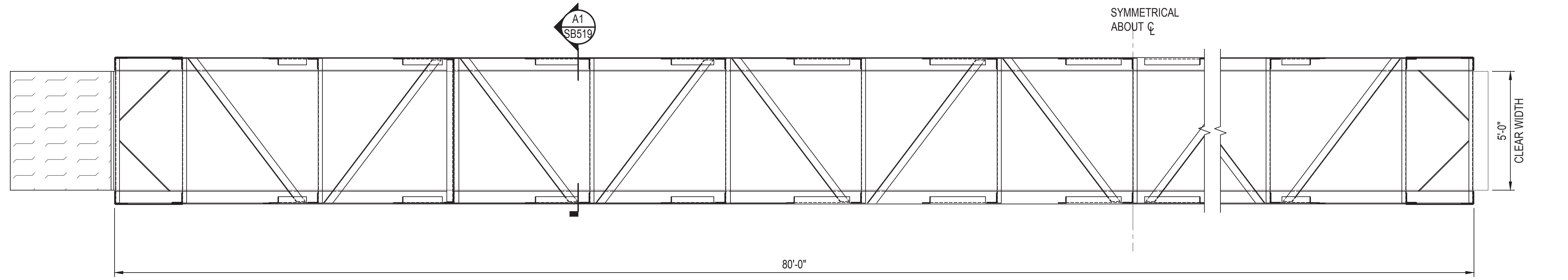
NAVFAC DRAWING NO. ---

SHEET --- OF

SB517

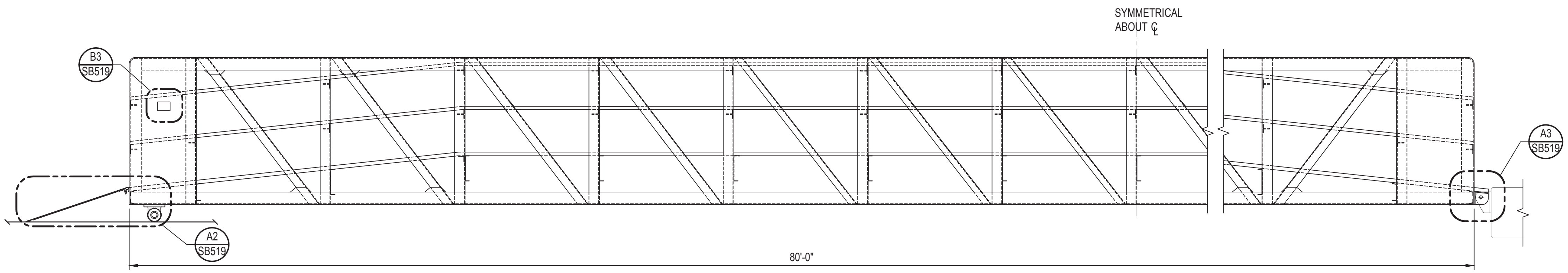
DRAWFORM REVISION: 25 AUG 2020

FILE NAME: Q:\NOR\10000-14\cadd_Active_noaa omao relocation\PIER-1562331-SB517.dwg LAYOUT NAME: APRON AND SUPPORT PLATFORM DETAILS PLOTTED: Thursday, March 31, 2022 - 1:04pm USER: scorson



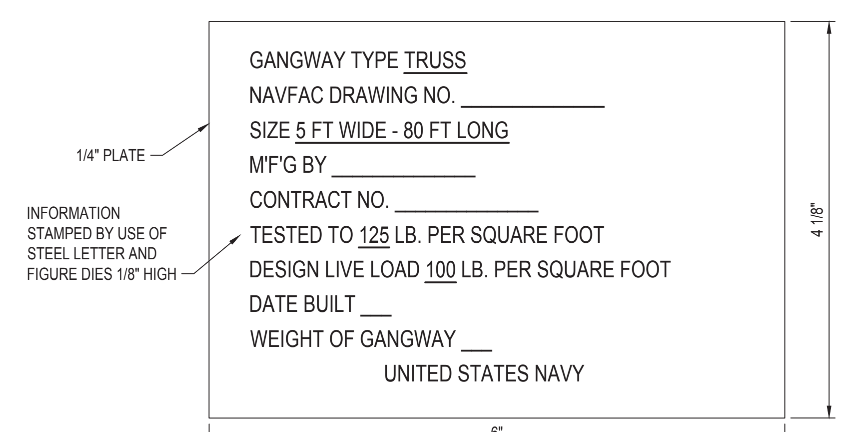
D1 GANGWAY PLAN

SCALE: 3/8" = 1'-0"



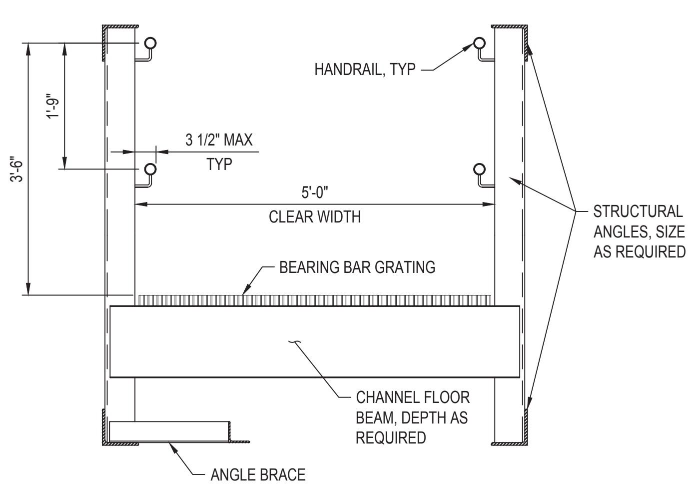
C1 GANGWAY ELEVATION

SCALE: 3/8" = 1'-0"



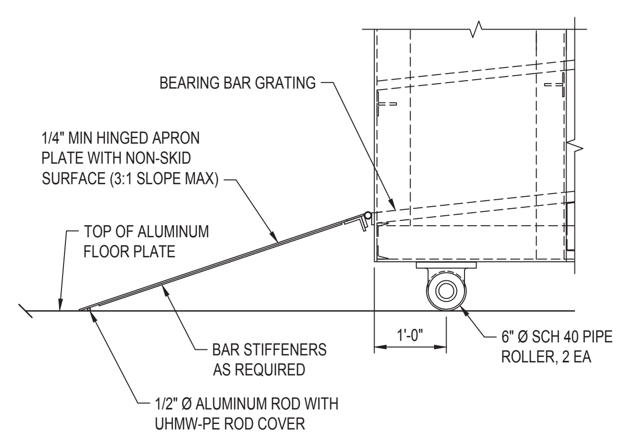
B3 GANGWAY NAME PLATE

SCALE: 1" = 1"



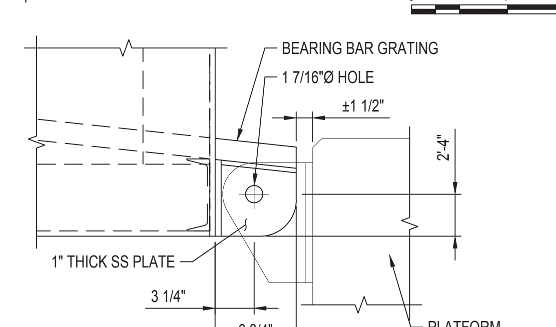
A1 SECTION - GANGWAY

SCALE: 3/4" = 1'-0"



A2 DETAIL

SCALE: 3/4" = 1'-0"



A3 DETAIL

SCALE: 1 1/2" = 1'-0"

SHEET NOTES

1. DESIGN, FABRICATION, AND ERECTION MUST BE IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION, INC. ALUMINUM DESIGN MANUAL (LATEST EDITION). THE DESIGN OF THE GANGWAY MUST BE IN ACCORDANCE WITH "PART I-A, SPECIFICATIONS FOR ALUMINUM STRUCTURES ALLOWABLE STRESS DESIGN" AND "PART II-A, COMMENTARY ON SPECIFICATIONS FOR ALUMINUM STRUCTURES ALLOWABLE STRESS DESIGN."
2. ALUMINUM EXTRUSIONS FOR GANGWAY MUST BE ALUMINUM ALLOY 6061-T6 EXTRUDED IN ACCORDANCE WITH THE REQUIREMENTS OF APPLICABLE SECTIONS OF THE FEDERAL SPECIFICATION QQ-A-200. ALUMINUM MUST BE SUITABLE FOR USE IN AN AGGRESSIVE MARINE ENVIRONMENT.
3. STAINLESS STEEL BOLTS AND ANCHOR BOLT MUST CONFORM TO ASTM F593, ALLOY GROUP 2 (TYPE 316). STAINLESS STEEL NUTS MUST CONFORM TO ASTM F594. WASHERS MUST BE OF THE SAME MATERIAL AND FINISH AS THE BOLTS AND NUTS TO WHICH APPLIED.
4. HOLES TO BE MADE IN ALUMINUM MUST BE DRILLED OR PUNCHED. FLAME CUTTING OR ENLARGEMENT OF HOLES MUST NOT BE PERMITTED.
5. FIELD CONNECTIONS MUSTS BE MADE WITH STAINLESS STEEL BOLTS UNLESS OTHERWISE NOTED. FIELD WELDING WILL BE PERMITTED ONLY WHEN SPECIFICALLY SHOWN ON THE APPROVED SHOP DRAWINGS.
6. WELDING MUST BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE - ALUMINUM, AWS D1.2. ALL SHOP CONNECTIONS MUST BE WELDED.
7. PRIOR TO WELDING, CERTIFICATION FOR EACH WELDER MUST BE SUBMITTED STATING THE TYPE OF WELDING AND POSITIONS QUALIFIED FOR, THE CODE AND PROCEDURE QUALIFIED UNDER, DATE QUALIFIED, AND THE FIRM AND INDIVIDUAL CERTIFYING THE QUALIFICATION TESTS.
8. SUBMIT SHOP DRAWINGS, DESIGN CALCULATIONS, MANUFACTURER'S CATALOG DATA, AND MATERIAL CERTIFICATES OF COMPLIANCE TO THE OWNER FOR REVIEW PRIOR TO THE PURCHASE OF MATERIALS AND START OF FABRICATION. CALCULATIONS MUST BE PREPARED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED TO PRACTICE IN THE STATE OF RHODE ISLAND.
9. GANGWAY MUST BE DESIGNED TO SUPPORT A UNIFORM LIVE LOAD OF 100 PSF AND A NONCONCURRENT CONCENTRATED LIVE LOAD OF 250 POUNDS, DISTRIBUTED OVER AN AREA OF TWO SQUARE FEET, PLATED ANYWHERE IN THE SPAN. ALLOWABLE DEFLECTION MUST BE A MAXIMUM OF L/240 WHERE "L" IS THE LENGTH OF THE GANGWAY.
10. THE DESIGN OF THE RAILING MUST BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.
11. DECKING MUST BE PROVIDED WITH A NONSKID WALKING SURFACE.
12. THE DETAILS SHOWN ON THIS SHEET ARE PROVIDED TO INDICATE THE GENERAL INTENT OF THE GANGWAY. THE ACTUAL GANGWAY FURNISHED AND INSTALLED MUST BE IN ACCORDANCE WIT THE APPROVED SHOP DRAWINGS AND DESIGN DATA AS PROVIDED AND SUBMITTED BY THE GANGWAY SUPPLIER/FABRICATOR.
13. MINIMUM GANGWAY FEATURES SHOWN. MANUFACTURER MUST SUBMIT FINAL DRAWINGS PER MIL-DTL-22342E OR FINAL STAMPED CALCULATIONS AND DRAWINGS PER PROJECT SPECIFICATIONS.

ALL WORK THIS SHEET IS BID OPTION - FLOATING DOCK SYSTEM

9b

SYM	DESCRIPTION	DATE	APPR
A	100% PRE-FINAL SUBMITTAL	04/07/2022	

NAVFAC

PRELIMINARY NOT FOR CONSTRUCTION

SEAL

MN+ FMcD Joint Venture

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO DATE

DES	JMM	DRW	SA	CHK	PRG
PM/DM					LE/RC
BRANCH MANAGER					---
CHIEF ENG/ARCH					EJA
FIRE PROTECTION					DSN

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND - MID-ATLANTIC
MIDLANT DCBL NAVAL STATION NORFOLK - NORFOLK, VA
NAVAL STATION NEWPORT NEWPORT, RHODE ISLAND
NOAA OMAO SHIP & SUPPORT FACILITY RELOCATION
GANGWAY DETAILS

SCALE: AS NOTED
EPROJECT NO.: 1562331
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. ---
SHEET --- OF
SB519

DRAWFORM REVISION: 25 AUG 2020

FILE NAME: Q:\NOR\10000-14\cadd_Active_noaa omao relocation\PIER-1562331-SB519.dwg LAYOUT NAME: GANGWAY DETAILS PLOTTED: Thursday, March 31, 2022 - 1:04pm USER: scorson

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

October 3, 2022

Mark George, P.E.
Environmental Compliance Division
NOAA/DSRC
325 Broadway
Boulder, CO 80305

RE: Federal Consistency Determination, Relocation of NOAA Research Vessels at Naval Station Newport, Coddington Cove, Newport, Rhode Island
CRMC file 2022-08-054

Dear Mr. George:

The Coastal Resources Management Council (CRMC) is in receipt of your Federal Coastal Consistency Determination filing (Coastal Consistency Determination) dated July 26, 2022 and received by this office on August 9, 2022 regarding the National Oceanic and Atmospheric Administration's (NOAA) "Preferred Alternative" to establish adequate pier, shoreside and support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station Newport (NAVSTA). The proposed project scope consists of the construction of a 62x587-foot pier including a 28x524-foot trestle, a 20x66-foot small boat floating dock, reinforcement of existing bulkheads via the installation of new bulkheads, and shoreside facilities consisting of an administration building and warehouse, boat wash, small boat repair facilities, hazardous materials storage, parking lots, and access roads. *See* Coastal Consistency Determination at 1-2. The Preferred Alternative will allow NOAA to address the "insufficiency of current research vessel locations, including deteriorating conditions of Pier 2 at NAVSTA Newport" and improve shoreline stabilization while eliminating ongoing erosion/deterioration. *See* Coastal Consistency Determination at 1.

The proposed actions are direct Federal activities subject to the Coastal Zone Management Act (CZMA) at 16 USC § 1456(c) and the CZMA's implementing regulations at 15 C.F.R. Part 930 Subpart C. The project area is located within the Rhode Island coastal zone and consist of listed activities in Table 1 of the CRMC's Federal Consistency Manual. *See* CRMC Federal Consistency Manual at 28. The Coastal Consistency Determination states that "NOAA has determined that the Preferred Alternative would be undertaken in a manner that is *consistent* *to the maximum extent practicable* with the federally approved, enforceable policies RICRMP." (emphasis added) *See* Coastal Consistency Determination at 14. The CRMC has determined that based on the information provided by NOAA's filing, the requirements of 15 C.F.R. § 930.36 are satisfied for purposes of the CRMC to issue a determination for the proposed Federal action as to whether the action is consistent to the maximum extent practicable with the RICRMP.

1.0 CRMC Analysis

For the purposes of Federal Consistency in this matter, the applicable enforceable policies in the RI CRMP are 650-RICR-20-00-1.2.2(F) (Manmade shorelines), 650-RICR-20-00-1.2.3(F) (Areas of historic and archaeological significance), 650-RICR-20-00-1.3.1(B) (Filling, removing, or grading of shoreline features), 650-RICR-20-00-1.3.1(C) (Residential, commercial, industrial and recreational structures), 650-RICR-20-00-1.3.1(F) (Treatment of stormwater and sewage), 650-RICR-20-00-1.3.1(G) (Shoreline protection), 650-RICR-20-00-1.3.1(M) (Public roadways, bridges, parking lots, railroad lines, and airports), and 650-RICR-20-00-1.3.1(N) (Maintenance of structures).

1.1 650-RICR-20-00-1.2.1(G): Type 6 industrial waterfronts and commercial navigation channels & 650-RICR-20-00-1.2.2(F): Manmade Shorelines

Section 1.2.1(G) states CRMC's policies regarding activities implicating Type 6 industrial/commercial waters. This section enumerates waterfront locations which have been altered to accommodate industrial water dependent and water enhanced activities including Coddington Cove, Newport, Rhode Island. The same section states one of the Council's goals for Type 6 waters is to "support modernization" of these waterfronts. The proposed Preferred Alternative is in and adjacent to Type 6 waters and seeks to "restore the shoreline area to its original operational condition and provide berthing as well as the ability to load and unload ships" used for NOAA's Atlantic Fleet research vessels. *See* Coastal Consistency Determination at 11. The outcome of the Preferred Alternative would be a modernized industrial waterfront with accompanying shoreside facilities which will further revitalize the area in keeping with the Council's goals. Therefore, the CRMC finds the Preferred Alternative is consistent to the maximum extent practicable with 650-RICR-20-00-1.2.1(G).

Section 1.2.2(F) states the CRMC's policies regarding manmade shorelines. The Council encourages maintenance of manmade shoreline structures that "mitigate erosion and/or sustain landforms adjacent to the water" and the "proper maintenance of existing shoreline protection structures." *See* 650-RICR-20-00-1.2.2(F). The existing shoreline protection structures at the project site consist of a deteriorating bulkhead which "includes corrosion of the steel sheet piles and sink holes in the fill behind the concrete cap." *See* Coastal Consistency Determination at 6. Installation of the new bulkhead would stabilize the shoreline and eliminate "ongoing erosion and deterioration of the existing shoreline." *Id.* Therefore, the CRMC finds the Preferred Alternative is consistent to the maximum extent practicable with 650-RICR-20-00-1.2.2(F).

1.2 650-RICR-20-00-1.2.3: Areas of Historic and Archeological Significance

Section 1.2.3 states the CRMC's policies intending to preserve and protect significant historic and archeological properties in the coastal zone. Preservation of these properties is a high priority for the CRMC. The Council typically solicits the recommendations of the Rhode Island Historical Preservation and Heritage Commission where an action "subject to [the Council's] jurisdiction" has a "reasonable probability of adverse impacts on properties listed in the National Register of Historic Places." *See* 650-RICR-20-00-1.2.3(A). The Coastal Consistency Determination states that NOAA has "initiated consolation with the State Historic Preservation Office" and that NOAA has found there would be "no adverse effect on historic properties" as a result of the Preferred Alternative. *See* Coastal Consistency Determination at 11. Therefore, the CRMC finds the Preferred Alternative is consistent to the maximum extent practicable with 650-RICR-20-00-1.2.3.

1.3 650-RICR-20-00-1.3.1(B): Filling, removing, or grading of shoreline features

Section 1.3.1(B)(1) requires a party filling or grading on or contiguous to a shoreline feature to prepare and adhere to an erosion and sediment control plan which is consistent with the RI Soil Erosion and Sediment Control Handbook. Additionally, activities with an affected area greater than two acres are typically required to meet certain earthwork and erosion standards. *See* 650-RICR-20-00-1.3.1(B)(1), (3). The Coastal Consistency Determination states the "Preferred Alternative would adhere to applicable best management practices as set forth in the [RI] Soil Erosion and Sediment Control Handbook" and that an "erosion and sediment control plan will be prepared" and *strictly adhered to*. (emphasis added) *See* Coastal Consistency Determination at 12. Therefore, the CRMC finds the Preferred Alternative is consistent to the maximum extent practicable with 650-RICR-20-00-1.3.1(B).

1.4 650-RICR-20-00-1.3.1(C): Residential, Commercial, Industrial and Recreational Structures

Section 1.3.1(C) states the Council policies regarding commercial and industrial structures being constructed within CRMC's jurisdiction. Projects are generally required to be constructed in such a way as to "prevent, minimize or mitigate the risks of storm damage to property and coastal resources." *See* 650-RICR-20-00-1.3.1(C)(1)(a). Additionally, projects being constructed within flood hazard zones must demonstrate that applicable portions of the Rhode Island State Building Code (RISBC) will be met. *Id.* at 1.3.1(C)(6). Portions of the Preferred Alternative are located within the FEMA-designated 100-year floodplain and within the FEMA-designated 500-year floodplain. *See* Coastal Consistency Determination at 1. The Coastal Consistency Determination also states that "all structures would comply with the state building codes for construction in flood hazard zones." *See* Coastal Consistency Determination at 12. Therefore, the CRMC finds the Preferred Alternative will be constructed in keeping with the policies stated above and is consistent to the maximum extent practicable with 650-RICR-20-00-1.3.1(C).

Section 1.3.1(C) typically requires a public access plan as part of any commercial or industrial development project in or impacting coastal resources. *See* 650-RICR-20-00-1.3.1(C)(1)(b). The Preferred Alternative is located "within the boundaries of a secure naval installation and no public access is permitted." *See* Coastal Consistency Determination at 12. As such, this policy is not applicable to the Preferred Alternative and the proposed activity is consistent to the maximum extent practicable with 650-RICR-20-00-1.3.1(C)(1)(b).

1.5 650-RICR-20-00-1.3.1(F): Treatment of Stormwater and Sewage

Section 1.3.1(F) states the Council's policies regarding the treatment of stormwater and sewage. The policies are intended in part to "maintain and, where possible, improve the quality of...groundwater resources and tidal...surface waters" through the treatment of stormwater and sewage. *See* 650-RICR-20-00-1.3.1(F)(1)(a). To achieve this and other policies, the Council requires the use of low impact development (LID) strategies and the "preparation and implementation of a stormwater management plan in accordance with the...RIDEM Rhode Island Stormwater Design and Installation Standards Manual" (RISDISM). *Id.* at 1.3.1(F)(a), (d)-(h). The Preferred Alternative will incorporate LID strategies to the maximum extent practicable to "reduce the volume of stormwater runoff to surface waters" and "project design and construction activities would comply with the most recent [RIDEM RISDISM]." *See* Coastal Consistency Determination at 12. Additionally, the Preferred Alternative would minimize erosion, sediment loss, and soil disturbance, limit increases of impervious surface areas, and maximize the use of natural features and native plant species in the project's stormwater management practices. *Id.* at 12-13. Coddington Cove's water quality would also be protected though the use of LID strategies and "landscape amenities" that reduce stormwater runoff. Therefore, the CRMC finds the Preferred Alternative will be consistent to the maximum extent practicable with 650-RICR-20-00-1.3.1(F).

1.6 650-RICR-20-00-1.3.1(M): Public roadways, bridges, parking lots, railroad lines and airports

Section 1.3.1(M) addresses the policies, prohibitions, and standards for alterations and improvements to existing parking lots. Section 1.3.1(M) requires a party to adhere to Section 1.3.1(B), implement an erosion and sediment control plan, and be compliant with stormwater management standards in Section 1.3.1(F). The Preferred Alternative includes the construction of parking lots associated with the proposed administration and warehouse building comprised of a "43,560 square feet of exterior storage area" and a 30 and 45-space parking lot. *See* Coastal

Consistency Determination at 8. Additionally, the Building 11 Parking Area would consist of a 50-space parking lot. *Id.* The Coastal Consistency Determination states that resulting increases in stormwater discharge would be managed in accordance with 650-RICR-20-00-1.3.1(F). *See* Coastal Consistency Determination at 13; *supra* section 1.5. Additionally, the Preferred Alternative parking lots would be constructed to "protect areas susceptible to erosion and sediment loss…would not disturb any natural drainage features" and limit increases in impervious surfaces to the maximum extent practicable. *See* Coastal Consistency Determination at 13. Construction of impervious surfaces would be managed through the projects soil and erosion control plan. *Id.* at 8. Therefore, based on the information provided in the Coastal Consistency Determination, the CRMC finds the Preferred Alternative will be consistent to the maximum extent practicable with 650-RICR-20-00-1.3.1(M).

1.7 650-RICR-20-00-1.3.1(N): Maintenance of structures & 650-RICR-20-00-1.3.1(G): Shoreline protection

Section 1.3.1(N)(1)(c) allows for the maintenance or repair of structural shoreline protection facilities in accordance with Section 1.3.1(G) (Shoreline protection). Shoreline protection includes bulkheads where the purpose of the bulkhead is to reduce the erosion of coastal features and "includes any sheet pile walls, concreate or stone walls, or other structures." *See* 650-RICR-20-00-1.1.2(A)(155). Section 1.3.1(G)(6) establishes the standards for the maintenance and repair of shoreline protection. The Preferred Alternative includes the installation of "approximately 728 feet of bulkhead…near the proposed new pier location to reinforce and stabilize the existing deteriorating bulkhead." *See* Coastal Consistency Determination at 6. The description of the bulkhead maintenance/repair portion of the Coastal Consistency Determination is in keeping with section 1.3.1(G)(6) to the maximum extent practicable and the Determination states that construction would be done "in accordance with Section 1.3.1(G) of the RICRMP." *Id.* at 6, 13. Therefore, the CRMC finds the Preferred Alternative will be consistent to the maximum extent practicable with 650-RICR-20-00-1.3.1(N) and 650-RICR-20-00-1.3.1(G).

2.0 Summary and Conclusion

Based on the information provided by NOAA in its Coastal Consistency Determination, the CRMC finds the Preferred Alternative project to Relocate NOAA Research Vessels at Naval Station Newport and to improve facilities at Coddington Cove to accommodate and facilitate NOAA's intent to address the insufficiency of current research vessel locations **is consistent to the maximum extent practicable** with the enforceable policies of the federally approved Rhode Island Coastal Resources Management Plan.

Please contact this office upon initiation of activities, or if you should have any questions regarding this project.

Sincerely,

Laura K. Miguel, Acting Deputy Director
Coastal Resources Management Council

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Appendix H Noise Analysis

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1 Noise

This discussion of noise includes the types and sources of noise and the associated sensitive receptors in the human environment. A workplan that details the airborne and underwater noise as it relates to biological resources is attached.

1.1 Airborne Noise

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB)
- Frequency – the number of cycles per second the air vibrates, in hertz
- Duration – the length of time the sound can be detected

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual. While vessels and construction vehicles and equipment are not the only sources of noise in an urban or suburban environment, they are readily identified by their noise output and are given special attention in this Environmental Assessment (EA).

1.1.1 Basics of Sound and A-Weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. This vast range means that using a linear scale to represent sound intensity is not feasible. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. All sounds have a spectral content, which means their magnitude or level changes with frequency, where frequency is measured in cycles per second or hertz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-weighted sound levels. Table 1 provides a comparison of how the human ear perceives changes in loudness on the logarithmic scale.

Table 1. Subjective Responses to Changes in A-Weighted Decibels

Change	*Change in Perceived Loudness*
3 dB	Barely perceptible
5 dB	Quite noticeable
10 dB	Dramatic – twice or half as loud
20 dB	Striking – fourfold change

Figure 1 (Cowan, 1994) provides a chart of A-weighted sound levels from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) are continuous sounds that maintain a constant sound level for some period of time. Other sources (e.g., automobile, heavy truck) are the maximum sound produced during an event like a vehicle pass-by. Other sounds (e.g., urban daytime, urban nighttime) are averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed below.

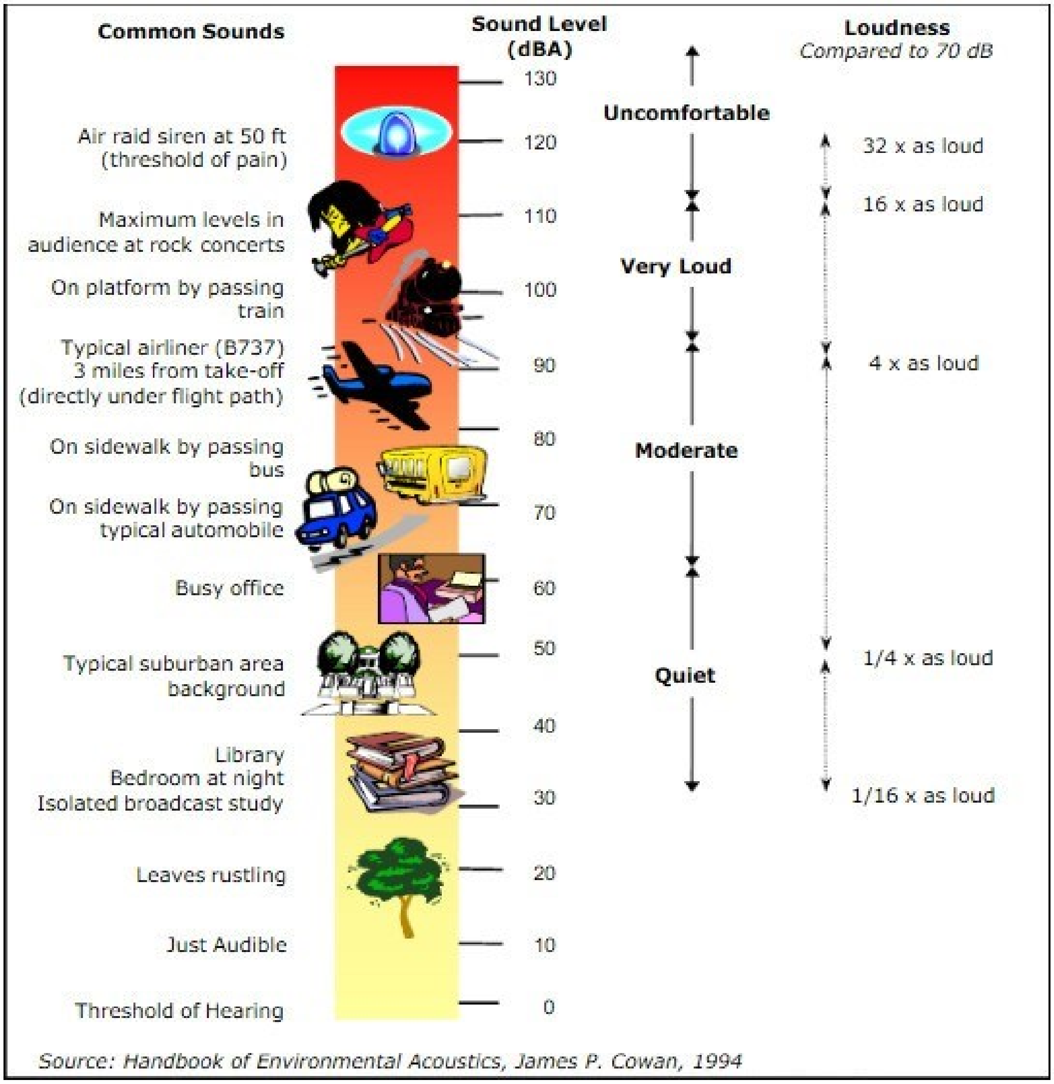

Figure 1. A-Weighted Sound Levels from Typical Sources

1.1.2 Noise Metrics

A metric is a system for measuring or quantifying a particular characteristic of a subject. Since noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. The noise metrics used in this EA are described in summary format below. While the Day-Night Average Sound Level (DNL) noise metric is the most commonly used tool for analyzing noise generated at Navy installations, the Department of Defense (DoD) has been developing additional metrics (and analysis techniques). These supplemental metrics and analysis tools provide more detailed noise exposure information for the decision process and improve the discussion regarding noise exposure. This EA evaluates supplemental noise metrics relevant to a discussion of noise produced during temporary intermittent construction operations, as described below.

1.1.2.1 Day-Night Average Sound Level

The DNL metric is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10 p.m. and 7 a.m. (acoustic night). DNL values are average quantities, mathematically representing the continuous sound level that would be present if all of the variations in sound level that occur over a 24-hour period were averaged to have the same total sound energy. The DNL metric quantifies the total sound energy received and is therefore a cumulative measure, but it does not provide specific information on the number of noise events or the individual sound levels that occur during the 24-hour day. DNL is the standard noise metric used by the U.S. Department of Housing and Urban Development, U.S. Environmental Protection Agency (USEPA), and DoD. Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments; there is a consistent relationship between DNL and the level of annoyance. Most people are exposed to sound levels of 50 to 55 DNL or higher on a daily basis. Research has indicated that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (Federal Interagency Committee on Urban Noise, 1980).

1.1.2.2 Equivalent Sound Level

A cumulative noise metric useful in describing noise is the Equivalent Sound Level (Leq). Leq is the continuous sound level that would be present if all of the variations in sound level occurring over a specified time period were smoothed out as to contain the same total sound energy. The same calculation for a daily average time period such as DNL but without the penalties is a 24-hour equivalent sound level, abbreviated Leq(24). Other typical time periods for Leq are 1 hour and 8 hours.

1.1.2.3 Sound Exposure Level

The Sound Exposure Level (SEL) metric is a composite metric that represents both the intensity of a sound and its duration. Individual time-varying noise events have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. SEL provides a measure of total sound energy of the entire acoustic event, but it does not directly represent the sound level heard at any given time. SEL captures the total sound energy from the beginning of the acoustic event to the point when the receiver no longer hears the sound. It then condenses that energy into a 1- second period of time and the metric represents the total sound exposure received. The SEL has proven to be a good metric to compare the relative exposure of transient sounds, such as a vessel or vehicle passing, and is the recommended metric for sleep disturbance analysis (DoD Noise Working Group, 2009).

1.1.3 Noise Effects

An extensive amount of research has been conducted regarding noise effects including annoyance, speech interference, sleep disturbance, noise-induced hearing impairment, nonauditory health effects, performance effects, noise effects on children, effects on domestic animals and wildlife, property values, structures, terrain, and archaeological sites. Annoyance, the primary effect of high noise levels on sensitive receptors, is discussed below. The other noise effects noted above tend to result from long- term high noise levels and are not discussed further in this EA.

1.1.3.1 Annoyance

As previously noted, the primary effect of recurring high noise events on exposed communities is long-term annoyance, defined by USEPA as any negative subjective reaction on the part of an individual or group. The scientific community has adopted the use of long-term annoyance as a primary indicator of community response and there is a consistent relationship between DNL and the level of community annoyance (Federal Interagency Committee on Noise, 1992).

1.1.3.2 Potential Hearing Loss

DoD policy directive requires that hearing loss risk be estimated for the at-risk population, defined as the population exposed to DNL greater than or equal to 80 dB (Department of Defense, 2009). Noise levels generated by waterfront activities at NAVSTA Newport are typical of an industrial setting are not known to reach 80 dB DNL or more outside the installation boundary. There is no risk of potential hearing loss due to Navy operations for individuals working or residing outside of NAVSTA Newport.

Therefore, this EA does not evaluate potential hearing loss.

1.1.3.3 Sleep Disturbance

The disturbance of sleep is a major concern for communities exposed to nighttime industrial noise. This EA evaluates noise produced during temporary, intermittent construction activities, which would not be occurring at night; therefore, this EA does not analyze sleep disturbance effects. NOAA vessel operations would not generate noise sufficient to result in sleep disturbance.

1.1.3.4 Workplace Noise

In 1972, the National Institute for Occupational Safety and Health (NIOSH) published a criteria document with a recommended exposure limit of 85 dBA as an 8-hour time-weighted average. This exposure limit was reevaluated in 1998 when NIOSH made recommendations that went beyond conserving hearing by focusing on the prevention of occupational hearing loss. Following the reevaluation using a new risk assessment technique, NIOSH published another criteria document in 1998, which reaffirmed the 85 dB recommended exposure limit (National Institute for Occupational Health and Safety, 1998).

Construction contractors would be required to comply with NIOSH noise exposure limits. Temporary, intermittent construction noise is not expected to increase the risk of hearing loss for workers outside of NAVSTA Newport; therefore, NIOSH standards are not addressed further in this EA.

1.1.4 Regulatory Thresholds

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hourperiod. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that would reduce sound levels to acceptable limits. Airborne noise limitations pertaining to wildlife are discussed in Section 1.2.4.

2 References

Cowan, J. P. (1994). Handbook of Environmental Acoustics. New York: John Wiley & Sons.

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DoD Noise Working Group. (2009). Improving Aviation Noise Planning, Analysis and Public Communication with Supplemental Metrics - Guide to Using Supllemental Metrics.

Federal Interagency Committee on Noise. (1992). Federal Review of Selected Airport Noise Analysis Issues.

Federal Interagency Committee on Urban Noise. (1980). Guidelines for Considering Noise in Land Use Planning and Control. Washington, DC.

National Institute for Occupational Health and Safety. (1998). Criteria for a Recommended Standart Occupational Noise Exposure, Revised Criteria. Cincinnati: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

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WORK PLAN

FOR

UNDERWATER ACOUSTIC TRANSMISSION LOSS MODELING

AND MARINE MAMMAL TAKE ANALYSIS

RELOCATION OF NOAA RESEARCH VESSELS

AT

NAVAL STATION NEWPORT

NEWPORT, RHODE ISLAND

Prepared by:

Naval Facilities Engineering Systems Command Mid-Atlantic

Prepared for:

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FEBRUARY 2022

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Acronyms and Abbreviations

dB	decibel(s)
dB_{pk}	peak pressure
dB peak	instantaneous peak SPL in decibels (can apply to either airborne or underwater sound)
dB re 1 µPa	dB referenced to a pressure of 1 microPascal (measures underwater SPL)
dB re 1 $µPa^2$-sec	dB referenced to a pressure of 1 microPascal squared per second (measures underwater SEL)
dB re 20 µPa	dB referenced to a pressure of 20 microPascals (measures airborne SPL)
dB SEL_{cum}	cumulative sound exposure level
DTH	down the hole
ESA	Endangered Species Act
GIS	geographical information systems
Hz	Hertz
kHz	kilohertz
MMPA	Marine Mammal Protection Act
NAVFAC	Naval Facilities Engineering Systems Command
NAVSTA	Naval Station
Navy	Department of the Navy
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NUWC	Naval Undersea Warfare Center
PTS	permanent threshold shifts
rms	root mean square
SEL	sound exposure level
SPL	sound pressure level
TL	transmission loss
TTS	temporary threshold shift
µPa	microPascal(s)
U.S.	United States
USCG	United States Coast Guard
WFA	Weighting Factor Adjustment

1 Overview

The United States (U.S.) Department of the Navy (Navy) and the National Oceanic and Atmospheric Administration (NOAA) propose to construct a new four-berth pier, small boat floating dock, and shoreside support facilities to support the relocation of four NOAA Atlantic Fleet research vessels at Naval Station (NAVSTA) Newport, Newport, Rhode Island (**Figures 1 and 2**). Reinforcement of 728 linear feet of the existing deteriorated bulkhead between the T-pier and breakwater would be necessary and would require the installation of a new combination steel sheet and pipe pile bulkhead waterward of the existing bulkhead. The existing bulkhead concrete cap would be demolished, and rock would be removed from existing revetments to accommodate the new bulkhead.

The project is needed due to the insufficiency of current research vessel locations including deteriorating conditions of Pier 2 at NAVSTA Newport and user conflicts at the Port of Davisville, Rhode Island, where two of the four research vessels are currently located. The remaining two vessels are currently unidentified but would be part of NOAAs existing Atlantic fleet. Relocation of NOAA vessels at NAVSTA Newport would establish and expand effective partnerships that would integrate operational capabilities, reduce redundancies, and unify commands resulting in greater mission success. The Proposed Action would also gain efficiencies by co-locating NOAA vessels in support of NOAA's mission and operational requirements consistent with the NOAA Fleet Plan (NOAA 2016) and Cooperative Maritime Strategy (U.S. Coast Guard [USCG] and NOAA 2013).

The goal of this task is to develop a rigorous, defensible model of underwater and airborne sound transmission loss from project activities for the purpose of mapping harassment zones within which "takes" of marine mammals, as defined under the Marine Mammal Protection Act (MMPA), can be anticipated. Modeled harassment zones identified for the Proposed Action are included in **Table A-1** and **Table A-2** and depicted in **Figures A-1 through A-20** in **Appendix A**. The Acoustic Transmission Loss Modeling effort will also support the analysis of project effects on Endangered Species Act (ESA)-listed fish and sea turtle species and Essential Fish Habitat. The key components of this analysis include (1) the definition of acoustic source levels; (2) mathematical models and assumptions for acoustic transmission loss from the source; (3) the application of thresholds for different levels of effect on marine mammals and other species to determine the distances within which those thresholds are exceeded; (4) mapping the resulting model of acoustic transmission loss onto the project area using geographic information systems (GIS) to quantify the harassment zones; and (5) use of appropriate density data to calculate the number of takes that may occur within the harassment zones.

This submittal presents Cardno's proposed Work Plan to accomplish this task. The proposed approach is consistent with that used in recent Navy applications for Incidental Harassment Authorizations and Letter of Authorizations for similar construction activities at Navy installations on the Atlantic and Pacific coasts. A glossary of acoustical terms is provided in Section 6 at the end of the plan.

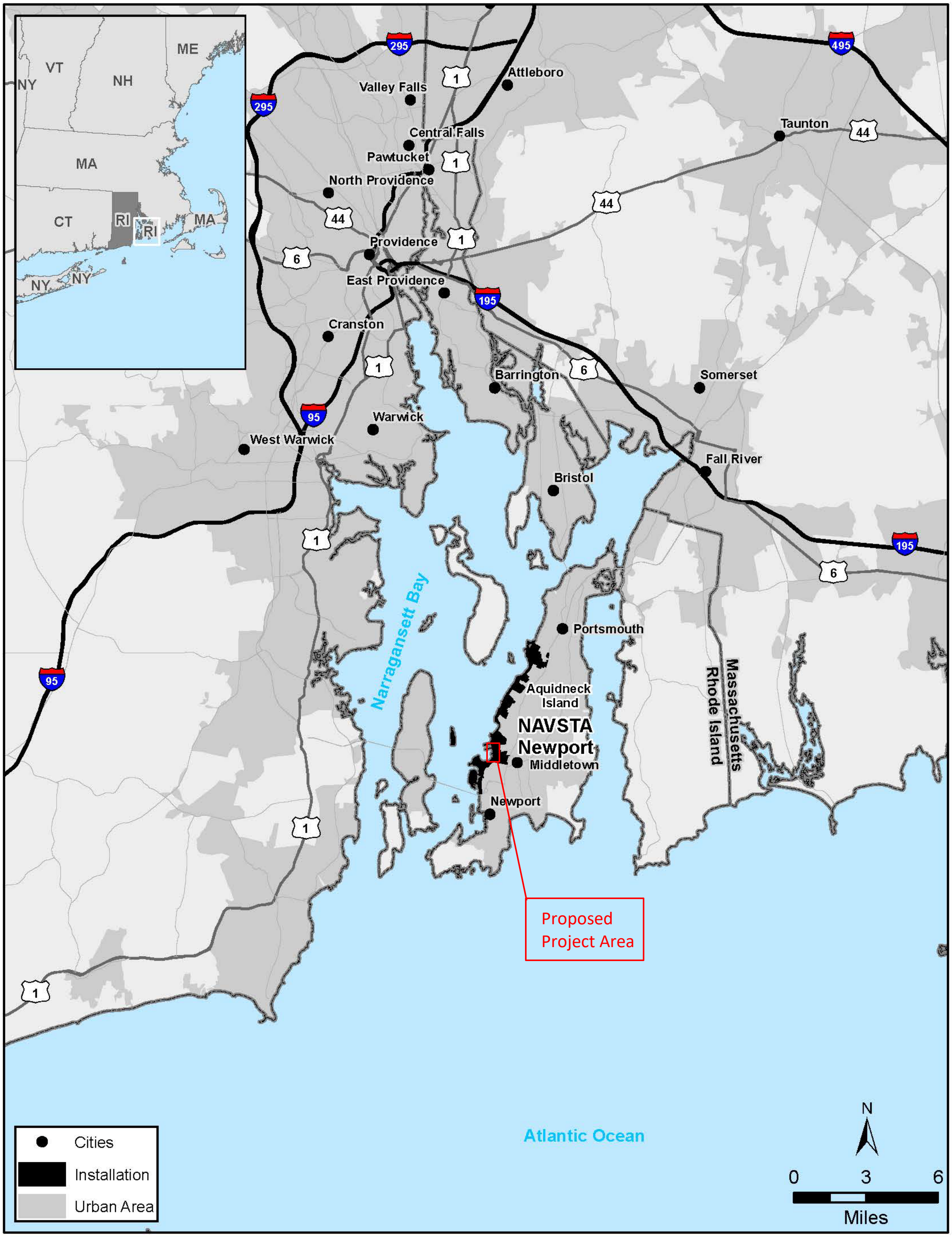

Figure 1. Project Location Map

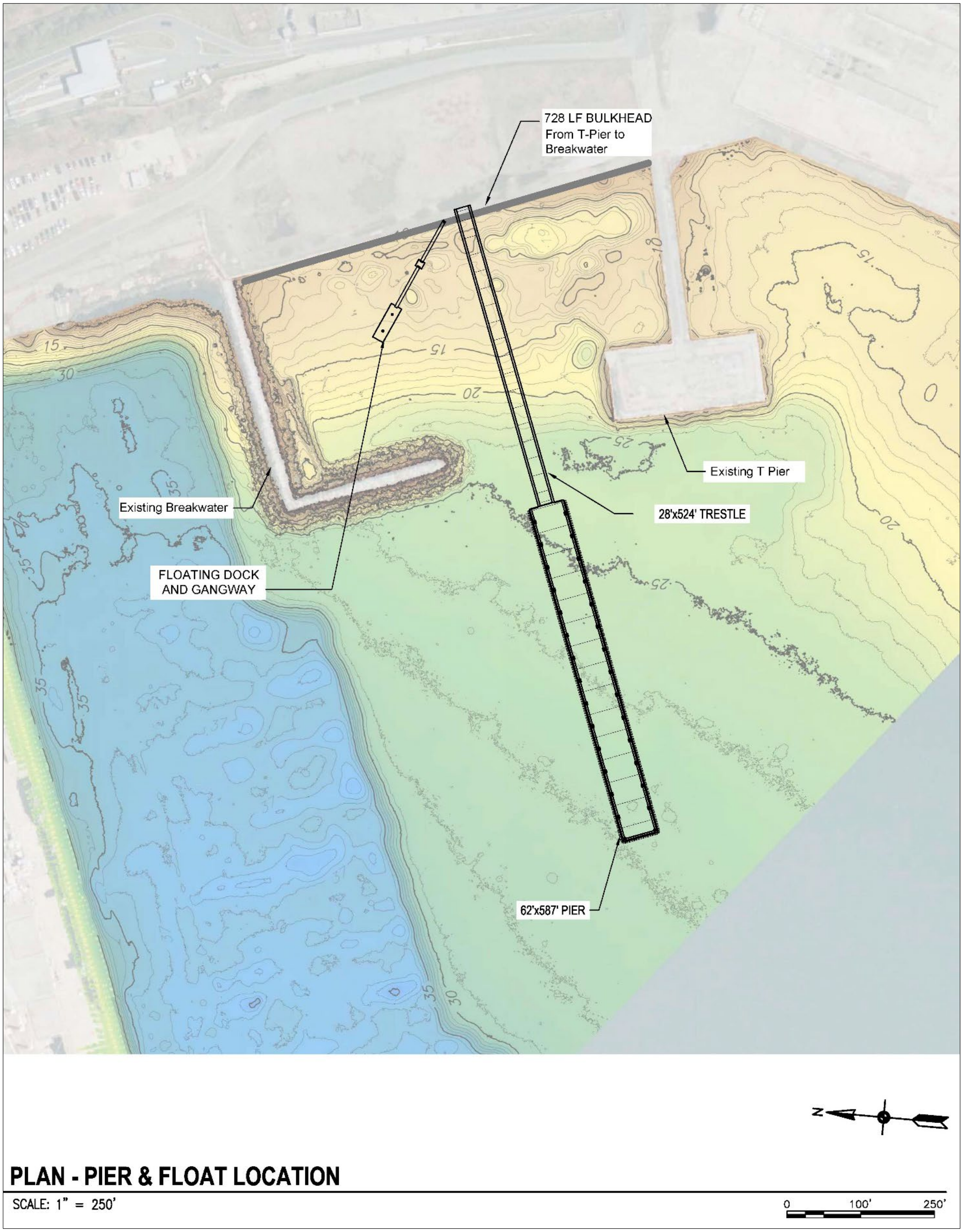

Figure 2. Waterfront Project Overview

2 Species to Be Assessed

Species proposed to be assessed for impacts from acoustic sources are listed in **Table 1**. The list includes all ESA-listed or otherwise protected marine mammal, sea turtle, and fish species determined to have a reasonable possibility of presence within the project's acoustic region of influence where exposure to underwater sound could result in a "take" by harassment under the MMPA. The list includes all species identified by National Marine Fisheries Service (NMFS) with the potential to be affected by the Proposed Action or characterized as "common" and with documented occurrences in Coddington Cove and Narragansett Bay. For marine mammals and sea turtles, this is largely based on the analysis of historical data prepared for the Rhode Island Ocean Special Area Management Plan by Kenney and Vigness-Raposa (2010). Marine Mammal Stock Assessment Reports in the Atlantic (Hayes et al. 2021), the NOAA Fisheries ESA Section 7 Mapper, and marine mammal surveys at NAVSTA Newport (Moll et al. 2016, 2017; Naval Undersea Warfare Center [NUWC] 2011; NOAA Fisheries 2019) were also consulted. The inclusion of fish species is based on literature cited in previous National Environmental Policy Act documents. Location and density information for these species will be obtained as available from the Navy's Marine Species Density Database (Navy 2017a). Further analysis will determine which of these species can be screened out based on extremely low density and discountable likelihood of take.

Table 1. Species to be Assessed for Impacts from Acoustic Sources

Common Name	***Scientific Name***	***Regulatory Authority***
Marine Mammals[1]		
Harbor seal	*Phoca vitulina vitulina*	MMPA
Gray seal	*Halichoerus grypus*	MMPA
Harp seal	*Pagophilus groenlandicus*	MMPA
Hooded seal	*Cystophora cristata*	MMPA
Short-beaked common dolphin	*Delphinus delphis delphis*	MMPA
Atlantic white-sided dolphin	*Lagenorhyncus acutus*	MMPA
Harbor porpoise	*Phocoena phocoena*	MMPA
Sea Turtles		
Leatherback (E)	*Dermochelys coriacea*	ESA
Loggerhead, NW Atlantic DPS (T)	*Caretta caretta*	ESA
Green, North Atlantic DPS (T)	*Chelonia mydas*	ESA
Kemp's ridley (E)	*Lepidochelys kempii*	ESA
Fishes		
Atlantic sturgeon, Gulf of Maine DPS (T), All other DPSs (E)	*Acipenser oxyrinchus oxyrinchus*	ESA
Shortnose sturgeon (E)	*Acipenser brevirostrum*	ESA

Notes: 1. Names based on Hayes et al. 2021.
E = Endangered, MMPA = Marine Mammal Protection Act, ESA = Endangered Species Act; T = Threatened.

3 Acoustic Sources

Construction of the new pier, trestle, small boat floating dock, and reinforcement of 728 linear feet of bulkhead will require the installation of steel pipe piles, sheet piles, and drilling steel casings. A summary of pile installation activity is contained in **Table 2**.

Demolition of the existing bulkhead concrete cap and several feet of steel sheet pile would not require in-water work. Removal of rock from existing revetments at the T-Pier and breakwater for bulkhead installation would not require drilling or hammering. Therefore, these demolition actions are not included in the underwater acoustic analysis. Three steel piles and four timber piles from an abandoned floating dock would be pulled and are included in **Table 2**.

3.1 Pile Installation and Extraction Methods

Vibratory and impact hammer methods as well as rotary drilling and down the hole (DTH) mono-hammer would be used for the project.

Vibratory hammers are routinely used to install/extract piles when permitted by the sediment type. Vibratory hammers typically produce lower source levels of noise than impact hammers, and they can be considered as an alternative to impact hammers in order to reduce underwater sound during construction activities (ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2012). They are considered a non-impulsive noise source as the hammer continuously drives or removes the pile into or out of the substrate. A vibratory hammer operates by using counterweights that spin to create a vibration. The vibration of the hammer causes the pile to vibrate at a high speed. The vibrating pile then causes the soil underneath it to “liquefy” and allow the pile to move easily into or out of the sediment.

Impact hammers are the most common pile driving method used to install piles of various sizes (ICF Jones and Stokes and Illingworth and Rodkin, Inc. 2012). Impact hammers typically produce greater source levels of noise than vibratory hammers and are an impulsive noise source. Impact pile drivers are piston-type drivers that use various means to lift a piston (ignition, hydraulics, or steam) to a desired height and drop the piston (via gravity) against the head of the pile in order to drive it into the substrate. The size and type of impact driver used depend on the energy needed to drive a certain type of pile in various substrates to the necessary depth.

Proposed pile sizes to be installed for this project range from 16- to 36-inch steel pipe or steel sheet. The impact hammers that may be used for these piles sizes are presented in **Tables 3** and **4**.

Table 2. Pile Installation/Extraction, Drilling, and Down the Hole Hammer Activity

Facility	*Construction Period*	*Pile Type*	*Pile Diameter (inch)*	*Number of Piles*	*Method of Pile Driving/Extraction*	*Daily Production Rate*	*Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)*	*Impact Pile Driving (Strikes)*	*Total Production Days* [(1)]
Abandoned guide piles along bulkhead	Feb 2023	Steel Pipe	12.0	3	Vibratory Extraction	3 piles/day	30	n/a	1
Floating dock demolition (Timber Guide Piles)	Feb 2023	Timber	12.0	4	Vibratory Extraction	4 piles/day	30	n/a	1
Bulkhead construction (Combination Pipe/Z-pile)	Feb – Apr 2023*	Steel Pipe Pile	18.0	115	Vibratory / Impact	8 piles/day	30	1,000 strikes/pile	15
				12	Mono-hammer DTH [(2, 3)]	1 hole/day	300	13 strikes/second	12
		Steel Sheet pile Z26-700	18.0 deep	230 (115 pairs)	Vibratory	8 pair/day	30	n/a	15
		Template Steel Pipe Pile	16.0	60 (4 x 15 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	30
Trestle (Bents 1-18)	Feb – Apr 2023*	Steel Pipe Pile	18.0	36	Vibratory / Impact	2 piles/day	30	1,500 strikes/pile	18
				4	Rotary Drilling [(4)]	1 hole/day	300	n/a	4
		Template Steel Pipe pile	16.0	72 (4 x 18 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	36
Trestle (Bent 19)	Apr 2023	Steel Pipe Pile	30.0	2	Vibratory / Impact	2 piles/day	45	2,000 strikes per pile	1
		Template Steel Pipe pile	16.0	4 (4 x 1 move)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2
Pier	May – Nov 2023**	Steel Pipe Pile	30.0	120	Vibratory / Impact	4 piles/day	45	2,000 strikes/pile	30
				12	Rotary Drilling [(4)]	1 hole/day	300	n/a	12
		Template Steel Pipe Pile	16.0	120 (4 x 30 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	60

Table 2. Pile Installation/Extraction, Drilling, and Down the Hole Hammer Activity

Facility	***Construction Period***	***Pile Type***	***Pile Diameter (inch)***	***Number of Piles***	***Method of Pile Driving/Extraction***	***Daily Production Rate***	***Vibratory Pile Driving/Extracting or Drilling (Minutes to drive a single pile)***	***Impact Pile Driving (Strikes)***	***Total Production Days (1)***
Fender Piles	May – Sep 2024**	Steel Pipe Pile	16.0	201	Vibratory	4 piles/day	20	n/a	50
		Template Steel Pipe Pile	16.0	96 (4 x 24 moves)	Vibratory Installation / Extraction	4 pile/day	30	n/a	48
Gangway support piles (small boat floating dock)	May 2024**	Steel Pipe Pile	18.0	4	Vibratory / Impact	2 piles/day	30	1,000 strikes/pile	2
Small Boat Floating Dock	Jun 2024**	Steel Casing w/ Rock Socket (Guide Pile)	36-inch shaft	2	Vibratory / Impact	1 pile/day	60	1,000 strikes/pile	2
				2	Mono-hammer DTH (2, 3, 5)	1 hole/day	300	13 strikes/second	2
		Template Steel Pipe Pile	16.0	4 (4 x 1 moves)	Vibratory Installation / Extraction	4 piles/day	30	n/a	2

Notes:
n/a=not applicable
*Pile installation at Bulkhead and Trestle may be concurrent
**Pile installation of Pier, Fender, Gangway, and Floating Dock may be concurrent

(1) Total production days for template piles includes the time to install and the time to extract the piles.
(2) “Down the hole hammer” (DTH) may be used to clear boulders and other hard driving conditions for pipe piling at the bulkhead. DTH will only be used when obstructions or refusal (hard driving) occurs that prevents the pile from being advanced to the required tip elevation using vibratory/impact driving. The DTH is placed inside of the steel pipe pile and operates at the bottom of the hole to clear through rock obstructions, hammer does not “drive” the pile but rather cleans the pile and removes obstructions such that the piles may be installed to “minimum” tip elevation.
(3) DTH uses both impulsive (strikes/second) and continuous methods (minutes).
(4) Rotary drilling may be used to clear boulders/obstructions for trestle and pier. Core barrel will be lowered through the pile and advanced using rotary methods to clear the obstruction. After the obstruction is cleared, the piling will be advanced to the required tip elevation using impact driving methods.
(5) DTH will be used to create a rock socket at each of the 36-inch shafts for the floating dock.

Table 3. Impact Hammers Anticipated for Installation of up to 18-inch Diameter Pile Sizes

Hammer	***Ram Wt (kip)***	***Max Energy (kip-ft)***	***Max Stroke (ft)***
Junttan HHK12S (base)	26.5	130.2	4.92
Delmag D55	11.8	125.0	10.54
ICE I-46v2	10.1	119.8	11.81

Notes: Wt = weight; kip = 1,000 pounds-force; kip-ft = 1,000 foot-pounds; ft = foot/feet.

Table 4. Impact Hammers Anticipated for Installation of 24-inch Diameter or Larger Pile Sizes

Hammer	***Ram Wt (kip)***	***Max Energy (kip-ft)***	***Max Stroke (ft)***
Junttan HHK16S (base)	35.2 kip	173.7	4.92
Delmag D62-22	13.6 kip	164.6	12.05
ICE I-62v2	14.6	164.9	11.3

Notes: Wt = weight; kip = 1,000 pounds-force; kip-ft = 1,000 foot-pounds; ft = foot/feet.

The magnitude and characteristics of underwater noise generated by a pile strike depend on the energy of the strike and the pile size and composition. To the extent practicable, it is assumed that the piles installed for this project would be set with a vibratory hammer and then finished with an impact hammer in order to reach bearing depth or to have the required load-bearing capacity if installed using vibratory methods only.

For rotary drilling, the drill bit rotates on the rock while the drill rig applies pressure. The bit rotates and grinds continuously to fracture the rock and create a hole. Rotary drilling is considered an intermittent, non-impulsive noise source, similar to vibratory pile driving and would be used to clear boulders/obstructions for the proposed trestle and pier.

The method of DTH mono-hammer uses both rotary drilling in conjunction with percussive hammering (approximately 13 strikes per second) to fracture rock. As the drill bit rotates under pressure from the drill rig, a hammer located within the bit is forced into the rock repeatedly. DTH excavation using mono-hammers would be used for clearing boulders and other hard driving at the bulkhead as well as create a rock socket at each of the 36-inch shafts for the floating dock.

3.2 Concurrent Activities

In order to maintain project schedules, it is likely that multiple pieces of equipment would operate at the same time along the waterfront. As footnoted in Table 2, pile installation at the bulkhead, trestle pier, fenders, gangway, and small boat floating dock may occur simultaneously. Concurrent activities would include various combinations of simultaneous use of vibratory pile driver/extractor, rotary drill, impact hammer, and DTH mono-hammer. Analysis of concurrent activities will follow NMFS 2021 unpublished guidance and be included in the IHA.

3.3 Sound Source Levels

3.3.1 Underwater Acoustics

In order to estimate sound source levels for pile driving, extracting, drilling, and DTH mono-hammer activities proposed for this project, available documentation for projects that are most similar to the Proposed Action in terms of the type and size of pile, method of installation, and substrate conditions were reviewed to identify the most relevant proxy sound source levels. **Table 5** summarizes proxy source levels for pile driving to be used to model distance to underwater noise thresholds for marine mammals, fish, and sea turtles.

For purposes of this analysis, underwater noise will be modeled without accounting for potential noise minimization measures.

3.3.2 Airborne Acoustics

To estimate airborne sound pressure level (SPLs) and their associated effects on marine mammals that are likely to result from pile driving, in-air acoustic monitoring of pile driving activities at Puget Sound Ferry terminals and U.S. Navy Installations were reviewed (Navy 2015, 2017b). **Table 6** summarizes airborne proxy source levels for modeling distances to noise thresholds for pinniped (seal) haul-out areas that are present near the affected area.

Table 5. Underwater Noise Source Levels Modeled for Impact and Vibratory Pile Driving/Extracting, Drilling, and DTH Mono-Hammer

Pile Type	*Installation/Extraction Method*	*Pile Diameter*	*Peak (dB re 1 μPa)*	*rms (dB re 1 μPa)*	*SEL (dB re 1 μPa² sec)*	*Reference*
Steel pipe	Vibratory Extraction	12-inch[1]	171	155	155	Caltrans 2020, Table 1.2-1d
Timber	Vibratory Extraction	12-inch	NA	158	NA	NMFS 2021a, Table 4
Steel pipe	Vibratory Install	18-inch[2]	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4
Steel pipe	Impact Install	18-inch[2]	208	187	176	Caltrans 2020, Table 1.2-1a
Sheet pile	Vibratory Install	Z26-700[3]	NA	156	NA	NMFS 2019, p.37846
Steel pipe	Vibratory Installation/Extraction	16-inch	NA	162	162	NAVFAC Mid-Atlantic 2019, Table 6-4
Steel pipe	DTH mono-hammer	18-inch	172	167	146	Egger 2021; Guan and Miner 2020
Steel pipe	Rotary Drilling	18-inch and 30-inch	NA	154	NA	Dazey et al. 2012
Steel Pipe	Vibratory Install	30-inch	NA	167	167	Navy 2015, p.14
Steel Pipe	Impact Install	30-inch	211	196	181	NAVFAC Southwest 2020, p.A-4
Steel Pipe	DTH mono-hammer	30-inch[4]	194	167	164	Egger 2021; Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019
Casing/Shaft for Steel pipe	Vibratory Install	36-inch	NA	175	175	NAVFAC Mid-Atlantic 2019, Table 6-4
Casing/Shaft for Steel pipe	Impact install	36-inch	209	198	183	NAVFAC Mid-Atlantic 2019, Table 6-4
Casing/Shaft for Steel pipe	DTH mono-hammer	36-inch[4]	194	167	164	Reyff and Heyvaert 2019; Reyff 2020; and Denes et al. 2019

Sources:

1. Proxy for 13-inch steel pipe used as data not available for vibratory install/extract of 12-inch steel pipe.
2. Proxy for impact install of 20-inch steel pipe as data were not available for 18-inch.
3. A proxy value for vibratory pile driving Z26-700 steel sheet piles could not be found so a proxy for a 30-inch steel pipe pile has been used (Navy 2015 [p. 14]).
4. Guidance from NMFS states: combination of (whichever higher for given metric) Reyff and Heyvaert (2019), Reyff (2020), and Denes et al. (2019).

Notes:

All SPLs are unattenuated; dB=decibels; NA = Not applicable/Not available; rms = root mean square; SEL = sound exposure level; single strike SEL are the proxy sources levels presented for impact pile driving and were used to calculate distances to PTS.

dB re 1 μPa = dB referenced to a pressure of 1 microPascal, measures underwater SPL. dB re 1 μPa²-sec = dB referenced to a pressure of 1 microPascal squared per second, measures underwater SEL.

All recordings were made at 10 meters unless noted otherwise.

Caltrans = California Department of Transportation; NA = Not Applicable; NAVFAC = Naval Facilities Engineering Systems Command

Table 6. Summary of Recommended Airborne Proxy Source Levels

Pile Size (diameter in inches)	*Impact rms L_{max} (Unweighted)*	*Vibratory/Drilling rms L_{eq} (Unweighted)*
16-inch steel pipe[1]	110	88
18-inch Steel pipe[1]	110	88
30-inch steel pipe[1]	110	n/a
36-inch steel casing w/rock socket[1]	112	95
Rotary Drilling[2]	69	69
DTH[2]	93	n/a

Source:
1. Navy 2015 (Table 2-3). 2. Washington State Department of Transportation 2020 (P. 7.13, 7.16).
Notes:
All values relative to dB re 20 µPa = dB referenced to a pressure of 20 microPascals at 15 meters (50-feet) (except where noted); rms = root mean square, $L_{eq=}$ Equivalent continuous SPLs; L_{max}= rms maximum level of a noise; n/a=not applicable. No data were available for 16-inch steel piles, so proxies for impact install of 24-inch and vibratory install/extract of 18-inch are suggested. No Impact install proxy for 18-inch, so 24-inch proxy suggested.

4 Acoustic Transmission Loss Models

4.1 Model for Level A (Permanent Threshold Shift) Harassment of Marine Mammals

Acoustic transmission loss modeling for cumulative sound exposure that may result in Level A harassment to marine mammals will be conducted using NMFS marine mammal acoustic technical guidance (*Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing—Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts, April 2018*) (NMFS 2018). This guidance provides acoustic thresholds for the onset of permanent threshold shift (PTS), which would be considered Level A harassment under the MMPA. PTS from pile driving activities will be calculated for marine mammals in the project area using the *Optional User Spreadsheet* (herein referred to as NMFS spreadsheet) provided on the NMFS website (NMFS 2020). There are no Level A thresholds for airborne sound.

For impact pile driving, the single strike sound exposure level (SEL)/pulse equivalent will be used, and for vibratory pile driving the root mean square (rms) SPL source level will be used. An intermediate "practical spreading" value of 15 (referred to as "practical spreading loss") is widely used for intermediate or spatially varying conditions when actual values for transmission loss are unknown. It is generally accepted by NMFS for use in pile driving applications and has been used in most Navy projects that involve pile driving.

The NMFS spreadsheet generates threshold distances to PTS for the situation in which an animal remains stationary for the entire 24-hour duration of activity. Although PTS is unlikely to occur due to likely animal avoidance during pile driver operations (Russell et al. 2016), some animals could habituate to the noise source and continue to occupy the area. The NMFS spreadsheet therefore provides a boundary condition for the maximum distance at which PTS could occur. Per the NMFS spreadsheet, default Weighting Factor Adjustments (WFAs) will be used for calculating PTS (see **Table 7**). These WFAs are acknowledged by NMFS as conservative.

Table 7. Suggested (Default) Weighting Factor Adjustments

Source	*WFA*	*Example Support Sources*
Impact Pile Driving Hammers	2 kHz	Blackwell 2005; Reinhall and Dahl 2011
Vibratory Pile Driving Hammers	2.5 kHz	Blackwell 2005; Dahl et al. 2015
DTH Pile Driving/Installation	2 kHz	Denes et al. 2016; Denes et al. 2019; Reyff and Heyvaert 2019
Drilling	2 kHz	Greene 1987; Blackwell et al. 2004; Blackwell and Green 2006

Notes: kHz=Kilohertz

In order to properly calculate the distances to PTS, number of pile strikes per pile and duration (in minutes) of vibratory pile driving/extracting and rotary drilling, as well as strikes/second and minutes duration/per pile for DTH mono-hammer in a day is required for the project. **Table 2** provides these parameters for the project that will be used in the NMFS spreadsheet.

4.2 Model for Level B (Behavioral) Harassment of Marine Mammals

Cardno proposes to use a general formula for underwater acoustic transmission loss in decibels (dB) as a function of distance from the source as follows:

$$TL = B * log10\left(\frac{R1}{R2}\right) + C * (R1 - R2)$$

TL is the transmission loss in dB. The B term has a value of 10 for cylindrical spreading, which is most applicable in shallow/confined waters where sound is reflected, and 20 for spherical spreading, which is most applicable in deep/unconfined waters where sound can propagate in all three dimensions. An intermediate "practical spreading" value of 15 is applicable where the environment contains elements of both (see Section 4.1). The amount of linear loss (C) is proportional to the frequency of sound. Due to the low frequencies of sound generated by impact and vibratory pile driving/extracting, this factor would be conservatively assumed to equal zero for all calculations and transmission loss will be calculated using only logarithmic spreading. For this project we recommend the assumption of practical spreading loss, which with the conservative assumption that C = 0, simplifies to:

$$TL = 15\, log10\left(\frac{R1}{R2}\right)$$

Where:

TL is the transmission loss in dB,

R1 is the distance of the modeled SPL from the installation/extraction location, and

R2 is the distance (usually 10 meters) from the installation/extraction location of the initial measurement.

This formula would be used to estimate the distances to critical threshold levels that bound the harassment zones for MMPA Level B (Behavioral) Harassment due to impulsive and continuous underwater sound.

In modeling transmission loss from the proposed project area, the conventional assumption would be made that acoustic propagation from the source is impeded by natural and relatively dense manmade features that extend into the water, resulting in acoustic shadows behind such features.

4.3 Model for Fish

Cardno proposes to use the transmission loss formula below for determining distance to thresholds for ESA-listed sturgeon:

$$TL = 15 * Log10[radius]$$

To calculate distance to thresholds (presented below in Chapter 5), installation parameters contained in **Table 2** (see Chapter 3) would be used for the project. **Table 5** provides proxy noise sound pressure levels that would be used.

4.4 Model for Sea Turtles

The hearing capabilities of sea turtles are poorly known and there is very little available information on the effects of noise on sea turtles, especially to determine impacts from natural and anthropogenic sound sources (i.e., pile driving noise) (Popper et al. 2014). Methods for analyzing acoustic impacts to sea turtles will be consistent with the Navy's Criteria and Thresholds for U.S. Navy Acoustic and Explosives Effects Analysis (Phase III) (Navy 2017c; 2018).

Cardno proposes to use the same transmission loss formula that is used for fish (above) in determining distance to thresholds for ESA-listed sea turtles. To calculate the distance to thresholds (see Chapter 5), the number of pile strikes per pile and duration of vibratory installation/extraction are required for the project (see **Table 2**).

4.5 Airborne Noise

For airborne noise, the assumption is made that sound propagates freely in all directions from the source, resulting in spherical spreading loss, which equates to 6 dB decrease in SPL per doubling of distance. The water surface is considered a hard site and acts as a reflective surface where it does not provide any attenuation (Washington State Department of Transportation 2020). Proxy source levels in **Table 6** would be used to calculate these distances:

$$TL = 20 \log\left(\frac{R1}{R2}\right).$$

where

TL is the transmission loss in dB,

R1 is the distance of the modeled SPL from the driven pile, and

R2 is the distance from the driven pile of the initial measurement.

5 Sound Exposure Criteria and Thresholds

5.1 Marine Mammals

The MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which: (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment] (50 Code of Federal Regulations, Part 216, Subpart A, Section 216.3-Definitions). Level A is the more severe form of harassment because it may result in injury, whereas Level B only results in behavioral disturbance without the potential for injury.

As introduced in Chapter 4, NMFS finalized the acoustic threshold levels for determining the onset of PTS in marine mammals in response to underwater impulsive and non-impulsive sound sources (NMFS 2018). The criteria use cumulative SEL metrics (dB SEL_{cum}) and peak pressure (dB_{pk}) rather than the dB rms metric. NMFS equates the onset of PTS, which is a form of auditory injury, with Level A harassment under the MMPA and "harm" under the ESA. Level B harassment is considered to occur when marine mammals are exposed to impulsive underwater sounds >160 decibels referenced to a pressure of 1 microPascal (dB rms re 1 µPa) and to non-impulsive underwater sounds >120 dB rms re 1 µPa (NMFS 2005) (**Table 8**). The application of the 120 dB rms threshold is considered precautionary (NMFS 2009, 74 *Federal Register* 41684) as it can sometimes be problematic because this threshold level can be either at or below the ambient noise level of certain locations. Behavioral harassment may or may not result in a stress response.

Acoustic disturbance levels from vibratory or impact pile driving have the potential to exceed the harassment levels defined in **Table 8** for both impulsive and non-impulsive/continuous sound levels. This table incorporates PTS thresholds in combination with prior existing thresholds for Level B exposure. In June 2021, NMFS developed guidance for estimating harassment zones for percussive drilling (DTH drilling). Because this type of drilling includes both impulsive and continuous sources of noise, both the 120 dB and 160 dB thresholds are relevant. To account for this, NMFS guidance states that the Level A and Level B isopleths should extend to the distance corresponding to the 160 dB rms and 120 dB rms thresholds, respectively (NMFS 2021b). See Tables A-1 and A-2 in **Appendix A** for modeled distances to thresholds.

For airborne sounds, there are no thresholds for Level A harassment to any marine mammal, and no Level B thresholds for cetaceans. Level B airborne sound exposure thresholds for harbor seals and other pinnipeds are included in **Table 8**. See Table A-3 in **Appendix A** for modeled distances to thresholds. Figures for airborne exposures will be provided in the Draft IHA and Draft Environmental Assessment.

Table 8. PTS and Behavioral Disturbance Threshold Criteria for Underwater and Airborne Noise

Marine Mammals	*Airborne Noise (impact and vibratory pile driving) (re 20 µPa)(1)*	*Underwater Vibratory Pile Driving Noise (non-impulsive sounds) (re 1 µPa)*		*Underwater Impact Pile Driving Noise (impulsive sounds) (re 1 µPa)*		*Percussive Drilling Noise (re 1 µPa)*	
	Disturbance Guideline (haul-out)(2)	*PTS Onset (Level A) Threshold*	*Level B Disturbance Threshold*	*PTS Onset (Level A) Threshold(3)*	*Level B Disturbance Threshold*	*PTS Onset (Level A) Threshold(3)*	*Level B Disturbance Threshold*
Mid-Frequency Cetaceans	Not applicable	198 dB SEL_{CUM}(4)	120 dB rms	230 dB Peak(5) 185 dB SEL_{CUM}(4)	160 dB rms	160 dB rms	120 dB rms
High-Frequency Cetaceans	Not applicable	173 dB SEL_{CUM}(4)	120 dB rms	202 dB Peak(5) 155 dB SEL_{CUM}(4)	160 dB rms	160 dB rms	120 dB rms
Phocidae (true seals)	90/100 dB rms6 (unweighted)	201 dB SEL_{CUM}(4)	120 dB rms	218 dB Peak(5) 185 dB SEL_{CUM}(4)	160 dB rms	160 dB rms	120 dB rms

Notes: µPa = micropascal; dB = decibel; PTS = permanent threshold shift; rms = root mean square; SEL = sound exposure level.
1. Airborne disturbance thresholds not specific to pile driver type.
2. Sound level at which pinniped haul-out disturbance has been documented. This is not considered an official threshold, but is used as a guideline.
3. Dual metric acoustic thresholds for impulsive sounds. Whichever results in the largest isopleth for calculating PTS onset is used in the analysis.
4. SEL_{cum} = Cumulative SEL over 24 hours.
5. Flat weighted or unweighted peak sound pressure within the generalized hearing range.
6. Harbor seal airborne noise threshold is 100 dB rms, all other phocids are 90 dB rms

5.2 Fish

Criteria and thresholds to estimate impacts from sound produced by impact pile driving activities are presented in **Table 9**. Consistent with Popper et al. 2014, dual metric sound exposure criteria are utilized. It is assumed that a specified effect would occur when either metric (cumulative SEL or peak SPLs) is met or exceeded. Guidelines were developed for mortality and the lowest level where injury was found (recoverable injury). In addition, Popper et al. (2014) developed guidance for the onset of temporary threshold shift (TTS). **Table 9** lists the impact pile driving guidance for the lowest level where injury was found and the onset of TTS.

Table 9. Fish Impact Pile Driving Injury Guidance

Fish Hearing Group	Onset of Mortality		Recoverable Injury		Temporary Threshold Shift
	SEL_{cum}	SPL_{peak}	SEL_{cum}	SPL_{peak}	
Fishes without a swim bladder (particle motion detection)	> 219	> 213	> 216	> 213	NC
Fishes with a swim bladder not involved in hearing (particle motion detection)	210	> 207	203	> 207	> 186 dB cumulative SEL
Fishes with a swim bladder involved in hearing (primarily pressure detection)	207	> 207	203	> 207	186 dB cumulative SEL
Eggs and larvae	> 210	> 207	Not quantified	Not quantified	Not quantified

Notes: No vibratory criteria have been established; SEL_{cum} = Cumulative sound exposure level (decibel referenced to 1 micropascal squared seconds [dB re 1 µPa^2-s]), SPL_{peak} = Peak sound pressure level (decibel referenced to 1 micropascal [dB re 1 µPa]), “>” indicates that the given effect would occur above the reported threshold; Cumulative SEL over 24 hours; NC = effects from exposure to sound produced by impact pile driving is considered unlikely, therefore no criteria are reported.

In addition, if the received SEL from an individual pile strike is below a certain level, then the accumulated energy from multiple strikes would not contribute to injury, regardless of how many pile strikes occur. This SEL is referred to as “effective quiet” and is assumed to be 150 dB (referenced to a pressure of 1 microPascal squared per second [re: 1 µPa^2-sec]). Effective quiet establishes a limit on the maximum distance from the pile where injury to fishes is expected – the distance at which the single strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected, regardless of the number of pile strikes. Underwater sound would likely cause behavioral changes to fish, which can vary from impaired startle response, freeze response, and increased swimming speed to avoidance (Iafrate et al. 2016).

In summary, based on the best available information for other fish species, underwater noise at or above the levels presented in **Table 9** have the potential to cause injury or behavioral modification to fish. See Table A-6 in **Appendix A** for modeled distances to thresholds. Figures depicting the distances will be provided in the Draft Environmental Assessment.

5.3 Sea Turtles

Unweighted peak pressure thresholds for TTS and PTS were developed for sea turtles based on auditory sensitivity in marine mammals (**Table 10**) (Navy 2017c; 2018). Sea turtle behavioral criteria was derived from impact pile driving based on exposure to air guns where 175 dB 1 µPa SPL rms is the expected sound level at which sea turtles would actively avoid exposure to pile driving noise (Navy, 2017c). See Tables A-4 and A-5 in **Appendix A** for modeled distances to thresholds. Figures depicting distances for sea turtles will be provided in the Draft Environmental Assessment.

Table 10. PTS, TTS, and Behavioral Thresholds for Sea Turtles Exposed to Impulsive and Non-Impulsive Sounds

Non-Impulsive		*Impulsive*				*Behavioral (unweighted re 1 µPa)*
TTS (weighted SPL Threshold re µPa2-s)	*PTS (weighted SPL Threshold re µPa2-s)*	*TTS (weighted SPL Threshold re µPa2-s)*	*TTS Peak SPL (unweighted SPL Threshold re 1 µPa)*	*PTS (weighted SPL Threshold re µPa2-s)*	*PTS Peak SPL (unweighted SPL Threshold re µPa)*	
200 dB SEL	220 dB SEL	189 dB SEL	226 dB Peak	204 dB SEL	232 dB Peak	175 dB rms

Notes: PTS = permanent threshold shift, TTS = temporary threshold shift, SEL = sound exposure level, SPL = sound pressure level, SEL_{cum} = cumulative SEL over 24 hours.

5.4 GIS Mapping of Harassment Zones

To create a GIS map of the modeled harassment zones, the following are proposed: (1) use of a high-resolution ArcGIS aerial image of the project area so that the shoreline boundaries of harassment zones can be accurately drawn; (2) define a modeled sound source location that provides a reasonable approximation for project activities with the greatest potential for effects; (3) the application of rules for sound propagation and acoustic shadowing along bearing angles that intersect shoreline obstructions; and (4) the translation of the Transmission Loss Model into a graphical depiction of diminishing sound pressure isopleths as a function of the sound source level and transmission loss over distance.

The calculations are made in a Microsoft Excel workbook, which is used to create a multi-ring buffer of isopleths (i.e., sound contours) diminishing in 1 dB increments from the sound source location. The sound contours are created in GIS and clipped to the boundary of the respective harassment zones and then displayed on a map. The graphical outputs will be modified based on different source levels.

5.5 Description of Take Calculation

Consistent with other Navy projects, take estimates associated with each activity will be calculated using the following general formula:

$$Take\ estimate = species\ density\ *\ area\ of\ harassment\ zone\ for\ the\ activity *\ days\ of\ activity$$

Available studies conducted in the area (Moll et al. 2016, 2017) provide information about abundance and presence/absence of species in the area. Species density estimates will be obtained, as available, from the Navy's Marine Species Density Database (Navy 2017a) based on these studies. From this source, an estimate of animals that can reasonably be expected in a specific harassment zone within a specific timeframe will be determined. This gives a number of takes per day, which is then multiplied by the number of days during which sound exposure would occur. The final take estimate will be rounded at the end of the calculation process to the nearest whole number after multiplying by the number of days. Under the MMPA, an animal can be taken only once per day; multiple exposures at the threshold level do not constitute additional takes, although they could contribute to the severity of the effect.

6 Glossary

Table 11. Glossary of Acoustical Terms

Term	*Definition*
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for water is 1 microPascal (µPa) and for air is 20 µPa (approximate threshold of human audibility).
Sound Pressure Level (SPL)	Sound pressure is the force per unit area, usually expressed in microPascals where 1 Pascal equals 1 Newton exerted over an area of 1 square meter. The SPL is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressure exerted by the sound to a reference sound pressure. SPL is the quantity that is directly measured by a sound level meter.
Frequency, hertz (Hz)	Frequency is expressed in terms of oscillations, or cycles, per second. Cycles per second are commonly referred to as hertz (Hz). Typical human hearing ranges from 20 Hz to 20 kilohertz (kHz).
Peak Sound Pressure, dB re 1 microPascal (µPa)	Peak sound pressure is based on the largest absolute value of the instantaneous sound pressure over the frequency range from 20 Hz to 20 kHz. This pressure is expressed in this application as dB re 1 µPa.
Root Mean Square (rms), dB re 1µPa	The rms level is the square root of the mean of the squared pressure level(s) as measured over a specified time period. For pulses, the rms has been defined as the average of the squared pressures over the time that comprise that portion of waveform containing 90 % of the sound energy for one impact pile driving impulse.
Sound Exposure Level (SEL), dB re 1 μPa^2-sec	Sound exposure level is a measure of energy. Specifically, it is the dB level of the time integral of the squared-instantaneous sound pressure, normalized to a 1-second period. It can be an extremely useful metric for assessing cumulative exposure because it enables sounds of differing duration, to be compared in terms of total energy.
Frequency Spectrum, dB over frequency range	The amplitude of sound at various frequencies, usually shown as a graphical plot of the mean square pressure per unit frequency (μPa^2/Hz) over a frequency range (e.g., 10 Hz to 10 kHz in this application).
Ambient Noise Level	The background sound level, which is a composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

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Appendix A
Harassment Zone Tables and Figures

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Table A-1. Impulsive (Impact Pile driving and DTH Mono-Hammer)

Structure	***Figure***	***Pile Size and Type***	***Activity***	***Total Production Days***	***Level A (PTS Onset) Harassment***			***Level B (Behavioral) Harassment – All Marine Mammals***
					MF Cetacean	***HF Cetacean***	***Phocid***	
					Maximum Distance to 185 dB SEL_{cum} Threshold (m)/Area of Harassment Zone (sq km)	***Maximum Distance to 155 dB SEL_{cum} Threshold (m)/Area of Harassment Zone (sq km)***	***Maximum Distance to 185 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)***	***Maximum Distance 160 dB rms SPL (120 dB DTH) Threshold (m)/ Area of Harassment Zone (sq km)***
Bulkhead construction (Combination Pipe/Z-pile)	A-1	18-inch steel pipe	Impact Install	15	48.5/0.0037	1,624.7/0.66	729.9/0.21	631/0.16
	A-2	18-inch	DTH Mono-Hammer	12	4.6/0.000033	154.2/0.028	69.3/0.0075	13,594/3.31
Trestle (Bents 1-18)	A-3	18-inch steel pipe	Impact Install	18	25.2/0.0020	844.9/1.21	379.6/0.38	631/0.82
Trestle (Bent 19)	A-4	30-inch steel pipe	Impact Install	1	65.8/0.014	2,205.0/3.72	990.7/1.47	2,512/4.45
Pier	A-4	30-inch steel pipe	Impact Install	30	104.5/0.034	3,500.3/6.49	1,572.6/2.50	2,512/4.45
Gangway support piles (small boat floating dock)	A-5	18-inch steel pipe	Impact Install	2	19.3/0.00058	644.8/0.17	289.7/0.049	631/0.16
Small Boat Floating Dock	A-6	36-inch Steel Casing w/Rock Socket Guide Pile	Impact Install	2	35.5/0.002	1,189.5/0.45	534.4/0.12	3,415/2.14
	A-7		DTH Mono-Hammer	2	73/0.0084	2,444.5/1.21	1,098.2/0.42	13,594/3.31

Notes: dB DTH = decibel down the hole; dB rms SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; DTH = down the hole; m = meter; PTS = Permanent Threshold Shift; sq km = square kilometer

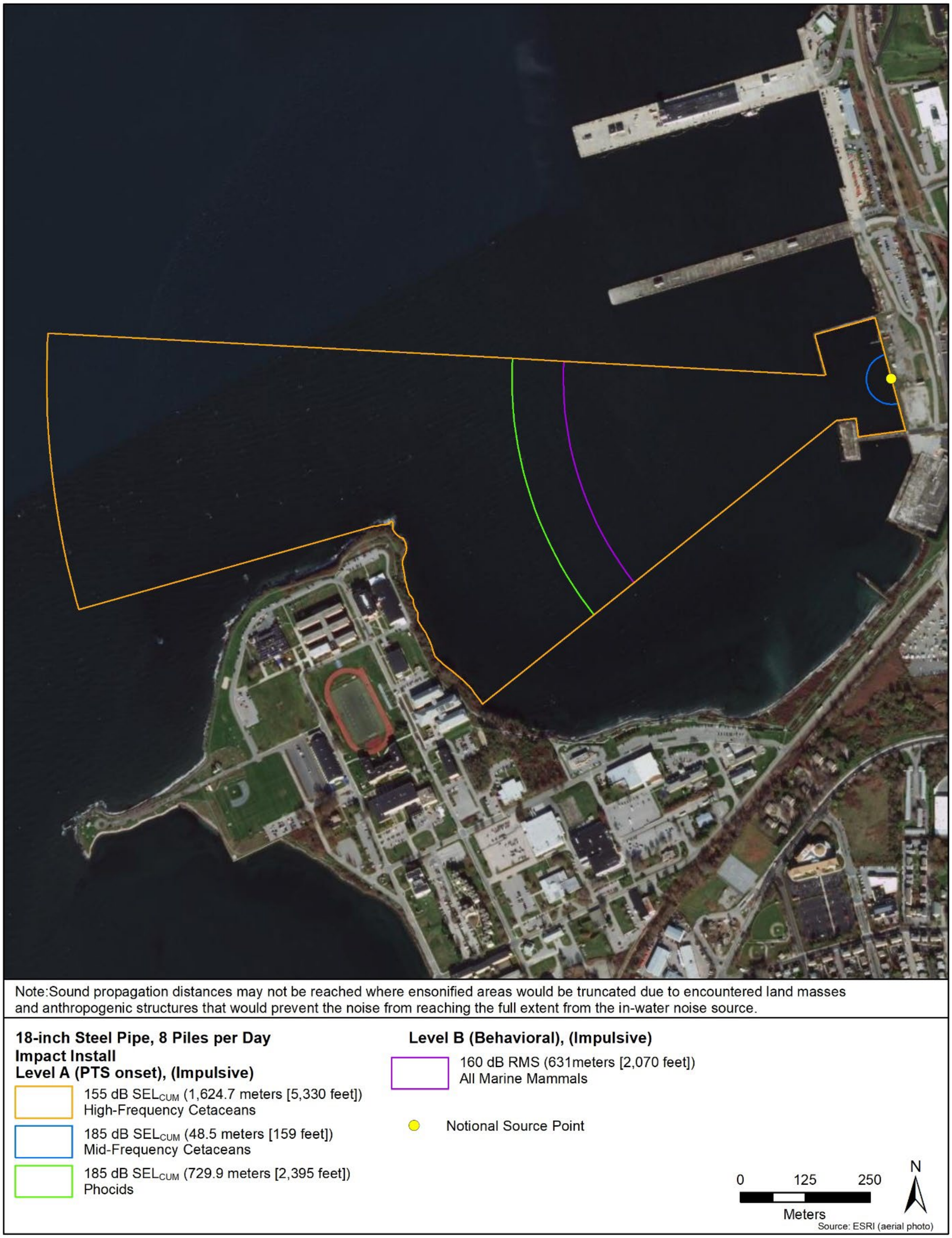


Figure A-1. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at the Bulkhead – 18-inch Steel Pipe

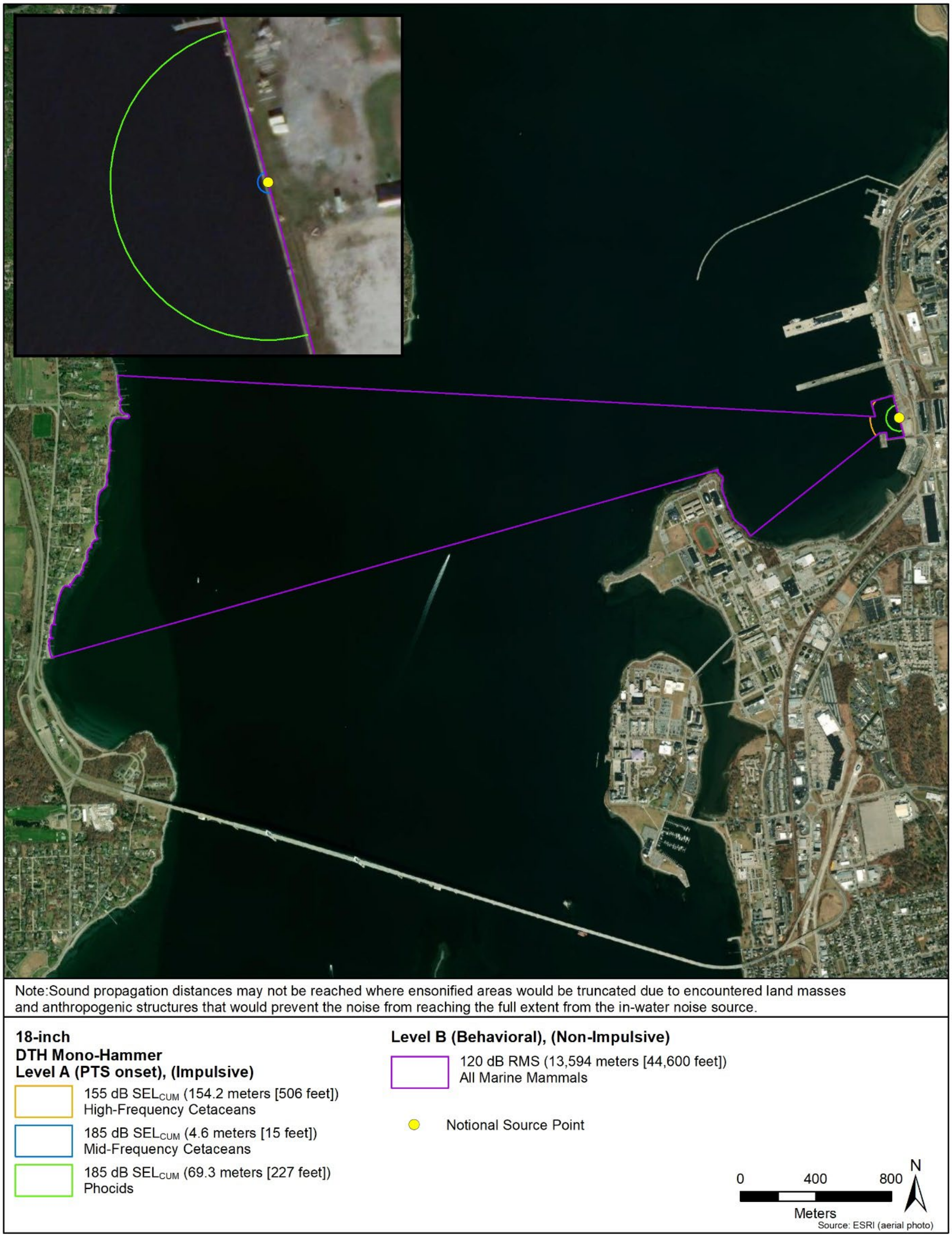


Figure A-2. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from DTH Mono-hammer Activity at the Bulkhead – 18-inch Steel Pipe

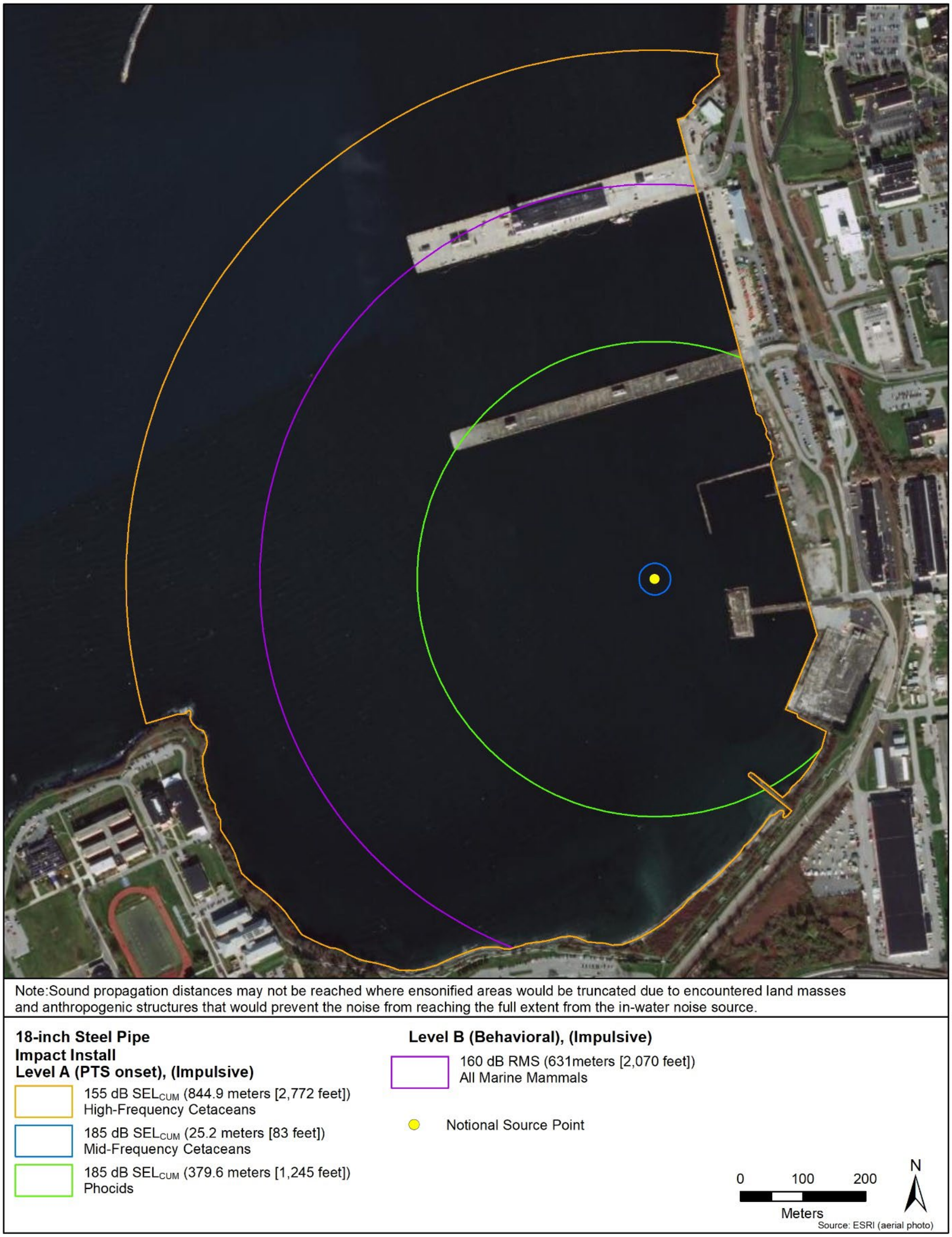


Figure A-3. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at the Trestle (Bents 1-18) and the Small Boat Floating Dock – 18-inch Steel Pipe

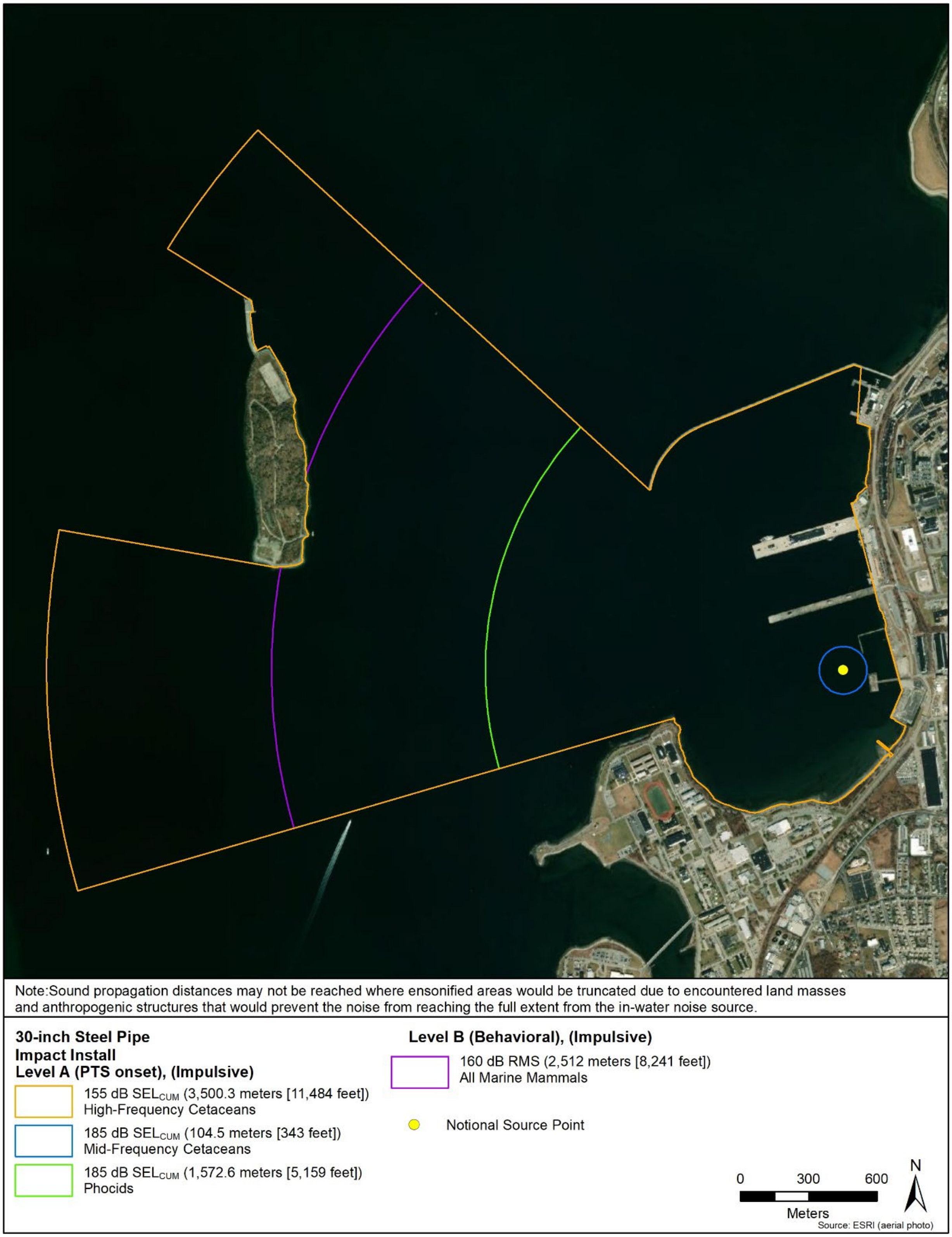


Figure A-4. Maximum Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at Trestle (Bent 19) and Pier – 30-inch Steel Pipe

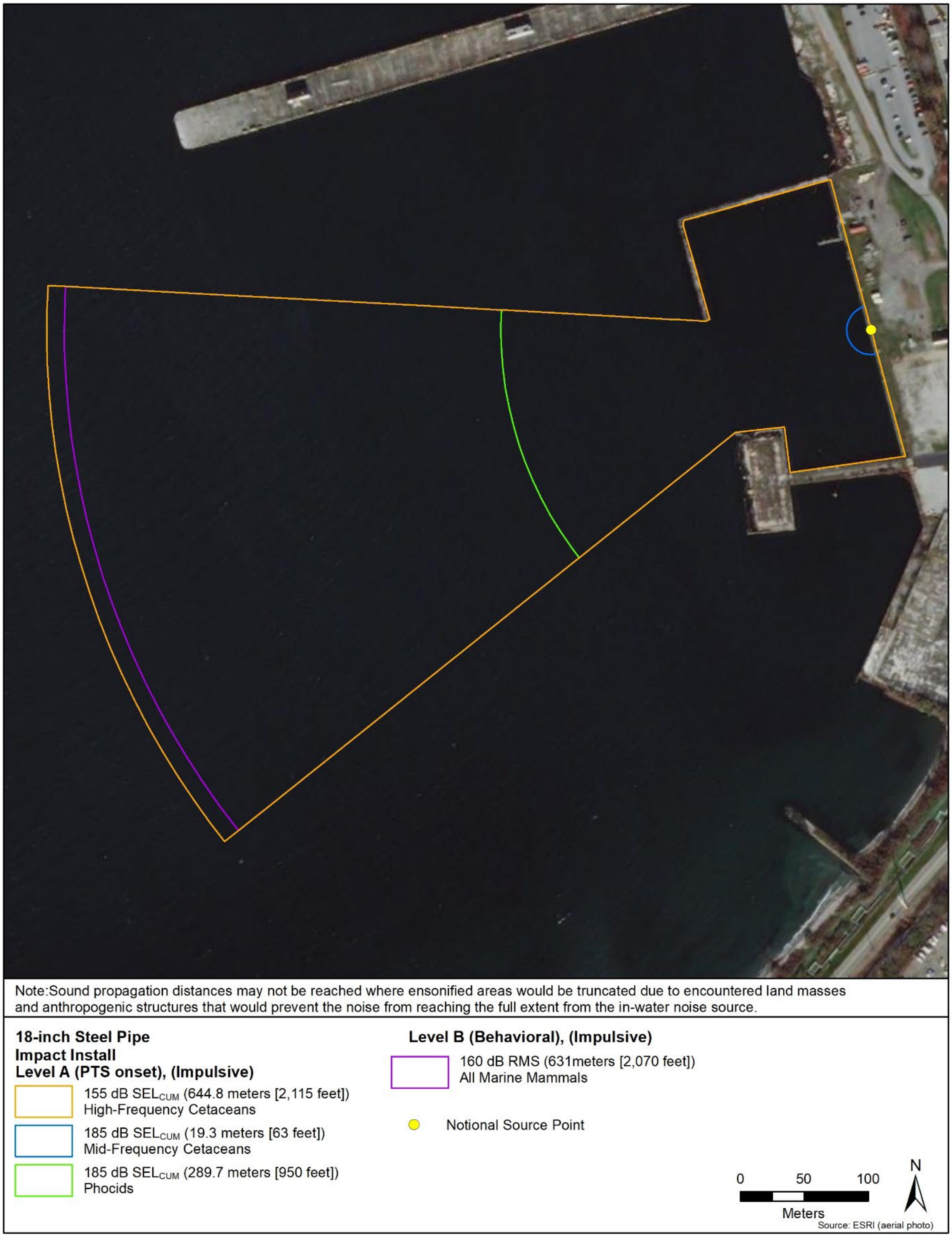


Figure A-5. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving of Gangway Support Piles at the Small Boat Floating Dock – 18-inch Steel Pipe

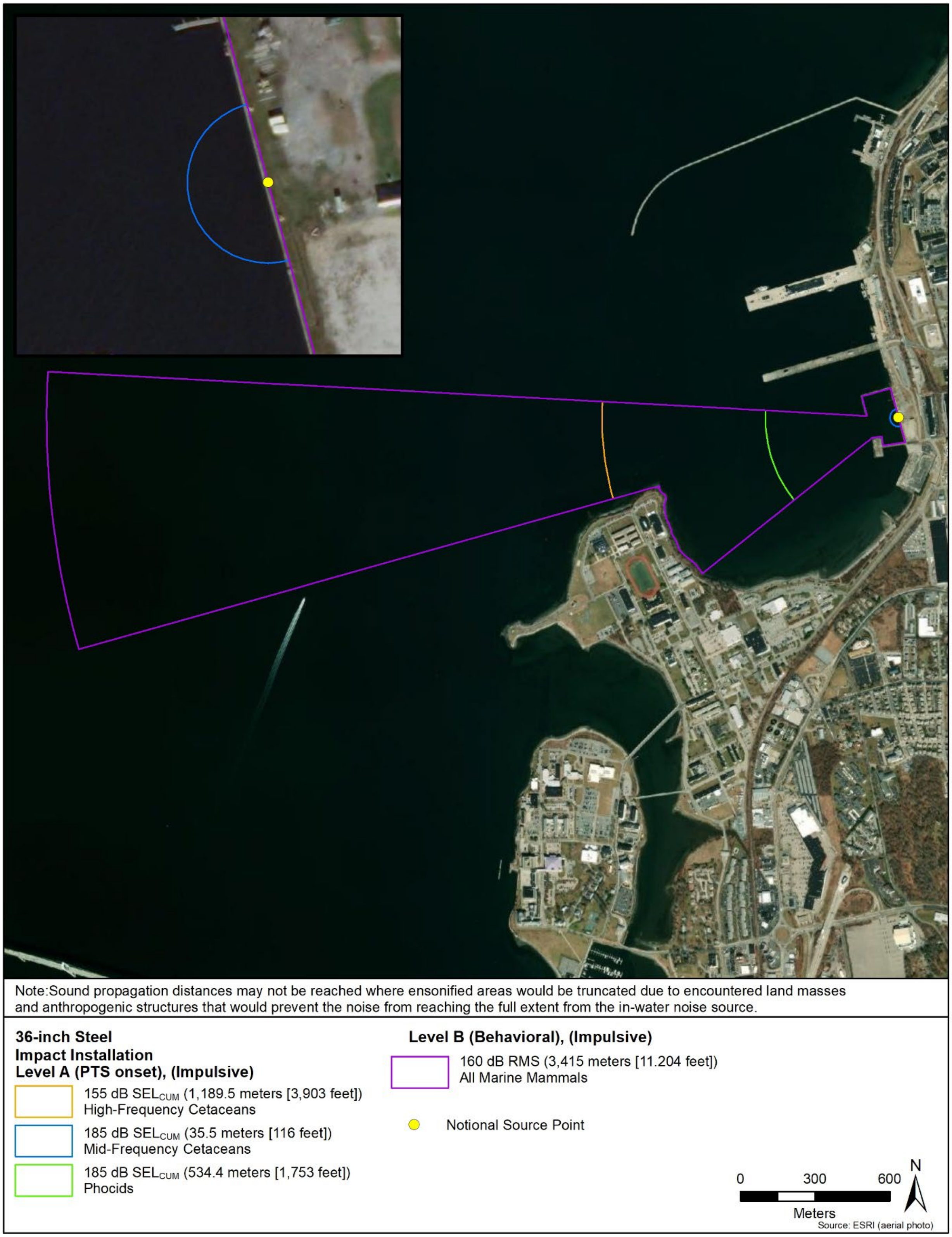


Figure A-6. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Impact Pile Driving at the Small Boat Floating Dock – 36-inch Steel Pipe

Note:Sound propagation distances may not be reached where ensonified areas would be truncated due to encountered land masses and anthropogenic structures that would prevent the noise from reaching the full extent from the in-water noise source.

Casing with Rock Socket Guide Pile
DTH Mono-Hammer
Level A (PTS onset), (Impulsive)

- 155 dB SEL_{CUM} (2,444.5 meters [8,020 feet]) High-Frequency Cetaceans
- 185 dB SEL_{CUM} (73 meters [240 feet]) Mid-Frequency Cetaceans
- 185 dB SEL_{CUM} (1,098.2 meters [3,603 feet]) Phocids

Level B (Behavioral), (Non-Impulsive)

- 120 dB RMS (13,594 meters [44,600 feet]) All Marine Mammals
- Notional Source Point

0 400 800
Meters
N
Source: ESRI (aerial photo)

Figure A-7. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from DTH Mono-hammer Activity at the Small Boat Floating Dock – 36-inch Rock Socket Guide Pile

Table A-2. Non-Impulsive Continuous (Vibratory Installation/Extraction and Rotary Drilling)

Structure	Figure	Pile Size and Type	Activity	Total Production Days	Level A (PTS Onset) Harassment – MF Cetacean: Maximum Distance to 198 dB SEL_{cum} Threshold (m)/ Area of Harassment Zone (sq km)	Level A (PTS Onset) Harassment – HF Cetacean: Maximum Distance to 173 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)	Level A (PTS Onset) Harassment – Phocid: Maximum Distance to 201 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)	Level B (Behavioral) Harassment - All Marine Mammals: Maximum Distance 120 dB rms SPL Threshold (m)/ Area of Harassment Zone (sq km)
Abandoned guide piles along bulkhead	A-8	12-inch steel pipe	Vibratory Extract	1	0.3/0	5.3/0.000044	2.2/0.000008	2,514/1.26
Floating dock demolition (Timber Guide Piles)	A-9	12-inch timber	Vibratory Extract	1	0.6/0.000001	10.7/0.000179	4.2/0.000028	3,415/2.14
Bulkhead construction (Combination Pipe/Z-pile)	A-10	18-inch steel pipe	Vibratory Install	15	1.8/0.000005	29.7/0.0014	12.2/0.00023	6,310/3.31
	A-11	Steel sheet Z26-700	Vibratory Install	15	0.7/0.000001	11.8/0.000218	4.9/0.000038	2,512/1.26
	A-12	16-inch steel pipe template piles	Vibratory Install/Extract	30	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31
Trestle (Bents 1-18)	A-13	18-inch steel pipe	Vibratory Install	18	0.7/0.000002	11.8/0.00044	4.8/0.00007	6,310/8.23
	A-14	18-inch steel pipe hole	Rotary Drill	4	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	A-20	16-inch steel pipe template piles	Vibratory Install/Extract	36	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.23

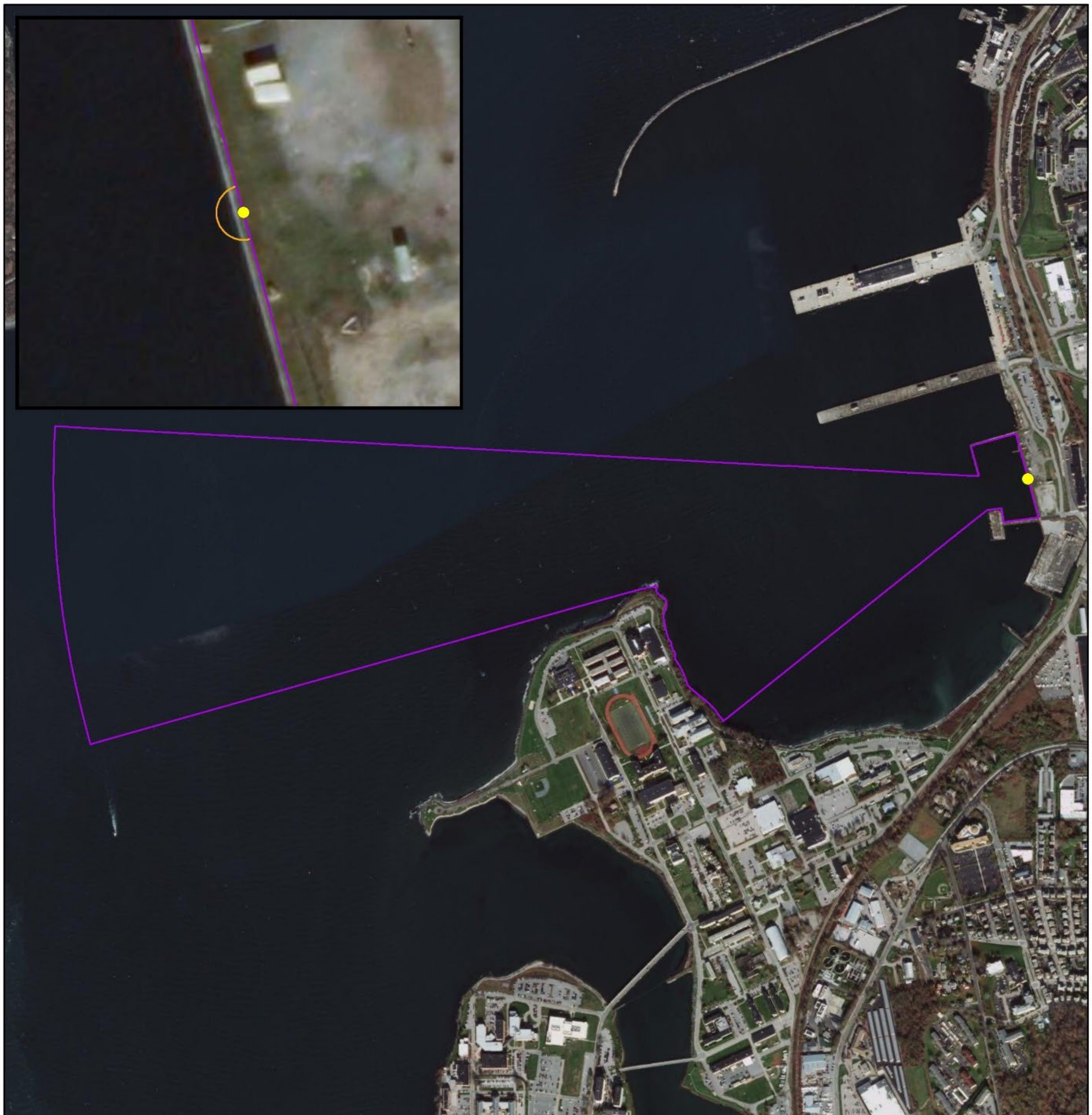
Table A-2. Non-Impulsive Continuous (Vibratory Installation/Extraction and Rotary Drilling)

Structure	Figure	Pile Size and Type	Activity	Total Production Days	Level A (PTS Onset) Harassment			Level B (Behavioral) Harassment - All Marine Mammals
					MF Cetacean	HF Cetacean	Phocid	
					Maximum Distance to 198 dB SEL_{cum} Threshold (m)/ Area of Harassment Zone (sq km)	Maximum Distance to 173 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)	Maximum Distance to 201 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)	Maximum Distance 120 dB rms SPL Threshold (m)/ Area of Harassment Zone (sq km)
Trestle (Bent 19)	A-15	30-inch steel pipe	Vibratory Install	1	2.0/0.00001	33.2/0.0034	13.7/0.00059	13,594/8.23
	A-20	16-inch steel pipe template piles	Vibratory Install/Extract	2	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.23
Pier	A-15	30-inch steel pipe	Vibratory Install	30	3.2/0.00003	52.8/0.0087	21.7/0.0015	13,594/8.23
	A-16	30-inch hole	Rotary Drill	12	0.0/0	0.6/0.000001	0.4/0.000001	1,848/2.98
	A-20	16-inch steel pipe template piles	Vibratory Install/Extract	60	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.23
Fender Piles	A-17	16-inch steel pipe	Vibratory Install	50	0.9/0.000003	14.3/0.00064	5.9/0.0001	6,310/8.23
	A-20	16-inch steel pipe template piles	Vibratory Install/Extract	48	1.1/0.000004	18.7/0.0011	7.7/0.00019	6,310/8.23
Gangway support piles (small boat floating dock)	A-18	18-inch steel pipe	Vibratory Install	2	0.7/0.000001	11.8/0.00022	4.8/0.000036	6,310/3.31
Small Boat Floating Dock	A-19	36-inch Steel Casing w/Rock	Vibratory Install	2	5.2/0.000042	86.6/0.012	35.6/0.002	46,416/3.31

Table A-2. Non-Impulsive Continuous (Vibratory Installation/Extraction and Rotary Drilling)

Structure	***Figure***	***Pile Size and Type***	***Activity***	***Total Production Days***	***Level A (PTS Onset) Harassment***			***Level B (Behavioral) Harassment - All Marine Mammals***
					MF Cetacean	***HF Cetacean***	***Phocid***	
					Maximum Distance to 198 dB SEL_{cum} Threshold (m)/ Area of Harassment Zone (sq km)	***Maximum Distance to 173 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)***	***Maximum Distance to 201 dB SEL_{cum} Threshold(m)/Area of Harassment Zone (sq km)***	***Maximum Distance 120 dB rms SPL Threshold (m)/ Area of Harassment Zone (sq km)***
		Socket Guide Pile						
	A-20	16-inch steel pipe template piles	Vibratory Install/Extract	2	1.1/0.000002	18.7/0.00055	7.7/0.000093	6,310/3.31

Notes: dB DTH = decibel down the hole; dB rms SPL = decibel root mean square sound pressure level; dB SEL_{cum} = cumulative sound exposure level; DTH = down the hole; m = meter; PTS = Permanent Threshold Shift; sq km = square kilometer



Note:Sound propagation distances may not be reached where ensonified areas would be truncated due to encountered land masses and anthropogenic structures that would prevent the noise from reaching the full extent from the in-water noise source.

12-inch Steel Pipe
Vibratory Extraction
Level A (PTS onset), (Non-Impulsive/Continuous)

173 dB SEL_{CUM} (5.3 meters [17 feet])
High-Frequency Cetaceans

Note: The distances generated to the Level A (PTS Onset) Harassment Zones for mid-frequency cetaceans and phocids are not mapped as they are approximately 2 m or less and cannot be depicted effectively.

Level B (Behavioral), (Non-Impulsive/Continuous)

120 dB RMS (2,514 meters [8,248 feet])
All Marine Mammals

Notional Source Point

0 200 400
Meters
N

Source: ESRI (aerial photo)

Figure A-8. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Extraction Activity at the Existing Bulkhead – 12-inch Steel Pipe

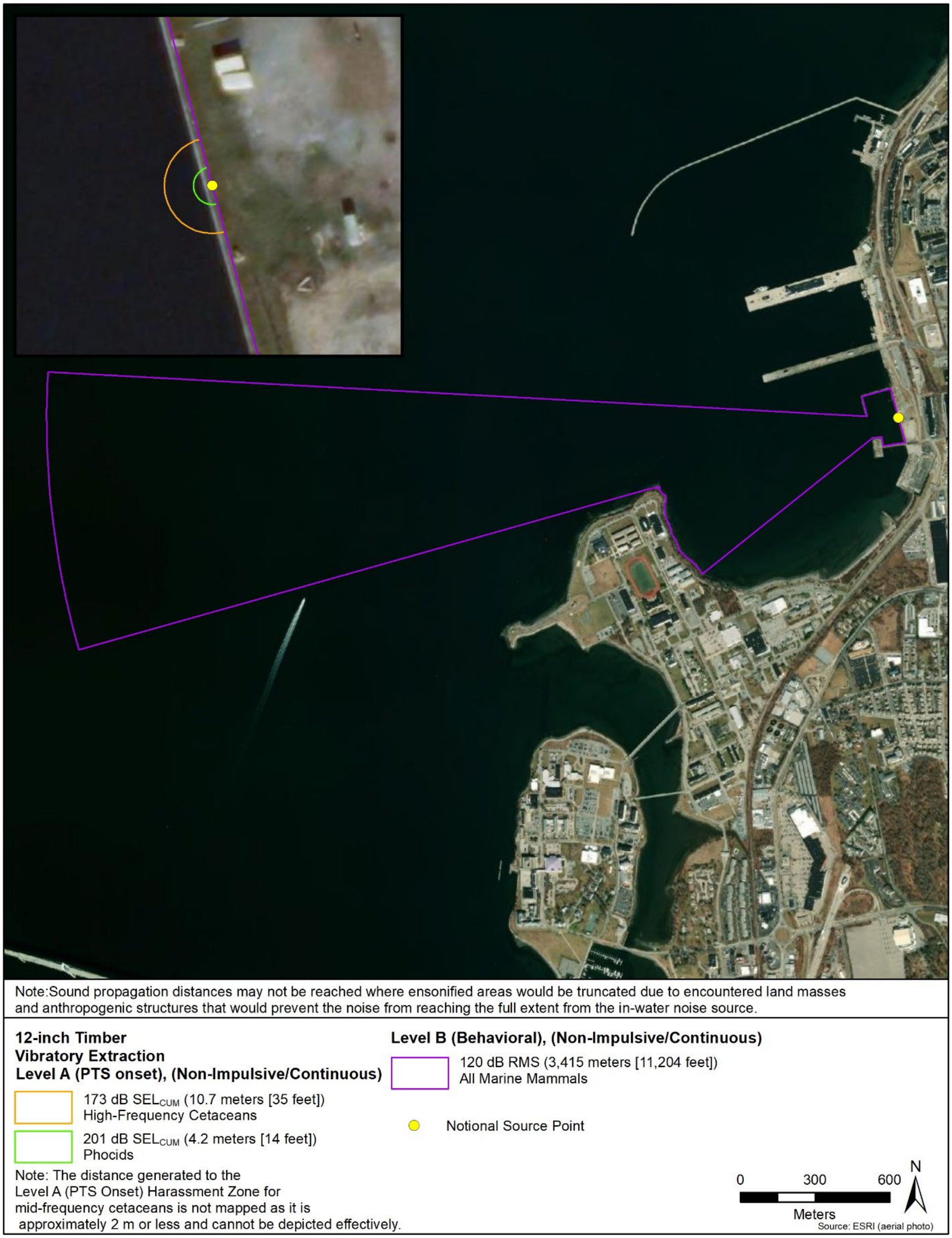


Figure A-9. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Extraction Activity for Floating Dock Demolition – 12-inch Timber Guide Piles

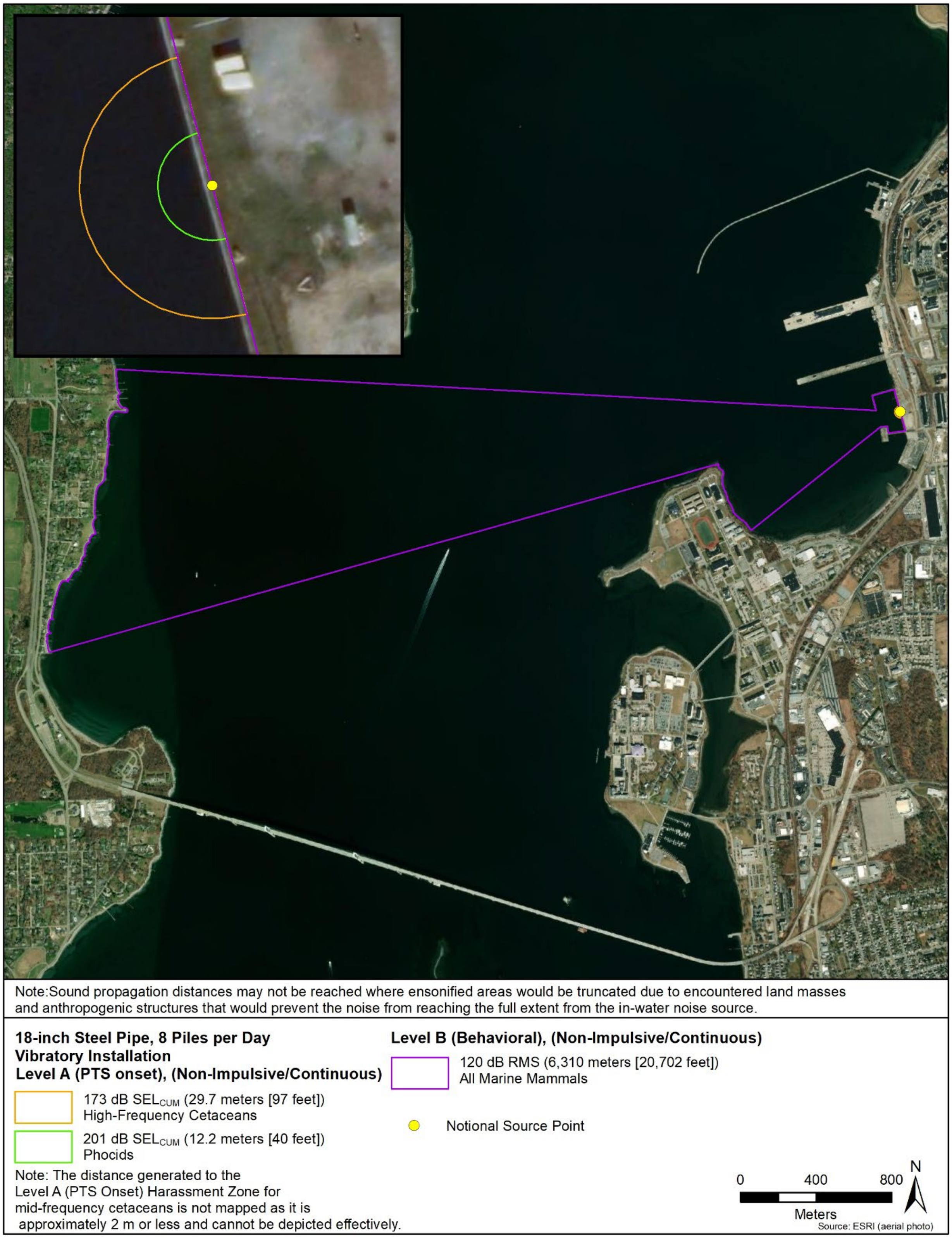


Figure A-10. Level B (Behavioral) Harassment Zone from Vibratory Installation Activity at the Bulkhead – 18-inch Steel Pipe

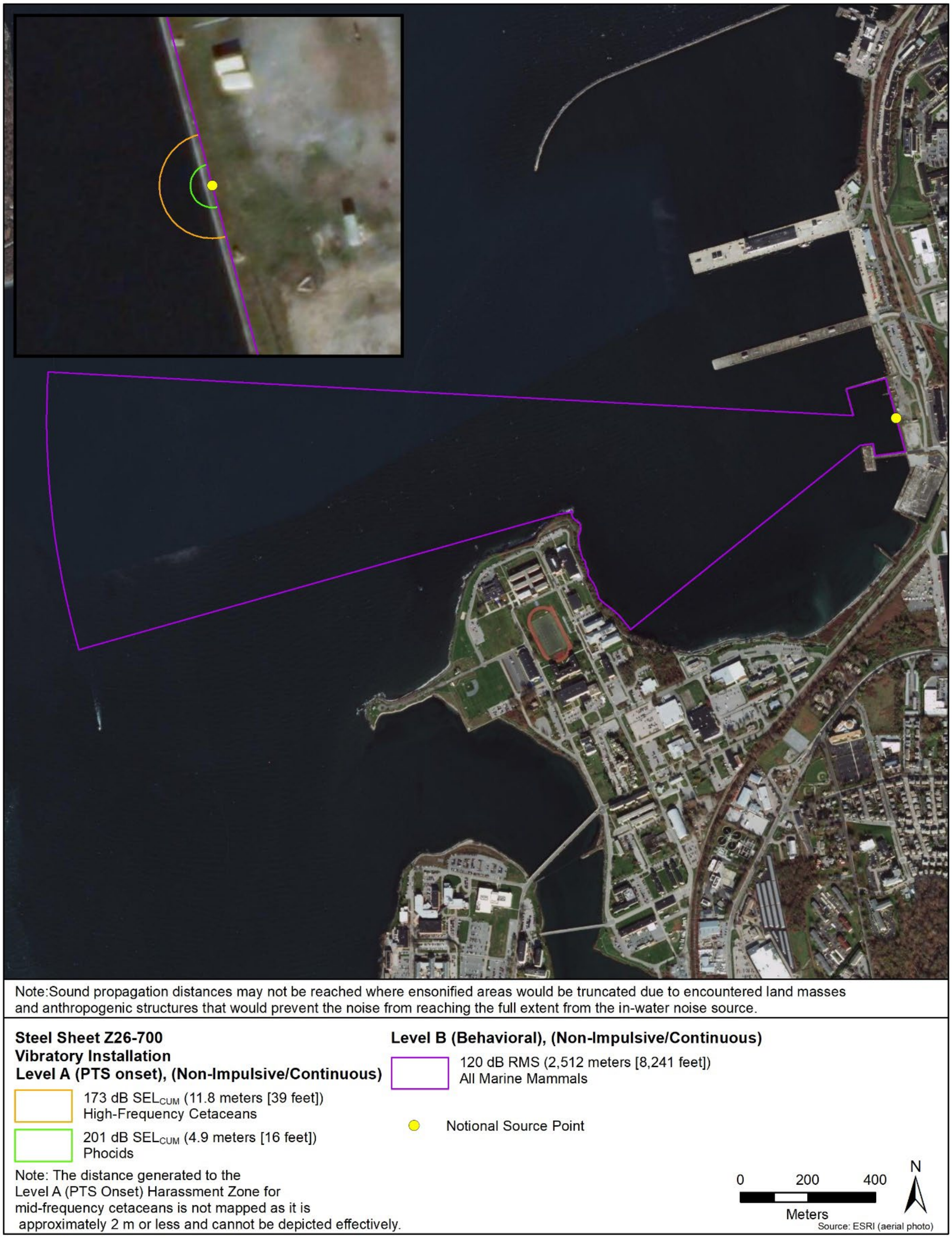


Figure A-11. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at the Bulkhead – Z26-700 Sheets

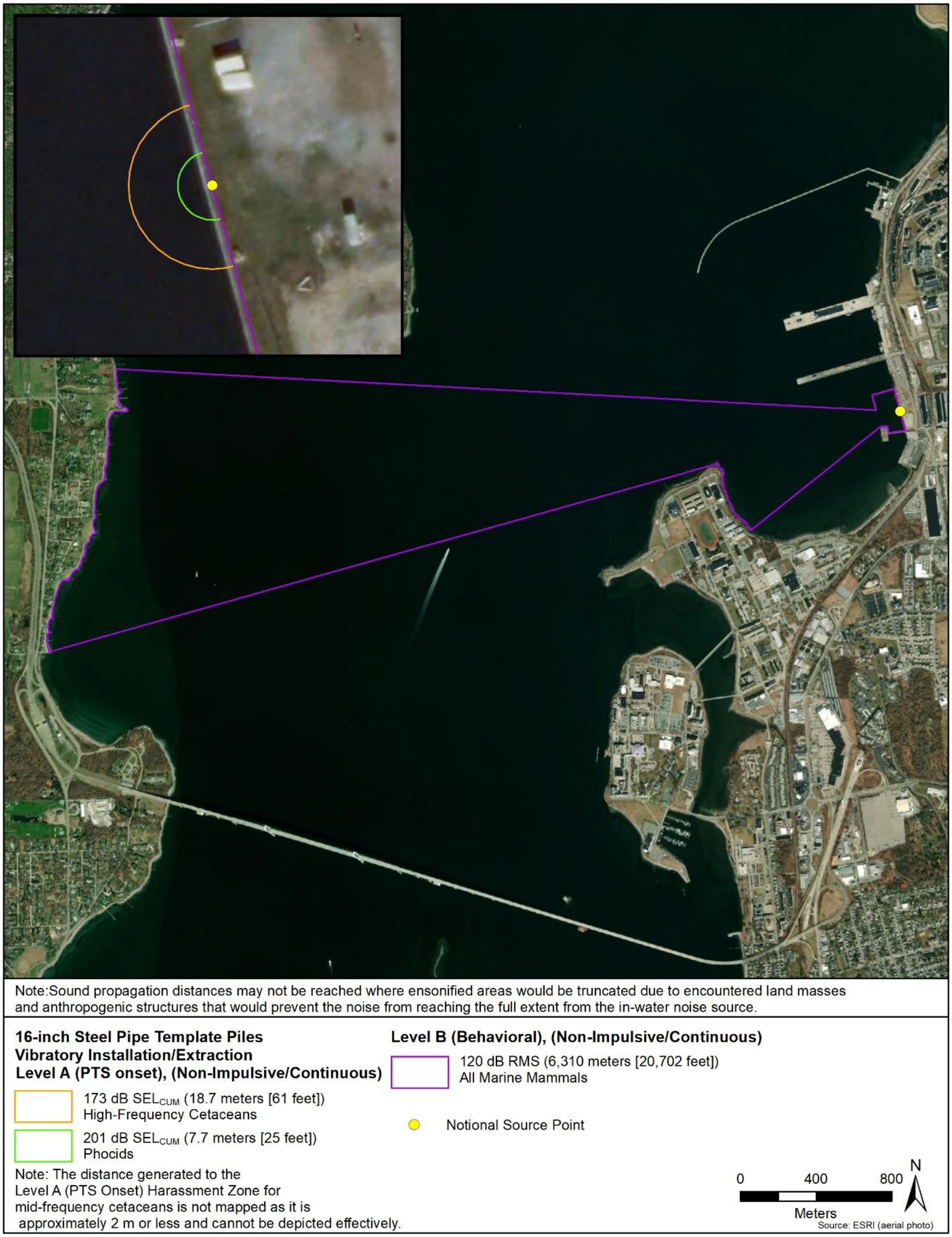


Figure A-12. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation/Extraction Activity at the Bulkhead – 16-inch Steel Pipe Template Piles

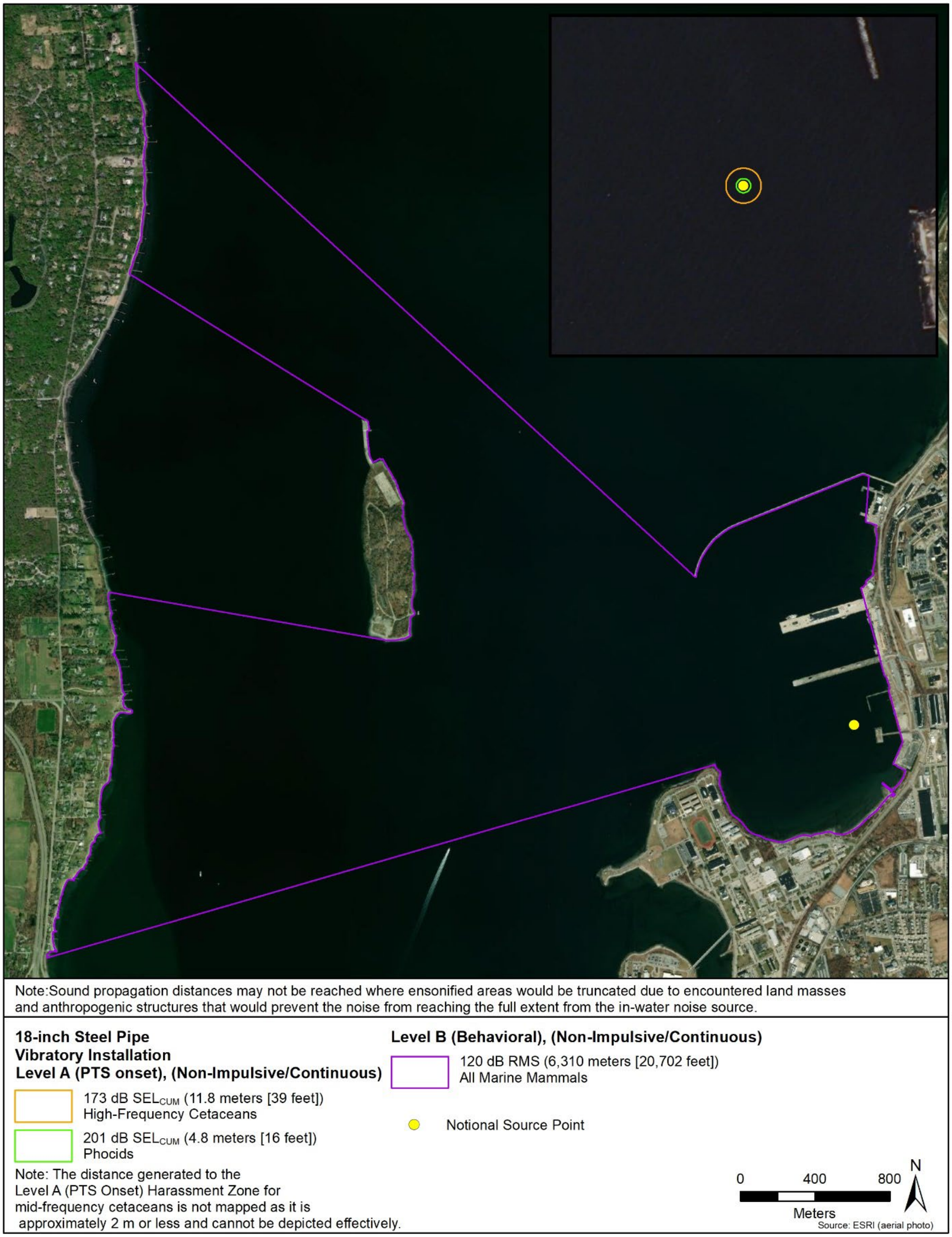


Figure A-13. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at the Trestle (Bents 1-18) – 18-inch Steel Pipe

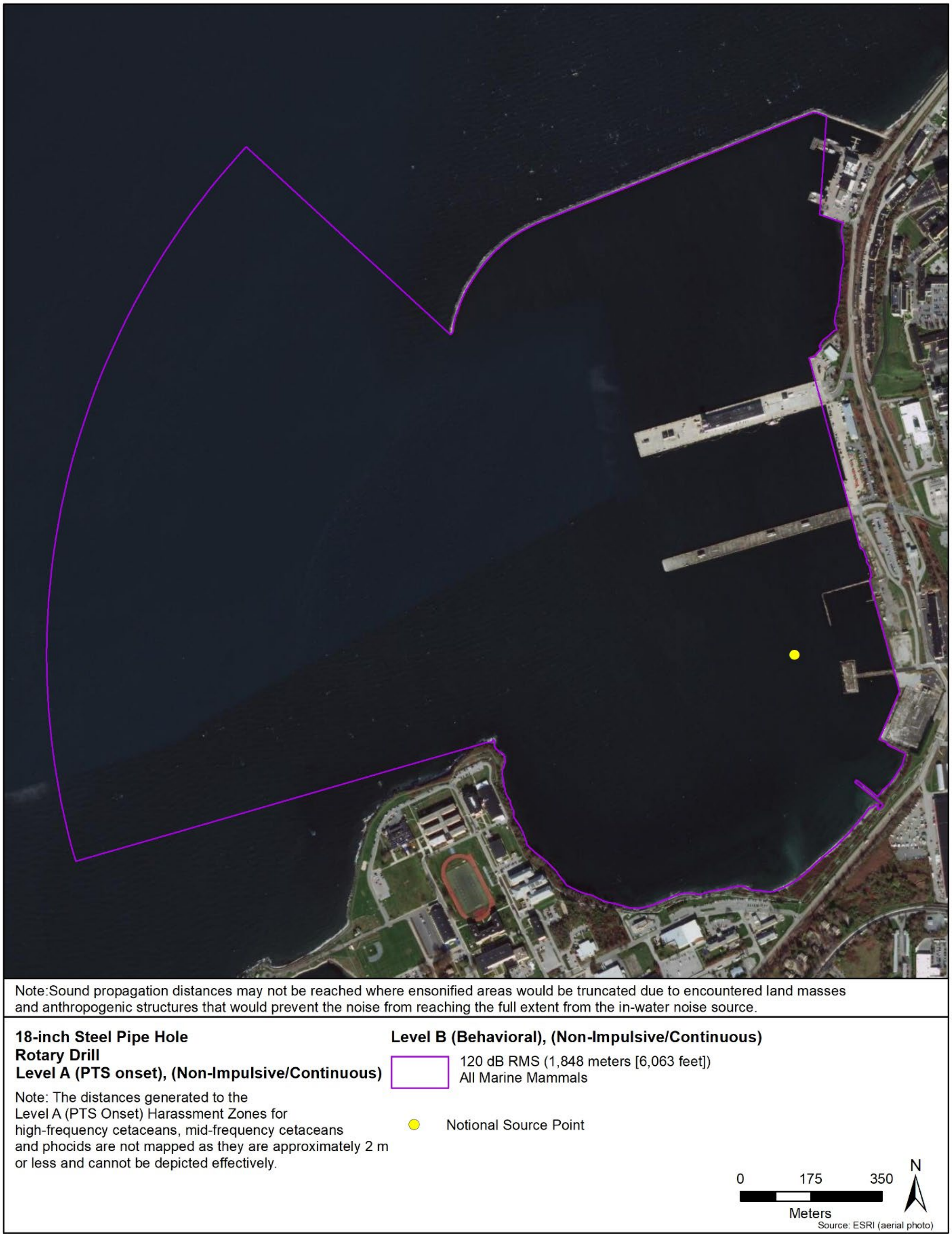


Figure A-14. Level B (Behavioral) Harassment Zone from Rotary Drilling Activity at the Trestle (Bents 1-18) – Hole for 18-inch Steel Pipe

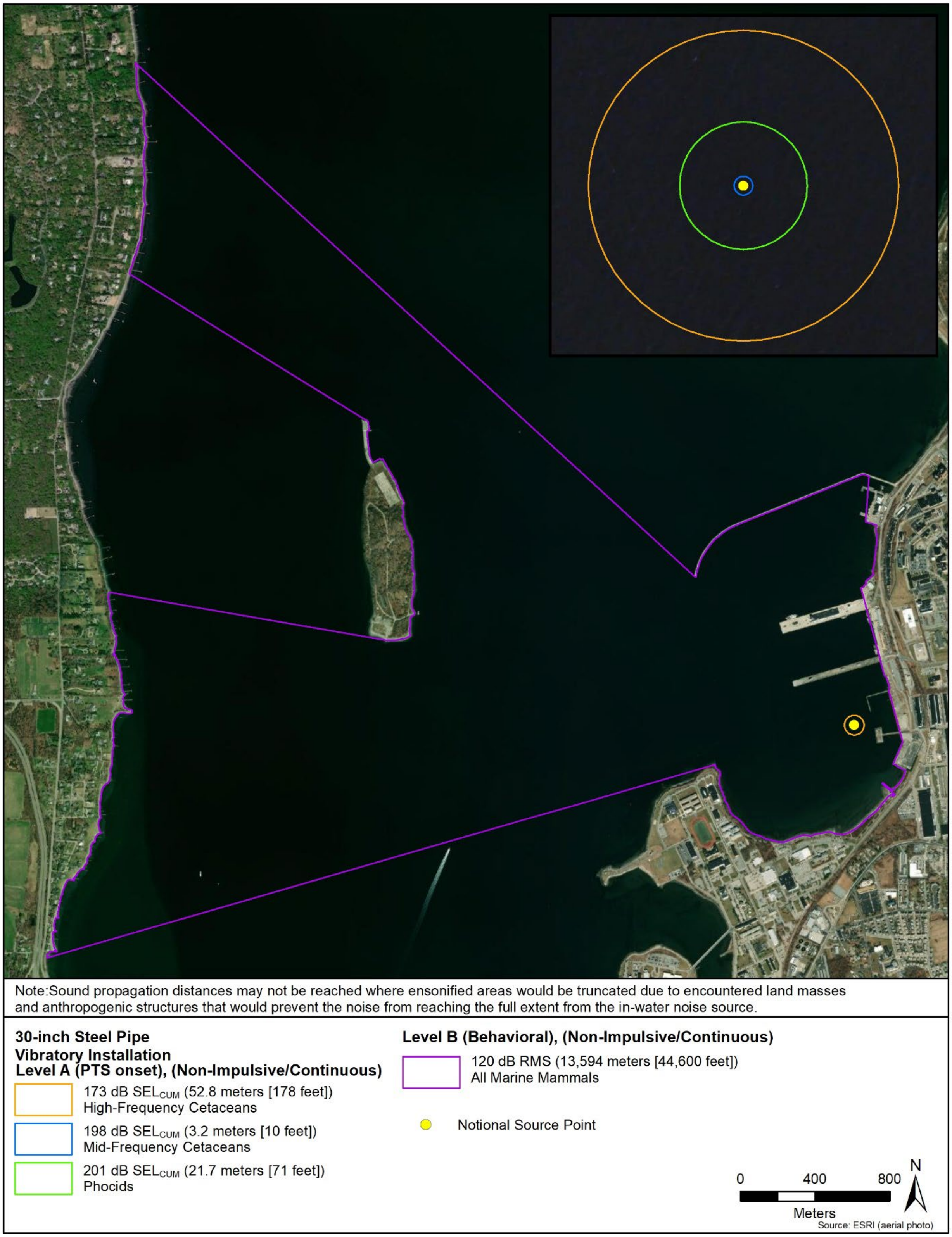


Figure A-15. Maximum Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at Trestle (Bent 19) and Pier – 30-inch Steel Pipe

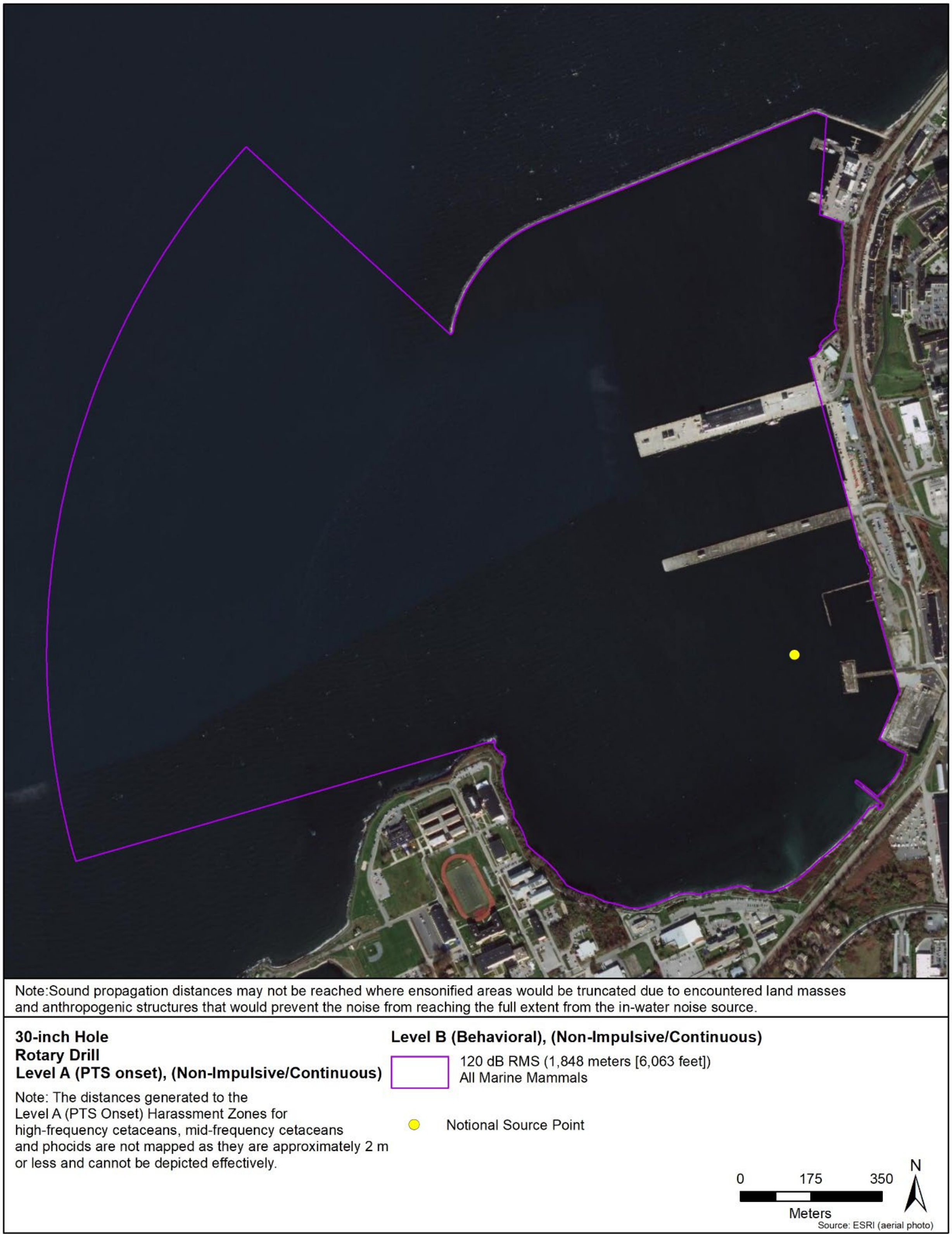


Figure A-16. Level B (Behavioral) Harassment Zone from Rotary Drilling Activity at the Pier – Hole for 30-inch Steel Pipe

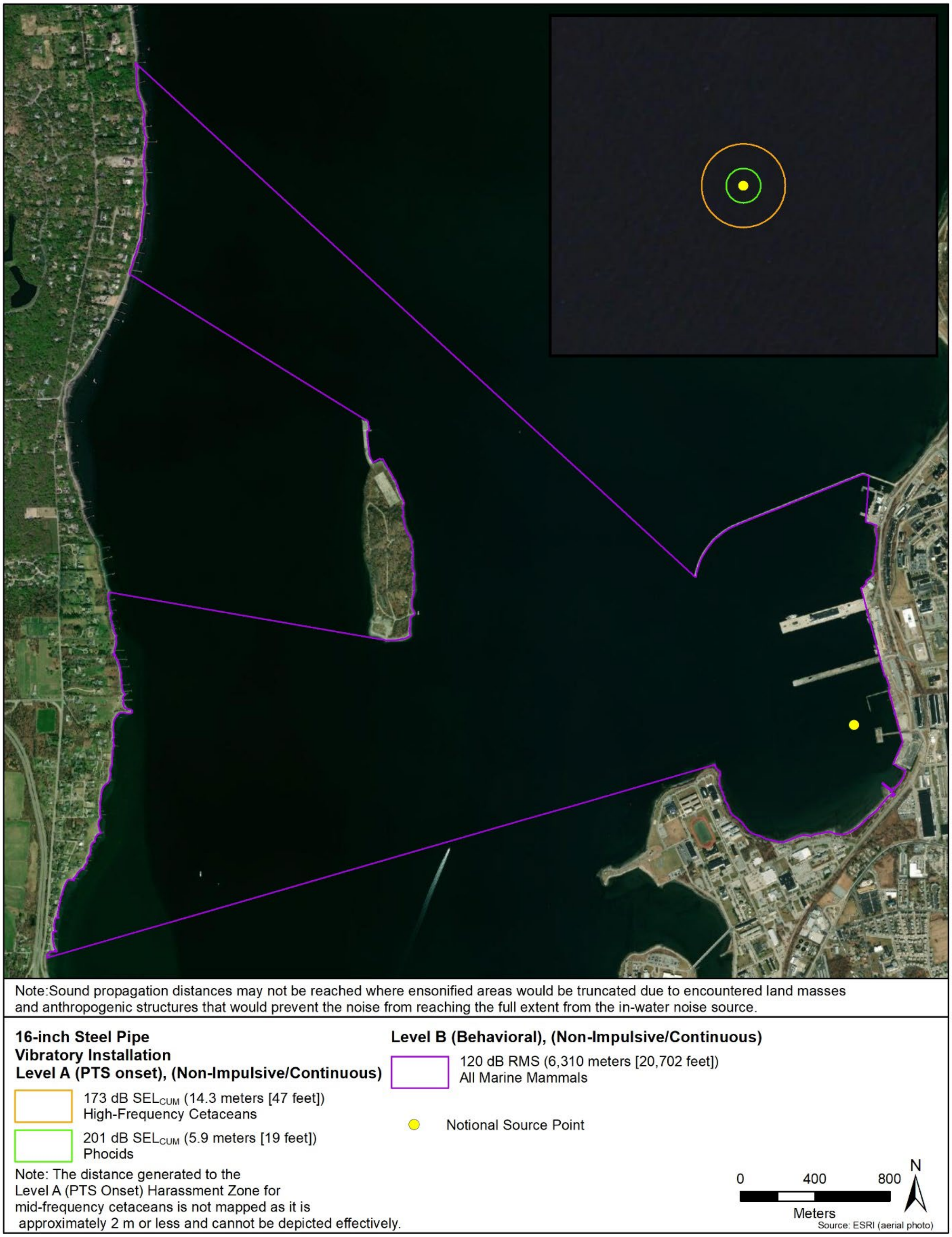


Figure A-17. Level A (PTS Onset) and Level B (Behavioral) Harassment Zone from Vibratory Installation Activity of Fender Piles – 16-inch Steel Pipe

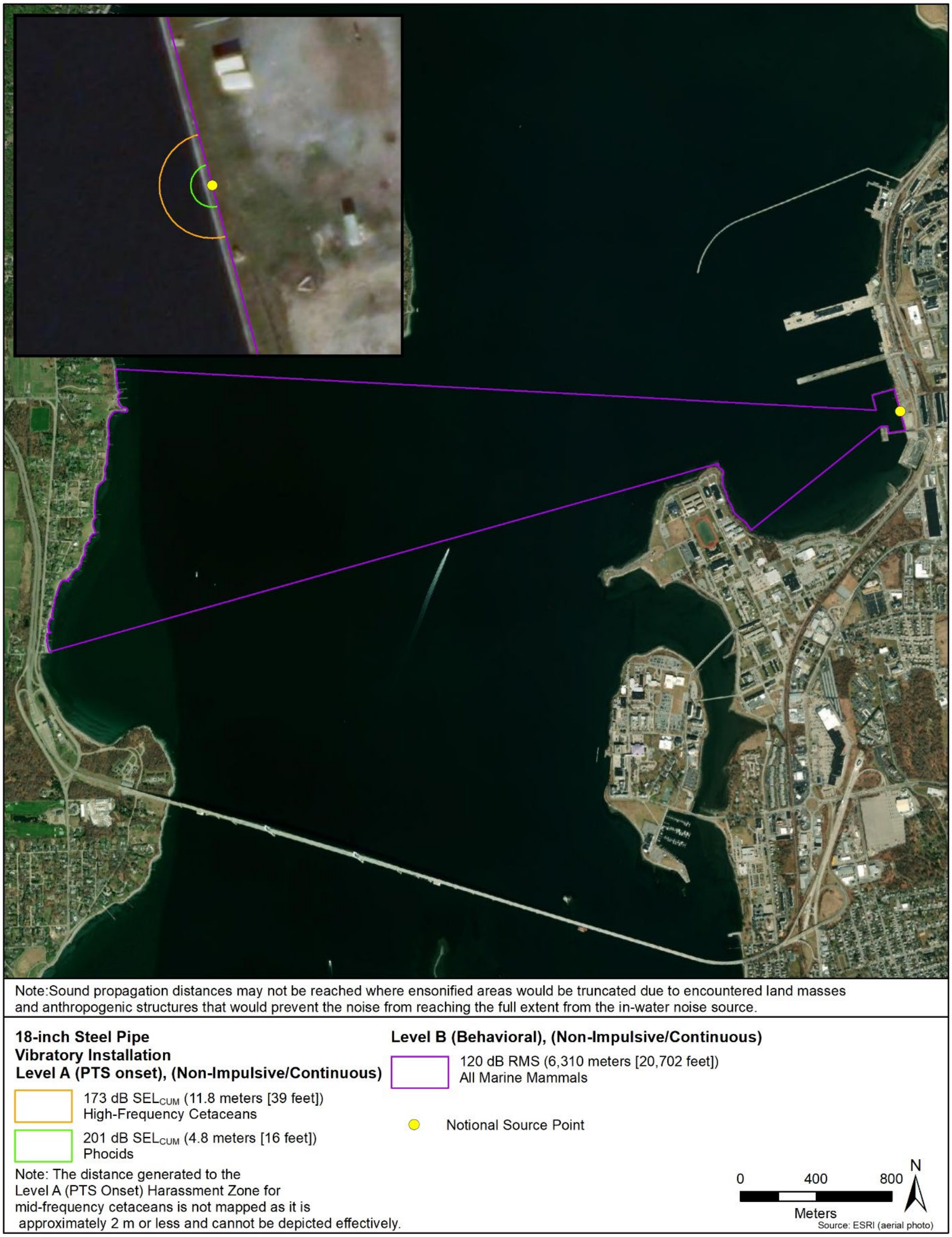


Figure A-18. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Pile Installation Activity at the Bulkhead – 18-inch Steel Pipe

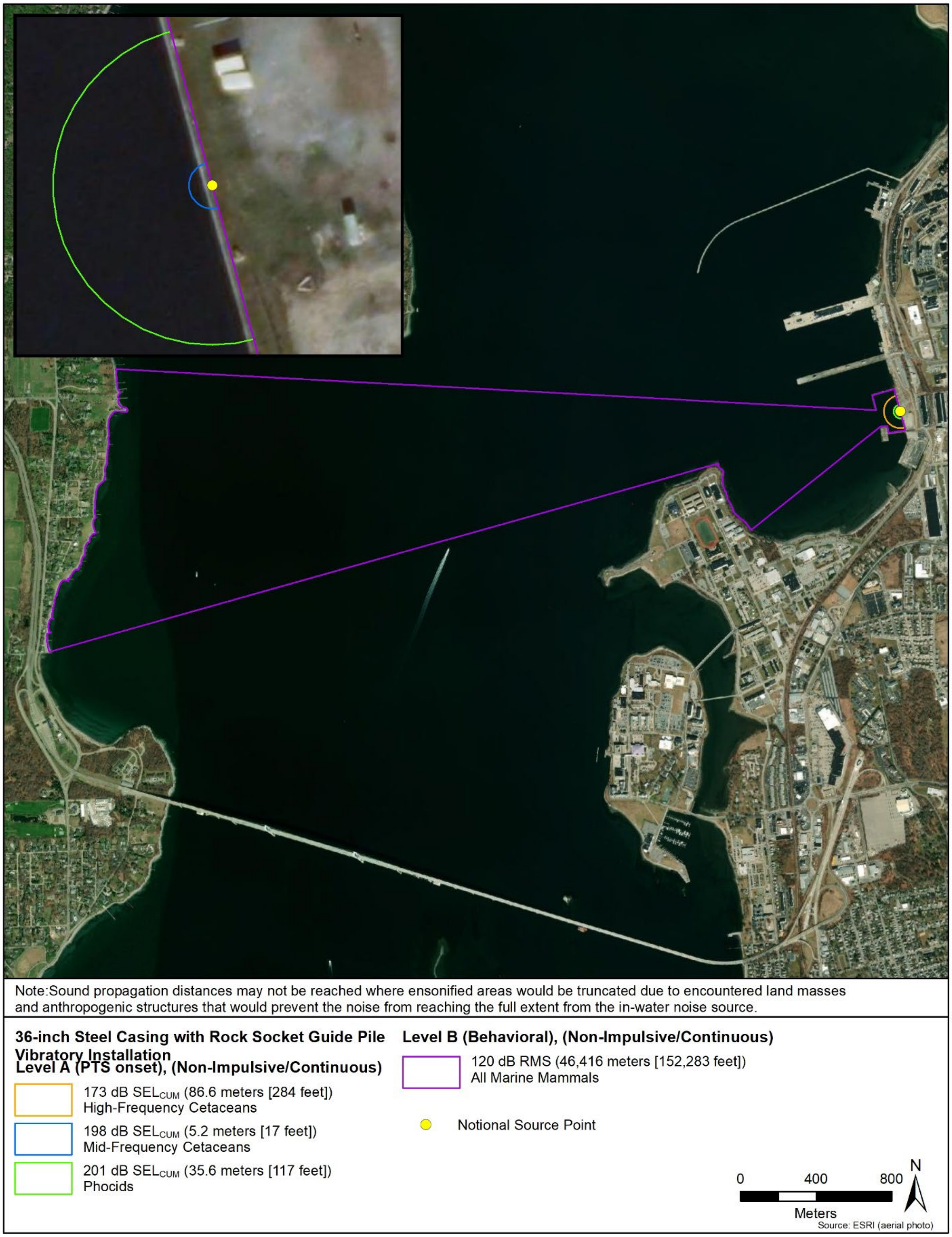


Figure A-19. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation Activity at the Small Boat Floating Dock – 36-inch Steel Pipe

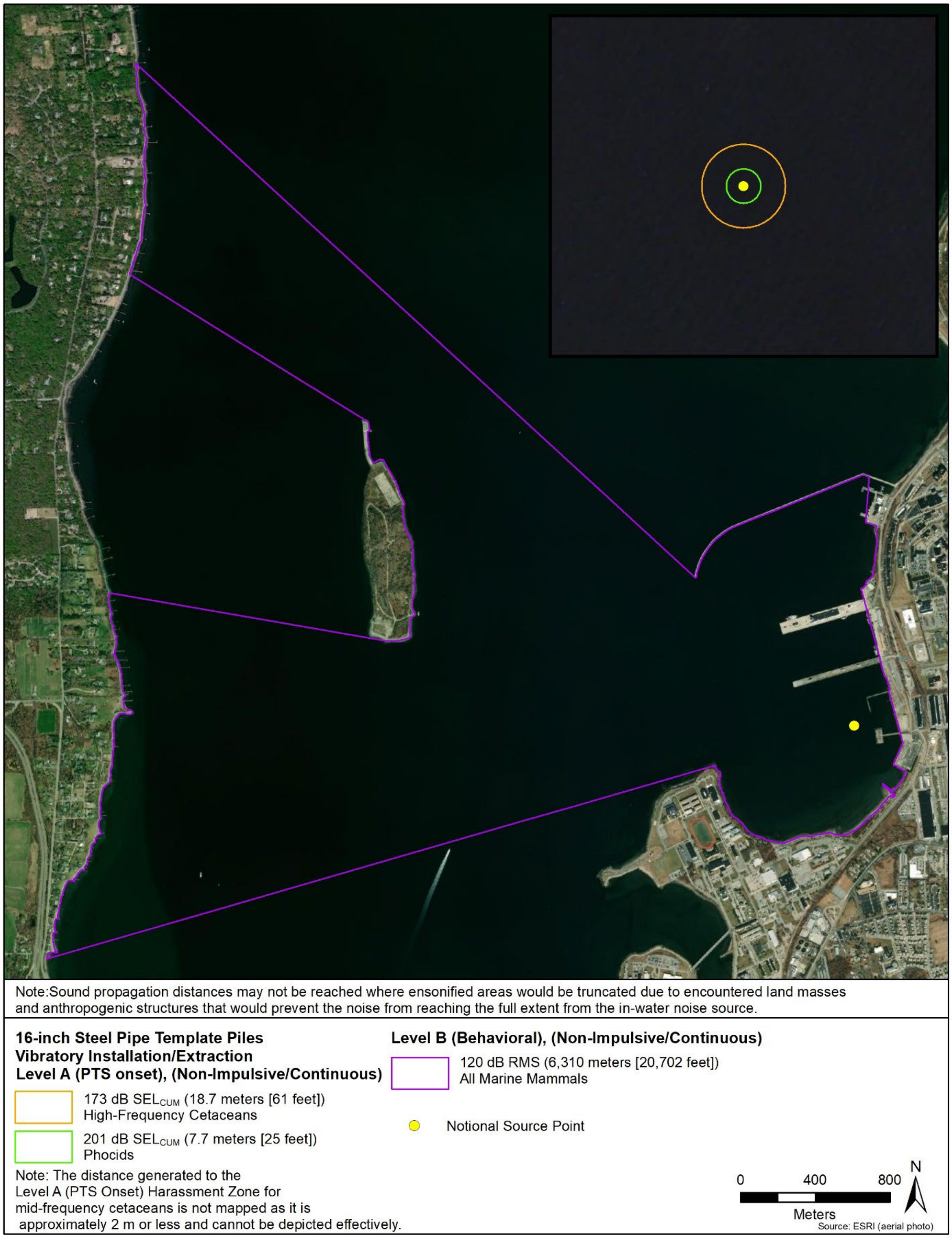


Figure A-20. Level A (PTS Onset) and Level B (Behavioral) Harassment Zones from Vibratory Installation/Extraction Activity at Trestle, Pier, Fender Piles, and Small Boat Floating Dock – 16-inch Steel Pipe Template Piles

Table A-3. Calculated and Measured Distances to Pinniped Behavioral Airborne Noise Thresholds

Activity	***Harbor Seal Threshold = 90 dB rms***	***Pinnipeds except Harbor Seals Threshold = 100 dB rms***
Vibratory installation/removal sheet piles and 12- to 30-inch pipe piles	12 m	3.8 m
Impact install of 16- to 30-inch pipe piles	150 m	47.4 m
Vibratory install of 36-inch steel pipe	27 m	8.4 m
Impact install of 36-inch pipe piles	189 m	59.7 m
Rotary drilling	1 m	0.4 m
DTH	21 m	6.7 m

Notes: dB = decibel; DTH = down the hole; m = meter rms = root mean square

Table A-4. Maximum Range to Sea Turtle Sound Thresholds from Impulsive Noise

Structure	*Pile Size and Type*	*Total Production Day*	*PTS Weighted (SEL_{cum}) Threshold 204 dB re µPa^2-s*	*TTS Weighted (SEL_{cum}) Threshold 189 dB re µPa^2-s*	*Behavioral Unweighted (rms) Threshold 175 dB re 1 µPa*
Bulkhead construction	18-inch steel pipe	15	7.0 m	69.8 m	63 m
Trestle, Pier, Gangway	18-inch steel pipe	18	0.7 m	6.7 m	63 m
	30-inch steel pipe	1	1.8 m	17.5 m	251 m
	30-inch steel pipe	30	2.8 m	27.8 m	251 m
Small Boat Floating Dock	36-inch Steel Casing w/Rock Socket Guide Pile	2	0.9 m	9.4 m	341 m

Notes: Modeled distances to peak thresholds for PTS and TTS are less than 0.1 meters and are not included in the table; dB re 1 µPa = dB referenced to a pressure of 1 microPascal (measures underwater SPL); dB re µPa^2-s = micropascal squared per second; PTS = Permanent Threshold Shift; m = meter; rms = root mean square; SEL_{cum} = cumulative SEL over 24 hours;

Table A-5. Maximum Range to Sea Turtle Sound Thresholds from Vibratory Pile Driving/Extracting and Rotary Drilling

Structure	*Pile Size and Type*	*Total Production Days*	*TTS (Unweighted SPL Threshold 200 dB re μPa²-s)*	*PTS (Weighted SPL Threshold 220 dB re μPa²-s)*	*Behavioral (Unweighted Threshold 175 dB re 1 μPa)*
Abandoned guide piles along bulkhead	12-inch steel pipe	1	0 m	0 m	0 m
Floating dock demolition (Timber Guide Piles)	12-inch timber	1	0.1 m	0 m	1 m
Bulkhead construction (Combination Pipe/Z-pile)	18-inch steel pipe	15	0.2 m	0 m	1 m
	Steel sheet Z26-700	15	0.1 m	0 m	1 m
	16-inch steel pipe template piles	30	0.1 m	0 m	1 m
Trestle	18-inch steel pipe	18	0.1 m	0 m	1 m
	18-inch steel pipe hole (rotary drill)	4	0 m	0 m	0 m
	16-inch steel pipe template piles	36	0.1 m	0 m	1 m
	30-inch steel pipe	1	0.3 m	0 m	3 m
Pier	30-inch steel pipe	30	0.4 m	0 m	3 m
	30-inch hole (rotary drill)	12	0 m	0 m	0 m
	16-inch steel pipe template piles	60	0.1 m	0 m	1 m
Fender Piles	16-inch steel pipe	50	0.1 m	0 m	1 m
	16-inch steel pipe template piles	48	0.1 m	0 m	1 m
Gangway support piles (small boat floating dock)	18-inch steel pipe	2	0.1 m	0 m	1 m
Small Boat Floating Dock	36-inch Steel Casing w/Rock Socket Guide Pile	2	0.7 m	0 m	10 m
	16-inch steel pipe template piles	2	0.1 m	0 m	1 m

Notes: dB re 1 μPa = dB referenced to a pressure of 1 microPascal (measures underwater SPL); dB re μPa2-s = microPascal squared per second; m = meter; SPL = Sound Pressure Level;
TTS = Temporary Threshold Shift

Table A-6. Maximum Range to Fish Sound Thresholds from Impact Pile Driving

Section	Pile Size and Count	Fishes Without a Swim Bladder					Fishes with a Swim Bladder not Involved in Hearing					Fishes with a Swim Bladder Involved in Hearing				
		Onset of Mortality		Recoverable Injury		TTS	Onset of Mortality		Recoverable Injury		TTS	Onset of Mortality		Recoverable Injury		TTS
		>219 SEL_{cum}	>213 SPL_{peak}	>216 SEL_{cum}	>213 SPL_{peak}	>186 SEL_{cum}	210 SEL_{cum}	>207 SPL_{peak}	203 SEL_{cum}	>207 SPL_{peak}	186 SEL_{cum}	207 SEL_{cum}	>207 SPL_{peak}	203 SEL_{cum}	>207 SPL_{peak}	186 SEL_{cum}
Bulkhead,	18-inch Steel pipe	*5 m*	*5 m*	*9 m*	*5 m*	*541 m*	*22 m*	*12 m*	*63 m*	*12 m*	*541 m*	*34 m*	*12 m*	*63 m*	*12 m*	*541 m*
Trestle, Pier, Gangway	18-inch Steel Pipe	3 m	5 m	4 m	5 m	448 m	11 m	12 m	33 m	12 m	448 m	18 m	12 m	33 m	12 m	448 m
	30-inch steel pipe	*7 m*	*7 m*	*12 m*	*7 m*	*1,166 m*	*29 m*	*18 m*	*86 m*	*18 m*	*1,166 m*	*47 m*	*18 m*	*86 m*	*18 m*	*1,166 m*
Small Boat Floating Dock	36-inch	*4 m*	*5 m*	*6 m*	*5 m*	*631 m*	*16 m*	*14 m*	*46 m*	*14 m*	*631 m*	*25 m*	*14 m*	*46 m*	*14 m*	*631 m*

Notes: m = meters; SEL_{cum} = Cumulative sound exposure level (decibel referenced to 1 micropascal squared seconds [dB re 1 μPa^2-s]), SPL_{peak} = Peak sound pressure level (decibel referenced to 1 micropascal [dB re 1 μPa]), “>” indicates that the given effect would occur above the reported threshold; TTS = Temporary Threshold Shift > indicates that the given effect would occur above the reported threshold. Distances are based on maximum number of pile strikes per day for any given pile type installed (see Table 2); Due to the lack of studies on fish supporting injury or behavioral disturbance from vibratory pile driving methods, the range of effects on fish focuses on impact pile driving.

Source: Popper et al. 2014

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Appendix I Air Quality Analysis

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AIR EMISSIONS CALCULATIONS

TAB A. EMISSIONS SUMMARY

Table 3. Potential Annual Emissions from Proposed Action

Year	Activity	VOC T/yr	CO T/yr	NOx T/yr	SO_2 T/yr	PM_{10} T/yr	$PM_{2.5}$ T/yr	CO2 T/yr
2024								
	Building Construction	0.13	0.43	0.98	0.00	3.73	0.43	470.62
	Waterfront Construction	0.81	2.66	13.89	0.01	0.44	0.42	2,596
	Construction Worker POVs	0.02	2.33	0.04	0.00	1.94	0.29	167.97
	Total	**0.95**	**5.41**	**14.91**	**0.02**	**6.11**	**1.14**	**3,235**
2025								
	Building Construction	0.26	0.72	1.65	0.00	18.90	1.98	794.68
	Waterfront Construction	0.46	1.62	8.74	0.01	0.25	0.24	1,610
	Construction Worker POVs	0.02	3.57	0.06	0.00	2.97	0.45	257.10
	Total	**0.75**	**5.91**	**10.44**	**0.01**	**22.12**	**2.66**	**2,662**
2026 on	**Commuting Staff**	**0.04**	**6.15**	**0.10**	**0.00**	**5.13**	**0.77**	**443**

TAB B. BUILDING CONSTRUCTION

453.59 grams per pound

Small Boat Repair Shop constructed 2024; Warehouse, Admin Bldg and Access Road construction begins in 2024

Table 1. Site Prep

Site Prep - Excavate/Fill (CY) 28,282 CY includes excavation from waterfront construction

Grading (SY) 155,176 SY

Off-road Equipment	Hours	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr
Excavator	300	450	0.53	0.03	0.20	0.55	1.48E-03	0.03	0.03	537
Skid Steer Loader	1,348	95	0.23	0.73	3.89	3.81	2.23E-03	0.55	0.54	694
Dozer (Rubber Tired)	449	275	0.58	0.02	0.09	0.29	1.44E-03	0.02	0.02	537
Scraper Hauler Excavator	300	450	0.53	0.03	0.20	0.55	1.48E-03	0.03	0.03	537
Compactor	321	105	1	0.06	0.26	0.86	1.50E-03	0.06	0.06	537
Grader	321	145	0.58	0.02	0.13	0.46	1.44E-03	0.03	0.03	537
Backhoe/Loader	1,348	300	0.48	0.03	0.17	0.50	1.47E-03	0.03	0.03	537

	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Excavator	5.31	32.07	86.56	0.23	5.14	4.98	84,665
Skid Steer Loader	50.25	252.51	247.47	0.14	36.00	34.92	45,064
Dozer (Rubber Tired)	3.25	13.96	46.31	0.23	2.62	2.54	84,824
Scraper Hauler Excavator	5.31	32.07	86.56	0.23	5.14	4.98	84,665
Compactor	4.32	19.56	63.95	0.11	4.33	4.20	39,830
Grader	1.26	7.91	27.35	0.09	1.84	1.79	31,908
Backhoe/loader	15.60	70.97	212.50	0.63	13.17	12.78	229,726

On-road Equipment	Miles	Engine HP	VOC g/VMT	CO g/VMT	NOx g/VMT	SO_2 g/VMT	PM10 g/VMT	PM2.5 g/VMT	CO_2 g/VMT
Dump Truck	107,333	230	3.07E-01	1.74E+00	3.19E+00	3.31E-03	1.37E+00	3.33E-01	9.73E+02

	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Dump Truck	72.55	411.32	754.75	0.78	324.72	78.72	230,192
Site Prep Grand Total in Tons	**0.08**	**0.42**	**0.76**	**0.00**	**0.20**	**0.07**	**415**

Table 2. Gravel Work 27,655 CY 2,305 trips 82,965 total miles

Off-road Equipment	Hours	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM_{10} g/hp-hr	$PM_{2.5}$ g/hp-hr	CO_2 g/hp-hr
Dozer	391	275	0.58	0.02	0.09	0.29	1.44E-03	0.02	0.02	537
Loader	391	300	0.48	0.03	0.17	0.50	1.47E-03	0.03	0.03	537
Compactor	391	105	1	0.06	0.26	0.86	1.50E-03	0.06	0.06	537

	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Dozer	2.83	12.13	40.26	0.20	2.27	2.21	73,731
Wheel Loader for Spreading	4.52	20.56	61.57	0.18	3.82	3.70	66,561
Compactor	5.26	23.83	77.91	0.14	5.27	5.11	48,529

On-road Equipment	Miles	Engine HP	VOC g/VMT	CO g/VMT	NOx g/VMT	SO_2 g/VMT	PM10 g/VMT	PM2.5 g/VMT	CO_2 g/VMT
Dump Truck	82,965	230	3.07E-01	1.74E+00	3.19E+00	3.31E-03	1.37E+00	3.33E-01	9.73E+02

	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Dump Truck	56.08	317.93	583.39	0.61	251.00	60.85	177,930.63
Gravel Work Grand Total in Tons	**0.03**	**0.19**	**0.38**	**0.00**	**0.13**	**0.04**	**183**

Table 3. Concrete Work

Foundation Work	542	CY
Other concrete work	498	
Total	1,040	CY

On-road Equipment	Miles	Engine HP	VOC g/VMT	CO g/VMT	NOx g/VMT	SO_2 g/VMT	PM10 g/VMT	PM2.5 g/VMT	CO_2 g/VMT
Dump Truck	3,929	230	3.07E-01	1.74E+00	3.19E+00	3.31E-03	1.37E+00	3.33E-01	9.73E+02
			VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Dump Truck			2.66	15.06	27.63	0.03	11.89	2.88	8,426.17
Concrete Work Grand Total in Tons			**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.00**	**4**

Table 4. Building Construction

29,274 SF Foundation
34,668 SF Total

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr
Crane	1,208	700	1	0.05	0.33	0.96	1.51E-03	0.04	0.04	530.9
Telehandler	1,208	130	0.48	0.01	0.06	0.19	1.42E-03	0.01	0.01	536.8
Skid Steer Loader	1,208	95	0.23	0.73	3.89	3.81	2.23E-03	0.55	0.54	693.9
Pile Driver	470	300	1	0.21	0.56	2.62	1.70E-03	0.12	0.11	530.4
				Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Crane				98.88	618.58	1,790.06	2.82	67.78	65.74	989,924.67
Telehandler				1.68	9.81	31.19	0.24	1.87	1.81	89,226.37
Skid Steer Loader				45.04	226.30	221.78	0.13	32.27	31.30	40,386.25
Pile Driver				69.02	173.99	815.42	0.53	36.23	35.14	164,889.61

On-road Equipment	Hours of Operation	Engine HP	VOC g/VMT	CO g/VMT	NOx g/VMT	SO_2 g/VMT	PM10 g/VMT	PM2.5 g/VMT	CO_2 g/VMT
Delivery Truck	347	265	3.07E-01	1.74E+00	3.19E+00	3.31E-03	1.37E+00	3.33E-01	9.73E+02
			VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Delivery Truck			0.23	1.33	2.44	2.53E-03	1.05	0.25	743.51
Building Construction Grand Total in Tons			**0.11**	**0.52**	**1.43**	**0.00**	**0.07**	**0.07**	**643**

Table 5. Paving

Pavement - Surface Area	155,176	SF	2,874	CY
Paving - HMA	77,588	CF	5,742	tons

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr
Roller	77	401	0.59	0.07	0.47	1.09	0.00	0.07	0.07	537
Paving Machine	77	164	0.59	0.04	0.22	0.59	0.00	0.05	0.05	536
Asphalt Curbing Machine	77	130	0.59	0.06	0.28	0.71	0.00	0.06	0.06	537
				VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Roller				2.82	19.55	46.00	0.08	3.07	2.94	22,564
Paving Machine				0.60	3.75	10.18	0.02	0.91	0.88	9,211
Asphalt Curbing Machine				0.79	3.82	9.62	0.03	0.87	0.85	7,315

On-road Equipment	Hours of Operation	Engine HP	VOC g/VMT	CO g/VMT	NOx g/VMT	SO_2 g/VMT	PM10 g/VMT	PM2.5 g/VMT	CO_2 g/VMT
Dump Truck	100	230	3.07E-01	1.74E+00	3.19E+00	3.31E-03	1.37E+00	3.33E-01	9.73E+02
Water Truck	30	230	3.07E-01	1.74E+00	3.19E+00	3.31E-03	1.37E+00	3.33E-01	9.73E+02
			VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Dump Truck			0.07	0.38	0.70	0.00	0.30	0.07	214.46
Water Truck			0.02	0.11	0.21	0.00	0.09	0.02	64.34

Hot Mix Asphalt (HMA)	Volume of HMA (ft^3)	Weight of HMA (tons)	VOC lb/ton	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Standard Hot Mix Asphalt	77,588	5,742	0.04	229.66	-	-	-	-	-	-
			Subtotal (lbs):	**234**	**28**	**67**	**0**	**5**	**5**	**39,369**
			Paving Grand Total in Tons	**0.12**	**0.01**	**0.03**	**0.00**	**0.00**	**0.00**	**19.68**

Table 6. Fugitive Dust Emissions

Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total	PM2.5/ PM_{10} Ratio	$PM_{2.5}$ Total
2024	0.42	0.68	250	3.6	0.1	0.4
2025	0.42	3.55	250	18.6	0.1	1.9

Table 7. Interior Painting Emissions

Year	Interior square feet	coverage per gal	primer VOC lb/gal	finish coat VOC lb/gal	Total VOC lb	Total VOC Tons
2025	25,000	300	0.70	0.4	92	0.05

Table 8. Total Construction Emissions

Year	VOC Tons/yr	CO Tons/yr	NOx Tons/yr	SO_2 Tons/yr	PM10 Tons/yr	PM2.5 Tons/yr	CO_2 M Tons/yr
2024	0.1	0.4	1.0	0.0	3.7	0.4	471
2025	0.3	0.7	1.6	0.0	18.9	2.0	795

TAB C. PIER, TRESTLE AND BOAT DOCK CONSTRUCTION

Table 1. Waterbased Service Barge

2024

Off-road Equipment	Hours of Operation	Engine kW	Load Factor	VOC (g/kWh)	CO (g/kWh)	Nox (g/kWh)	SO2 (g/kWh)	PM10 (g/kWh)	PM2.5 (g/kWh)	CO_2 (g/kWh)	BSFC (g/kWh)
Tow Boat - propulsion	1,566	671	0.68	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Tow Boat - propulsion	1,566	671	0.68	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Tow Boat - auxiliary	1,566	149	0.43	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213

Off-road Equipment	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Tow Boat - propulsion	465.68	1,447.27	8,888.20	9.84	233.22	226.22	1,070,360
Tow Boat - propulsion	465.68	1,447.27	8,888.20	9.84	233.22	226.22	1,070,360
Tow Boat - auxiliary	65.39	203.22	1,248.06	1.38	32.75	31.77	150,298
2024 Tons/year:	**0.50**	**1.55**	**9.51**	**0.01**	**0.25**	**0.24**	**1,146**

2025

Off-road Equipment	Hours of Operation	Engine kW	Load Factor	VOC (g/kWh)	CO (g/kWh)	Nox (g/kWh)	SO2 (g/kWh)	PM10 (g/kWh)	PM2.5 (g/kWh)	CO_2 (g/kWh)	BSFC (g/kWh)
Tow Boat - propulsion	1,214	671	0.68	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Tow Boat - propulsion	1,214	671	0.68	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Tow Boat - auxiliary	1,214	149	0.43	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213

Off-road Equipment	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 lb
Tow Boat - propulsion	361.00	1,121.96	6,890.34	7.63	180.80	175.37	829,768
Tow Boat - propulsion	361.00	1,121.96	6,890.34	7.63	180.80	175.37	829,768
Tow Boat - auxiliary	50.69	157.54	967.53	1.07	25.39	24.63	116,515
2024 Tons/year:	**0.39**	**1.20**	**7.37**	**0.01**	**0.19**	**0.19**	**888**

Table 2. Construction Equipment — Bulkhead concrete 613 CY; Pier & Trestle concrete 14,112 CY; Excavate and Dispose soil 14,500 CY; Fill 10,000 CY

2024

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr
Pile Driver/Extractor	3,200	300	1	0.21	0.56	2.62	1.70E-03	0.12	0.11	530.4
Concrete Pump	155	215	1	0.22	0.71	2.60	1.66E-03	0.13	0.12	530.5
Barge Crane	1,566	700	1	0.05	0.33	0.96	1.51E-03	0.04	0.04	530.9
Welder	1,585	10	0.19	1.17	5.27	4.76	2.55E-03	0.61	0.59	692.6
Forklift	1,585	74	0.48	0.05	0.20	2.55	1.57E-03	0.02	0.02	596.0
Loader	2,219	300	0.48	0.03	0.17	0.50	1.47E-03	0.03	0.03	536.7

Off-road Equipment	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 kg
Pile Driver	446.26	1,184.63	5,551.79	3.60	246.66	239.26	1,122,652.63
Concrete Pump	15.92	52.16	191.35	0.12	9.21	8.93	38,978.55
Barge Crane	121.71	801.74	2,320.08	3.66	87.84	85.21	1,283,030.86
Welder	7.78	34.99	31.58	0.02	4.07	3.95	4,598.58
Forklift	6.35	24.22	316.15	0.19	1.96	1.91	73,974.29
Loader	24.39	116.82	349.76	1.04	21.68	21.03	378,104.84
Tons/year:	**0.31**	**1.11**	**4.38**	**0.00**	**0.19**	**0.18**	**1,451**

2025 — Floating Docks and remaining construction — 285 CY concrete

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	Nox g/hp-hr	SO2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr
Pile Driver/Extractor	200	300	1	0.21	0.56	2.62	1.70E-03	0.12	0.11	530.4
Concrete Pump	3	215	1	0.22	0.71	2.60	1.66E-03	0.13	0.12	530.5
Barge Crane	1,214	700	1	0.05	0.33	0.96	1.51E-03	0.04	0.04	530.9
Welder	1315	10	0.19	1.17	5.27	4.76	2.55E-03	0.61	0.59	692.6
Forklift	1315	74	0.48	0.05	0.20	2.55	1.57E-03	0.02	0.02	596.0
Loader	1,841	300	0.48	0.03	0.17	0.50	1.47E-03	0.03	0.03	536.7

Off-road Equipment	VOC lb	CO lb	Nox lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 kg
Pile Driver	27.89	74.04	346.99	0.23	15.42	14.95	70,165.79
Concrete Pump	0.31	1.01	3.70	0.00	0.18	0.17	754.42
Barge Crane	94.35	621.52	1,798.58	2.84	68.10	66.06	994,635.67
Welder	6.45	29.03	26.20	0.01	3.38	3.28	3,815.23
Forklift	5.26	20.09	262.30	0.16	1.63	1.58	61,372.99
Loader	20.24	96.92	290.18	0.86	17.99	17.45	313,695.81
Tons/year:	**0.08**	**0.42**	**1.36**	**0.00**	**0.05**	**0.05**	**722**

TAB D. VEHICLE EMISSIONS

Table 1. POV Operations related to Pier and Building Construction 232 trips per day

				Emission Factor g/VMT						
Personnel Type	**Year**	**Vehicle Trips**	**mile/trip**	**VOC**	**CO**	**NOx**	**SO2**	**PM10**	**PM2.5**	**CO2**
Construction	2024	34,104	15	0.03	4.13	0.07	0.00	3.45	0.52	297.88
Construction	2025	52,200	15	0.03	4.13	0.07	0.00	3.45	0.52	297.88
				VOC Tons	**CO Tons**	**NOx Tons**	**SO2 Tons**	**PM10 Tons**	**PM2.5 Tons**	**CO2 Tons**
			2024	0.02	2.33	0.04	0.00	1.94	0.29	168
			2025	0.02	3.57	0.06	0.00	2.97	0.45	257

Table 2. POV Operations related to Additional Staff at NAVSTA Newport

				Emission Factor g/VMT						
Personnel Type	Year	Vehicle Trips	mile/trip	**VOC**	**CO**	**NOx**	**SO2**	**PM10**	**PM2.5**	**CO2**
Staff	2026+	90,000	15	0.03	4.13	0.07	0.00	3.45	0.52	297.88
				VOC Tons	**CO Tons**	**NOx Tons**	**SO2 Tons**	**PM10 Tons**	**PM2.5 Tons**	**CO2 Tons**
			Totals	0.04	6.15	0.10	0.00	5.13	0.77	443

TAB E. CONSTRUCTION SUMMARY BY PROJECT Work schedule is 5 days/week; 10 hrs per day 250

Project Name	Year	Days of Activity 2024	Days of Activity 2025	FootPrint (sf)	Grading (sf)	Building Construction - Total Size (sf)	Building Construction-foundation footprint (sf)	# Stories	Paving - Surface area (SF)	Paving - HMA (CF)	Gravel Work (CY)	Concrete Work - sidewalks, etc (CY)	Concrete Work - foundation (CY)
Small Boat Repair Shop	6/8/24-12/27/24	139		1,500	1,500	1,500	1,500	1	NA	NA	89	150	28
Warehouse	6/8/24-6/25/25	133	133	11,190	11,190	11,190	11,190	1	NA	NA	663	1,119	207
Admin building	6/8/24-9/19/25	130	196	16,584	16,584	21,978	16,584	2	NA	NA	983	1,658	307
Exterior storage	3/14/25-7/8/25		81	43,560	43,560	NA	NA	NA	43,560	21,780	1,613	NA	NA
Parking (30 + 45 spaces)	1/25-6/25		131		22,579	NA	NA	NA	22,579	11,289	836	31	
Building 11 Parking Area (50 spaces)	11/24 - 6/25	15	90		18,063				18,063	9,032	693	24	
Access road between new pier and Anderson Ave Ext.	11/6/24-9/11/25	32	128		70,974				70,974	35,487	23,756	443	
Totals		**449**	**759**	**43,560**	**155,176**	**34,668**	**29,274**	**NA**	**155,176**	**77,588**	**26,899**	**498**	**542**

TAB F. EQUIPMENT DATA AND EMISSION FACTORS

Construction Equipment	HP	Load Factor	Emissions Factors VOC	CO	NOx	SO_2	PM10	PM2.5	CO_2
			g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr
Grader	145	0.58	0.02	0.13	0.46	1.44E-03	0.03	0.03	536.8
Dozer	275	0.58	0.02	0.09	0.29	1.44E-03	0.02	0.02	536.8
Excavator	450	0.53	0.03	0.20	0.55	1.48E-03	0.03	0.03	536.7
Skidsteer Loader	95	0.23	0.73	3.89	3.81	2.23E-03	0.55	0.54	693.9
Loader	300	0.48	0.03	0.17	0.50	1.47E-03	0.03	0.03	536.7
Compactor	105	1	0.06	0.26	0.86	1.50E-03	0.06	0.06	536.7
Crane	700	1	0.05	0.33	0.96	1.51E-03	0.04	0.04	530.9
Telehandler	130	0.48	0.01	0.06	0.19	1.42E-03	0.01	0.01	536.8
Forklift	74	0.48	0.05	0.20	2.55	1.57E-03	0.02	0.02	596.0
Welder	10	0.19	1.17	5.27	4.76	2.55E-03	0.61	0.59	692.6
Pile Driver/Extractor	300	1	0.21	0.56	2.62	1.70E-03	0.12	0.11	530.4
Roller	401	0.58	0.05	0.31	0.85	1.52E-03	0.04	0.04	536.7
Paving Machine	164	0.58	0.06	0.27	0.87	1.50E-03	0.06	0.06	536.7
Asphalt Curbing Machine	130	0.58	0.06	0.26	0.86	1.50E-03	0.06	0.06	536.7
Concrete pump	215	1	0.22	0.71	2.60	1.66E-03	0.13	0.12	530.5

Boat Equipment	Engine kW	Load Factor	Emissions Factors VOC	CO	NOx	SO_2	PM10	PM2.5	CO_2	BSFC
			(g/kWh)	(g/kWh)	(g/kWh)	(g/kWh)	(g/kWh)	(g/kWh)	(g/kWh)	(g/kWh)
Tow Boat - propulsion	671	0.68	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Tow Boat - auxiliary	149	0.43	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Crew/launch boat 1	149	0.45	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Work tug - propulsion	112	0.5	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Work tug - auxiliary	19	0.43	0.30	0.92	5.64	7.27E-03	0.15	0.14	791	248
Clamshell dredge auxiliary	358	0.66	0.22	0.90	6.10	6.25E-03	0.14	0.13	679	213
Crane 2- auxiliary	358	0.66	0.22	0.90	6.10	4.94E-03	0.14	0.13	537	168
Clamshell offloader auxiliary	358	0.66	0.22	0.90	6.10	6.25E-03	0.14	0.13	679	213
Crew/launch boat 2	75	0.45	0.30	0.92	5.64	6.25E-03	0.15	0.14	679	213
Crew/launch boat 2 - auxiliary	30	0.43	0.30	0.92	5.64	7.27E-03	0.15	0.14	791	248

For Harborcraft:

SO2 Emission factor calculated based on equation 4.5 in EPA (2020), Port Emission Guidance

CO2 Emission factor calculated based on equation 4.4 in EPA (2020)

300 MBH hot water boilers - 2

300 kW emerg gen - nat gas

Appendix J Public Involvement

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COVID memorial opens on State House lawn

G. Wayne Miller
Providence Journal
USA TODAY NETWORK

PROVIDENCE – The more than 3,000 Rhode Islanders lost to COVID were memorialized Saturday with a display of thousands of white flags on the State House lawn and a ceremony that opened a week during which the flags will remain in place — available for loved ones and friends to sign in remembrance of those who have died.

The display, a striking juxtaposition of windswept white against the lush green of early-summer grass and trees, was created by artist Suzanne Firstenberg, who designed the "In America: Remember" installation on the National Mall in Washington, D.C. By the time the installation closed, more than 700,000 white flags had been placed in the nation's capital in memory of Americans who died during the pandemic.

"This art is meant to call attention to the immense loss of life that has happened because of COVID and to bring us an opportunity to grieve together," Firstenberg said in an interview with The Providence Journal before the ceremony began.

> **"This art is meant to call attention to the immense loss of life that has happened because of COVID and to bring us an opportunity to grieve together."**
> **Suzanne Firstenberg**
> Artist

"We are so divided now, but there's one thing we're together in, and that is grief. We have all suffered from COVID, from this pandemic, whether it's the loss of life of a loved one, loss of a job, of income or educational opportunities. This gives us a chance to reflect."

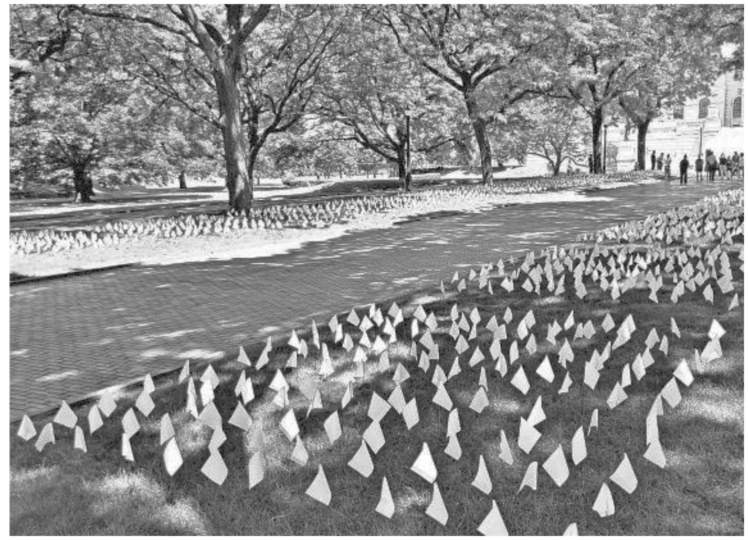
"Everybody's been touched by the pandemic," said the Rev. Eugene Dyszlewski, president of the Rhode Island Council of Churches, the multi-faith group that brought the installation to Rhode Island. "In the early days, people were not able to be with their loved one when they died. It was difficult to memorialize anyone or do a funeral, because we couldn't gather, there couldn't be more than five or six people. A lot of the usual kind of steps in mourning were missing. And so this is another mourning opportunity. Perhaps a healing opportunity for people."

During his remarks, Sen. Jack Reed said: "This memorial is a touching tribute to those we have lost in Rhode Island. Each of these flags represents a friend, a neighbor, a parent, a grandparent. We carry them in our hearts. And we have a responsibility to shape a brighter future in America. We must lift up those who have suffered during this pandemic and do our part to prevent the spread of COVID-19 and also do our part to ensure an equitable and just society."

During the coming week, Rhode Islanders are invited to visit the memorial and write an inscription on one of the white flags. Sharpie pens and informational materials will be available. According to Bradley Hospital's Margaret R. Paccione, clerics from many faiths have been trained in counseling and will be available on a rotating basis to assist visitors who may want to discuss their grief.

The display concludes with a closing ceremony at 7 p.m. on July 2 "during which we are inviting firefighters and first responders from the individual towns and cities of Rhode Island to gather the flags for their individual towns and cities," according to the Council of Churches.

Among the others speaking on Saturday were Firstenberg, Dyszlewski, the Rev. Effie McAvoy, Lt. Gov. Sabina Matos, Dr. Michael Fine and the Rev. Chontell N. Washington.



Thousands of white flags mark the State House lawn during Saturday's opening of a remembrance of Rhode Islanders lost to COVID.
PHOTOS BY G. WAYNE MILLER/THE PROVIDENCE JOURNAL

NOTICE OF AVAILABILITY
ENVIRONMENTAL ASSESSMENT FOR RELOCATION OF NOAA RESEARCH VESSELS AT NAVAL STATION NEWPORT, RHODE ISLAND

The National Oceanic and Atmospheric Administration (NOAA), in partnership with the Department of the Navy, has prepared a Draft Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969, the National Historic Preservation Act, and Executive Order 11988 Floodplain Management. The EA analyzes the environmental impacts of the proposed relocation of four NOAA research vessels to Naval Station Newport in Newport, Rhode Island. The proposed project would include the construction of a new pier, bulkhead, and shoreside facilities within the FEMA designated 100-year and 500-year floodplains at the Former Robert E. Derecktor Shipyard in Coddington Cove, and construction of additional support facilities outside of the floodplain.
The proposed shoreside support facilities must be situated near the new pier to support the functions of NOAA vessels; therefore, proposed construction in the floodplain could not be avoided. Structures and impervious surfaces would be constructed in the floodplain, potentially impacting floodplain functions. Impacts to the floodplain would be reduced through the proposed stormwater management system, which would include methods to improve water quality and detain stormwater flows as close as possible to pre-development levels. To reduce impacts from potential flooding, structures would be engineered for protection against storm surge, and critical structures would be raised above the base flood elevation.

The Draft EA is available for review and comment on the NOAA website at: https://www.noaa.gov/administration/draft-environmental-assessment.
NOAA invites the public to submit comments on the Draft EA **until July 26, 2022** to:
Mark George, NOAA DSRC, 325 Broadway, Boulder, CO 80305. No return replies will be provided. All comments will be considered during the preparation of the Final EA.

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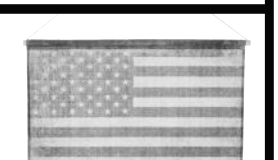

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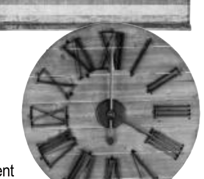

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