# Appendix C
# Informal Section 7 Consultation

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# Green Sea Turtle Assessment for the Floating Drydock Project at Naval Base San Diego

The United States Navy, Naval Base San Diego (NBSD), requests informal Section 7 consultation for the Navy's proposed Floating Dry Dock Project in south-central San Diego Bay.

The purpose of the Proposed Action is to support the emplacement and operation of floating dry dock facilities on NBSD, including all required dredging and sediment disposal, as well as all required demolition and construction activities necessary to provide the required dry dock space for maintenance of the Pacific Fleet at NBSD. Additional details of the proposed in-water activities are provided in the accompanying EFH Assessment. The Proposed Action is to install two floating dry docks on NBSD, one at the south berth of the Mole Pier, and the second at a commercial outlease (COL) location near the Marine Group Boat Works, LLC (MGBW) maintenance piers. The attached EFH Assessment Figures 3-1 and 3-2 show the location of the project, as well as eelgrass beds in the vicinity.

The Navy is requesting Section 7 consultation regarding the project's potential to affect the threatened green turtle (*Chelonia mydas*). No other threatened or endangered species under the purview of the National Oceanic and Atmospheric Administration (NOAA) are known or likely to occur in the project action area.

The Navy, NOAA's Southwest Fisheries Science Center and the Port of San Diego (POSD) have been partners in the study of the San Diego Bay's population of Green Turtles since 2007. There have been no green turtle sightings in the immediate area of NBSD, which is a heavily used maritime industrial area and, for the most part, lacks eelgrass or other habitat features that might attract green turtles. The only eelgrass bed on NBSD is a small (0.83 acre) bed at the south end of NBSD, within the location of the proposed COL floating dry dock. Extensive eelgrass beds are associated with the Sweetwater River and San Diego Bay National Wildlife Refuges beginning about 0.5 mile farther south, and eelgrass occurs almost continuously along the shoreline about 1 mile across the bay.

The San Diego Bay green turtle population is part of the East Pacific distinct population segment (DPS), which is listed as threatened under the ESA. The Bay represents one of green turtle's northernmost foraging habitats (MacDonald et al. 2012); the nearest other regularly inhabited location is in the highly urbanized San Gabriel River mouth (Crear et al. 2016; Crear et al. 2017). Since this species is considered rare along the California coast, the resident turtles in San Diego Bay are considered both "noteworthy" and "extremely interesting" by members of the scientific community (Macdonald et al. 1990). The number of turtles using the bay is estimated to range between 40 and 60 animals during most months of the year, increasing to 100 animals during peak migratory periods (Eguchi 2017).

Between 2009 and 2011, the Navy, POSD, NOAA's National Marine Fisheries Service (NMFS), and San Diego State University initiated tracking efforts to determine the movement patterns of green turtles in San Diego Bay. Using a combination of manual and automated acoustic telemetry, turtles' home ranges and movements throughout the bay were recorded and analyzed. Results from this study suggest that the South Bay serves as important green turtle habitat. The study also found individual home range areas tend to be 2.09 to 8.70 square kilometers in size, and that each turtle primarily uses one or two areas (MacDonald et al. 2012). The home ranges of all turtles in the study were found to be exclusively located in the South Bay, near abundant eelgrass pastures and the South Bay Power Plants' warm water effluent (MacDonald et al. 2012).

In 2009, the South Bay power plant decreased operations by 50 percent, shutting down two of four units, and was fully decommissioned by December 31, 2010 (Hill 2011). This resulted in cooler temperatures and a reduced concentration of turtles in areas formerly warmed by effluent (Turner-Tomaszewicz and Seminoff 2012). In an effort to evaluate how turtle behavior may have changed as a result of the power plant closure, the Navy and the Marine Turtle Ecology & Assessment Program at NMFS Southwest Fisheries Science Center initiated a satellite tagging effort in order to detect fine-scale movements of turtles in the bay. The data collected since the inception of the post-closure program in 2011 indicates that turtles' movements in the bay are changing. Turtle home ranges increased in size by 12 percent when comparing pre-closure tags (2007-2010) with post-closure tags (2011-2016). The 50 percent Utilization Distribution, which generally shows the most utilized areas or core home range, increased in size by 0.2 square kilometers and shifted to the northern side of outflow jetty. Overall, there was a trend of northern movement of home ranges following the power plant closure (Navy and POSD 2018).

Additionally, it was determined that turtles in the bay may associate with or seek out thermal refugia, when possible, to avoid low water temperatures. The cold-water temperature inactivity threshold for East Pacific green turtles may be lower than previously thought. In a recent study, there was a significant negative relationship between turtle size and water temperature after power plant closure, which led researchers to conclude that East Pacific green turtles exhibit clear responses in habitat use to changes in water temperature (Madrak et al. 2016).

During the day, green turtles in San Diego Bay reside in the deeper portion of the now-defunct South Bay power plant discharge channel. At night, they feed in the south bay eelgrass beds, including those near Coronado Cays (Stinson 1984). Green turtles are carnivorous from hatching until they reach juvenile size, at which point they gradually transition to a primarily herbivorous diet; they have also been described as opportunistic feeders, feeding on jellyfish, ctenophores, bivalves, and gastropods, if such prey items are readily available (Lemons et al. 2011). Adult sea turtles around the world are primarily herbivorous grazers of marine algae and grasses. Recent stable isotope diet analysis suggests that the San Diego Bay population also consumes various invertebrates, making this population predominantly omnivorous (Lemons et al. 2011). Stomach content analysis has revealed that San Diego Bay green turtles also consume red algae (*Polysiphonia* sp.), sea lettuce (*Ulva* sp.), and various species of invertebrates found in the south bay (MacDonald and Dutton 1992; Lemons et al. 2011). A study by Seminoff et al. (2006) has broadened our understanding of green turtle foraging in San Diego Bay, indicating that adult green turtles in this population are likely more omnivorous than previously thought.

In the aforementioned telemetry study (as summarized in Navy and POSD 2018), turtle home ranges were found to extend from the south end of San Diego Bay northward to approximately to the Sweetwater River. Given the lack of eelgrass and limited food resources on NBSD, occurrence in the project area would likely be limited to migratory or wandering individuals.

A federal recovery plan for the species lists the following threats as pertinent to the San Diego Bay population (NMFS and USFWS 1998):

- Limited information concerning turtles' home range and foraging patterns impedes habitat delineation and subsequent protection.
- Persistent marine debris, including plastic and other anthropogenic waste, remains a concern with respect to potential mortalities through entanglement or blockage of turtles' digestive tracts.

- Reduction and/or fragmentation of foraging habitat caused by dredging and shoreline development.
- Disturbance and/or behavior modification as a result of various anthropogenic activities, most notably dredging and construction involving pile driving. Little information is available on defined thresholds or potential population-level impacts.
- Mortalities caused by collisions with motorized vessels transiting the bay.

Demolition, dredging, and pile driving activities have the potential to affect turtles in the immediate vicinity because of habitat (eelgrass) removal, vessel movement, construction-related noise, and water quality degradation. Dredging will remove 0.83 acre of eelgrass, representing potential foraging habitat, at the COL floating dry dock location. Use of this particular location by turtles is undocumented, and may be unlikely because of the relative isolation of the location and ongoing Navy and MGBW industrial activity in the immediate vicinity. Eelgrass apparently established in this area only recently as it was not known to occur there prior to the most recent survey in 2017 (Merkel & Associates, Inc. 2018). Eelgrass removal would be mitigated in conformance with the California Eelgrass Mitigation Policy using the Navy Eelgrass Mitigation Bank. As a result, eelgrass removal may affect but is not likely to adversely affect green turtles.

Vessel movement is associated with the transportation of the floating dry dock, in-water construction and demolition, and all stages of dredging, including transit to and from the project area, transit to and from the deposition site, and operation of the dredger. Collision with vessels is a known cause of injury and mortality to turtles. However, given the slow speed of dredgers, collisions with project-related vessels are unlikely. Further, other support vessels (such as barges) are limited in number, will be required to maintain established speeds, and are consistent with baseline conditions. The risk of injury by dredging equipment or sediment disposal is considered negligible (discountable) as green turtles are not known or likely to be present at those sites.

Potential impacts to green turtles from implementation of the proposed action would primarily be from impact pile driving, which will be limited to daylight hours. The threshold value for injury to turtles from impact pile driving is a cumulative sound exposure level (SEL) of 204 dB re 1 µPa2-sec or a peak sound pressure level (SPL) of 232 dB re 1 µ Pa (Navy 2017). Sound source levels associated with pile driving have been estimated from CALTRANS (2015), and the widely accepted “practical spreading loss” model of transmission loss has been used to determine distances to these and other thresholds. Based on this analysis, the maximum distance to any injury threshold would be reached during impact driving 24-inch steel pipes, when the injury threshold SEL value, assuming a single-strike SEL source level (10 m from the pile) of 178 dB re 1 µPa2-sec and an animal’s exposure to 600 pile strikes, would be reached within 14 m. To be consistent with and to avoid confusion for the marine species monitors, we will be implementing the same 25 m shutdown zone for both green turtles and marine mammals.

During all activities, turtles are expected to avoid exposure to an underwater root-mean-square (rms) SPL of 175 dB re 1 µPa or greater (Navy 2017). Behavioral reactions would not rise to the level of “take” under the ESA unless they result in a significant curtailment of feeding, movement and other activities affecting fitness. During impact driving the 24-inch steel piles (the loudest sound source), this threshold value would be reached within a distance of 185 m from the source, assuming a source rms SPL of 194 dB re 1 µPa. For all other activities, this threshold value would be reached at much shorter distances. Given the lack of feeding areas (eelgrass at the COL location would be removed during dredging, prior to construction) in the project area and ample space for turtles to move through the area

at a distance of greater than 185 m from construction, behavioral avoidance, if and when it occurs, would have minor, inconsequential effects on movement, foraging, and overall fitness. This would not rise to a level of "take" under the ESA. As a result, the Navy believes impact driving the 24-inch steel piles may affect, but is not likely to adversely affect green turtles. The following BMP's will be implemented for all pile driving activities:

- A standard monitoring distance of 185 meters will be implemented before and during all pile driving activities and after a break in pile driving of more than 30 minutes.
- If a turtle is seen in the project area out to a distance of 185 meters prior to pile driving, the activity will not commence until the animal has moved out of the area or at least 15 minutes has passed since the last sighting.
- If a turtle is seen within the 185 meter zone after pile driving has commenced, the Navy may continue driving that pile to completion, as long as that turtle is not within 25 meters of the project work area. The Navy may not initiate the driving of another pile until at least 15 minutes has passed since the last sighting.
- To avoid direct contact between equipment and turtles and potential injuries, if a turtle is seen within 25 meters of the project area while work is in progress, then all project activities will immediately cease. Under this assessment, 25 meters represents the maximum range of direct contact with equipment and serves as the shutdown zone. Work will only commence once the turtle has left the project area out to 185 meters or 15 minutes has elapsed from the last sighting in the area.
- Ramp-up procedures will be implemented to slowly increase the intensity of pile driving to allow undetected turtles in the area an opportunity to move away. Prior to the start of impact pile driving each day, or after each break of more than 30 minutes, a "soft-start" procedure will be used (i.e., three unfueled hammer blows separated by 30 seconds). The procedure allows any animals in the area to voluntarily depart after brief exposures to project-related noise.

Maximum SPLs associated with bucket dredging operations have been reported as 124 dB re 1 µPa at 150 m (Dickerson et al. 2001, cited by Jones et al. 2015), which would be comparable to background noise from vessels and machinery in an industrial harbor, depending on proximity to the activity. Average background (ambient) noise in south-central San Diego Bay was measured at 126 dB ($L_{50}$) in 2019 (Dahl and Dall'Osto 2019), whereas ambient noise levels in the northern San Diego Bay were measured at from 126 to 137 dB ($L_{50}$) in 2014, 2015, and 2016 (NAVFAC SW 2018). Sound levels in south-central San Diego Bay are likely lower due to the reduced ship traffic relative to north San Diego Bay. These data indicate that dredging noise will not be appreciably different from ambient. Dredging activities would occur: 1) at the Mole Pier location within a 4.79-acre area in San Diego Bay and would last for a period of 14 weeks; and 2) within a similar area at the COL location, but lasting 27 weeks due to the greater volume of dredging and disposal required. Dredging will occur at nighttime. Disposal would occur at previously permitted nearshore, offshore, or upland disposal sites. The following BMP's will be implemented for all dredging activities:

- Sufficient lighting will be used to illuminate the entire project area. A standard monitoring distance of 120 meters will be implemented 15 minutes before and during all dredging activities and after a break of more than 30 minutes.

- If a turtle is seen within 120 meters of the project area prior to dredging, the activity will not commence until the animal has moved out of the area or at least 15 minutes has passed since the last sighting.
- If a turtle is seen within 25 meters of the project area while dredging is in progress, then all project activities will immediately cease. Work will only commence once the turtle has left the project area out to 120 meters or 15 minutes has elapsed from the last sighting in the area.
- A debris boom would be installed around active dredging to facilitate collection and proper disposal of any debris accidentally discharged during construction.

Based on the foregoing, the Navy requests written concurrence from NOAA on the finding of "may affect, not likely to adversely affect" as to the green turtle for the proposed Navy Floating Dry Dock Project at NBSD.

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**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

March 25, 2020

Refer to NMFS No:
WCRO-2020-00597

J.R. Habeck
Public Works Officer
Naval Base San Diego
3455 Senn Road
San Diego, California 92136-5084

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter for the Floating Dry Dock project at Naval Base San Diego

Dear Mr. Habeck:

On February 20, 2020, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the proposed installation and operation of a Floating Dry Dock facility at Naval Base San Diego (NBSD) by the U.S. Navy (Navy) is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency template for preparation of letters of concurrence.

During consultation, the Navy indicated that an application for an Incidental Harassment Authorization under the Marine Mammal Protection Act (MMPA) was in the process of completion. As a result, we do not provide any further comments regarding compliance with the MMPA in this response. In addition, we acknowledge that Essential Fish Habitat (EFH) consultation under the Magnuson-Steven Fishery Conservation and Management Act (MSA) for this proposed project is ongoing and has not concluded as of the date of this response.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at NMFS' Environmental Consultation Organizer (ECO) [https://www.fisheries.noaa.gov/resource/tool-app/environmental-consultation-organizer-eco]. A complete record of this consultation is on file at the NMFS West Coast Region Long Beach Office.

**Consultation History**

On February 20, 2020, NMFS received the request from the Navy to initiate informal ESA consultation for the proposed Floating Dry Dock project, along with a Green Sea Turtle Assessment and Essential Fish Habitat Assessment for the project. On February 24, 2020, NMFS staff sent an email to Navy staff with additional questions and clarifications about the proposed project needed to initiate ESA consultation. On February 25th, 2020, the Navy responded with an

email to NMFS staff that provided the information needed to initiate ESA consultation, which we consider as having been initiated on this date.

**Proposed Action and Action Area**

The proposed action is to support the emplacement and operation of floating dry dock facilities on NBSD, located in south-central San Diego Bay, including all required dredging and sediment disposal, as well as all required demolition and construction activities necessary to provide the required dry dock space for maintenance of the Pacific Fleet at NBSD. More specifically, this proposed project includes installation of two floating dry docks on NBSD, one at the south berth of the Mole Pier, and the second at a commercial outlease (COL) location near the Marine Group Boat Works, LLC (MGBW) maintenance piers. Before installation, partial demolition of some existing wharf decking and mooring dolphins is required. This includes removal of some existing piles with a hydraulic cutter (or pile clipper) lowered over each of the existing piles, allowing the pile to be cut at the mudline, removed by the crane, and set onto a barge.

Installation of the floating dry dock includes installation of new mooring dolphins and fendering upgrades to existing wharf structures. The proposed aft and fore mooring dolphins at both locations would each be supported by approximately sixteen 24-inch octagonal concrete piles. The aft mooring dolphin at each location would also require approximately two 24-inch battered steel-pipe piles. Up to eight additional 24-inch steel piles will be required for the forward and aft mooring dolphins installed at the MGBW maintenance piers location. Up to two new steel fender piles of 16-inch diameter or less in size would be installed along the south berth of the Mole Pier. The proposed floating dry docks would be barged to each location for installation. The minimum dimensions for the floating dry dock proposed at the south berth of the Mole Pier are: 700-foot length, 163-foot outside width, a 139-foot inside width, a pontoon height of 14 feet, and a wing wall height of 44 feet above the pontoon deck. The floating dry dock at the MGBW maintenance piers location would also be constructed entirely of steel but would be smaller than the dry dock proposed for the Mole Pier. The minimum dimensions for this floating dry dock are: 531.5-foot length, 154.2-foot outside width, a 120.08-foot inside width, a pontoon height of 10.2 feet, and a wing wall height of 42.85 feet above the pontoon deck. Ultimately, pile removal and installation at the south berth of the Mole Pier is anticipated to occur over a 14-week period (e.g., demolition is anticipated to take 4 weeks and pile installation is anticipated to take up to 10 weeks total). Pile installation at the MGBW maintenance piers location would also take up to 10 weeks.

In addition, two pedestrian bridges and a vehicle bridge would be constructed to provide landside access and servicing to the MGBW floating dry dock. The port-side pedestrian bridge, which would provide access to the port wing deck, would be approximately 115 feet long supported by a concrete abutment on land. The proposed ramp wharf would be approximately 80 feet wide and 55 feet long and would support a 60-foot-long vehicle bridge that would provide vehicle access to the MGBW floating dry dock. The ramp wharf would also support the starboard pedestrian bridge, which would provide access to the starboard wing deck. The concrete ramp wharf and vehicle bridge would cover approximately 5,360 $ft^2$ and would be supported by twenty-four 24-inch octagonal concrete piles.

The proposed project includes dredging of approximately 251,121 cubic yards (cy) of sediment (86,121 cy at the south berth of the Mole Pier and 165,000 cy near the MGBW maintenance piers) and subsequent sediment disposal activities using a barge-mounted clamshell dredge.

Because of the potential presence of munitions, and associated Explosives Safety Quantity-Distance (ESQD) arcs, dredging activities would be limited to nighttime (6:00pm to 6:00am), Monday through Friday. Dredging activities are estimated to occur over a 14-week period at the south berth of the Mole Pier and 27 weeks at the MGBW maintenance piers location. Options for dredge disposal include beneficial reuse, ocean disposal, or upland disposal; with beneficial reuse being the current preferred option pending future sediment testing other consideration.

Project activities associated with the MGBW COL dry dock are currently scheduled to begin as early as the fall (September) of 2020. Project activities associated with the NBSD Mole Pier dry dock are currently projected to occur some time after the spring of 2024.

We considered whether the proposed action would cause any other activities and determined that it would not.

**Background and Action Agency's Effects Determination**

The Navy determined the proposed project that may affect East Pacific Distinct Population Segment (DPS) green sea turtles (*Chelonia mydas*) that occur in San Diego Bay, which are currently listed as threatened under the ESA ( 81 FR 20057). San Diego Bay has been identified as an important foraging area for East Pacific DPS green turtles along the U.S. west coast, with the shallow waters of San Diego Bay providing valuable food resources such as marine algae and seagrass. While some of the San Diego Bay green turtles are year-round residents, others migrate seasonally in order to reach their southern breeding grounds, located in the southern state of Michoacán, Mexico, and at the Revillagigedos Islands, offshore central Mexico. Green turtles are attracted to the shallow waters and high concentrations of eelgrass in southern San Diego Bay (South Bay), and the presence of this important food item and habitat for other preferred prey species likely influences sea turtle activity patterns within the Bay (Lemmons et al. 2011). Data generated from tag-recapture studies suggest that San Diego Bay is a productive habitat for green sea turtles, with green turtles from the Bay showing fast growth rates comparable to green turtles found in more tropical environments (Eguchi et al. 2012). Surveys show that the sea turtles generally forage and are typically located within the confines of the South Bay, in relative proximity to the location of the former South Bay Power Plant, which shut down operations in 2010 (MacDonald et al. 2012). Recent information produced from monitoring and tracking green turtle movements throughout the Bay have indicated some green turtle activity outside of South Bay even during the winter and spring months when water temperatures are cooler, typically with relatively short duration movements between other areas and back to South San Diego Bay (Madrak et al. 2014). Since the closure of the power plant, there has been a trend of northern movement of home ranges of green turtles in San Diego Bay (Navy and Port of San Diego 2018).

The Navy identified several activities including demolition, dredging, and pile driving activities as having the potential to affect turtles in the immediate vicinity because of habitat (eelgrass) removal, vessel movement, construction-related noise, and water quality degradation. The Navy also identified risks of injury generally occurring from direct contact with project equipment or activities such as sediment disposal. In order to avoid potential impacts to green sea turtles during the proposed project, the Navy has proposed to implement a suite of minimization and avoidance measures that include:

- Use of biological monitors during all project activities to detect the presence of protected species and implement monitoring zones
- During dredging, a standard monitoring distance of 120 meters (m) will be implemented 15 minutes before and during all dredging activities, and after a break of more than 30 minutes. Sufficient lighting will be used to illuminate this project area during nighttime dredging operations.
- During dredge disposal, a monitoring distance of 100 m will be implemented 15 minutes prior to and during sediment disposal.
- During pile driving, a standard monitoring distance of 185 m will be implemented before and during all pile driving activities and after a break in pile driving of more than 30 minutes. If a turtle is seen in the project area out to a distance of 185 m prior to pile driving, the activity will not commence until the animal has moved out of the area or at least 15 minutes has passed since the last sighting.
- If a turtle is seen within the 185 meter zone after pile driving has commenced, the Navy may continue driving that pile to completion, as long as that turtle is not within 25 meters of the project work area. The Navy may not initiate the driving of another pile until at least 15 minutes has passed since the last sighting or turtles is observed outside the 185 meter zone.
- To avoid direct contact between equipment and turtles and potential injuries, if a turtle is seen within 25 meters of the project area while any work is in progress, then all project activities will immediately cease. Work will only commence once the turtle has left the project area out to appropriate zone for various activities or 15 minutes has elapsed from the last sighting in the area.
- Ramp-up procedures will be implemented to slowly increase the intensity of pile driving to allow undetected turtles in the area an opportunity to move away. Prior to the start of impact pile driving each day, or after each break of more than 30 minutes, a "soft-start" procedure will be used (i.e., three unfueled hammer blows separated by 30 seconds). The procedure allows any animals in the area to voluntarily depart after brief exposures to project-related noise.

## Endangered Species Act

### Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

The Navy accurately described the potential effects of the action, including habitat impacts, direct contact injuries with project activities, and exposure to potential harmful levels of sound. The Navy considered the potential impact of removing 0.83 acre of eelgrass, representing potential green sea turtle foraging habitat, at the COL floating dry dock location. In their EFH Assessment, the Navy determined there were potential adverse effects to EFH associated with dredging, sediment transport, and disposal, as well as during demolition and construction activities at each site. Project activities may adversely affect EFH as a result of eelgrass impacts; habitat conversion; and increased shading, noise, and turbidity.

The Navy noted that use of this project area by green turtles is undocumented, and may be unlikely because of the relative isolation of the location and ongoing Navy and MGBW industrial activity in the immediate vicinity. Eelgrass apparently established in this area only recently as it was not known to occur there prior to the most recent survey in 2017 (Merkel & Associates, Inc. 2018). They also noted that eelgrass removal would be mitigated in conformance with the California Eelgrass Mitigation Policy using the Navy Eelgrass Mitigation Bank. As a result, the Navy concluded that the impact of eelgrass removal by the proposed project may affect, but is not likely to adversely affect, green turtles. Overall, we concur with the assessment provided by the Navy. Although it is possible that green turtles may occasionally be in this area and take advantage of any available eelgrass habitat that is near the project area temporarily or while transiting out of San Diego Bay, the project area does not appear to be a typical, preferred, or hospitable location for green turtle presence in San Diego Bay. Any disturbance or disruption of habitat in this area is unlikely to impact the foraging activities of green sea turtles concentrated in other areas of San Diego Bay. Although use of the Navy Eelgrass Mitigation Bank is expected to occur, use of a mitigation bank is not required to determine that the anticipated effects to habitat resulting from the proposed project are insignificant for green sea turtles in San Diego Bay. Although the EFH consultation has not yet concluded, we anticipate that the outcome will include compensatory mitigation to offset unavoidable impacts to EFH, including eelgrass impacts, through the use of the Navy's Mitigation Bank. While creation of the Navy Eelgrass Mitigation was not done as a purposeful benefit to green sea turtles, the creation of this habitat has resulted in increased eelgrass habitat in San Diego Bay (over 28 acres created with over 13 acres available for credit use, as recently assessed; Navy 2019) some of which has likely been at least occasionally benefitting individual green sea turtles since the beginnings of the mitigation bank back in 1987.

The Navy also considered the potential impact of vessel movements associated with the transportation of the floating dry dock, in-water construction and demolition, and all stages of dredging, including transit to and from the project area, transit to and from the sediment disposal site, and operation of the clamshell dredger. The Navy acknowledges collisions with vessels are a known cause of injury and mortality to turtles. However, they conclude that given the slow speed of dredgers and other vessels during the proposed project, collisions between project-related vessels and sea turtles are unlikely. Further, they note that other support vessels (such as barges) are limited in number and will be required to maintain established speeds. In addition, they will implement monitoring zones and shut-down procedures for all in-water project activities including demolition, dredging, disposal, and pile driving. Ultimately, the Navy has determined the risk of contact injury as discountable given that green turtles are not known or likely to be present during project activities and as a result of the implementation of the proposed minimization and avoidance measures. Overall, we concur with assessment provided by the Navy. During research operations, NMFS staff repeatedly have observed the detection and

avoidance reactions of sea turtles to slow moving vessels, even upon detecting them at very close proximity while surfacing, and concluded that the risk of a collision with slower moving vessels in project areas that are monitoring for the presence of green turtles is discountable (D. Lawson, NMFS, personal observations 2015). The use of biological monitors and the zones described are expected to minimize the risks of direct contact with project activities, in the unlikely event a green turtle is present in the project area.

The Navy considered the potential impacts to green turtles from impact pile driving using sound source levels estimated from CALTRANS (2015), and the widely accepted "practical spreading loss" model of transmission loss used to determine distances to thresholds. Based on this analysis, the Navy determined the maximum distance to any injury threshold for green turtles would be reached during impact driving 24-inch steel pipes (the loudest source), when the injury threshold SEL value, assuming a single-strike SEL source level (10 m from the pile) of 178 dB re 1 µPa2-sec and an animal's exposure to 600 pile strikes, would be reached within 14 m.[1] In addition, the Navy concluded all turtles are expected to avoid exposure to an underwater root-mean-square (RMS) SPL of 175 dB re 1 µPa or greater (Navy 2017), and determined this threshold value would be reached within a distance of 185 m from the source during impact driving 24-inch pipes, assuming a source RMS SPL of 194 dB re 1 µPa. Further, the Navy believes that any behavioral avoidance in response to the sound levels that may be produced, if and when it occurs, would have minor, inconsequential effects on movement, foraging, and overall fitness of individual green turtles. Ultimately, the Navy concludes that with the implementation of the proposed monitoring program, the avoidance and minimization measures, and the relative unlikely occurrence of green turtles in the project area, pile driving is not likely to adversely affect green turtles.

Overall, we concur with the Navy's conclusions about the potential impact of pile driving given the proposed monitoring program. Currently, NMFS has not established any specific guidelines for safety criteria that directly relate to sea turtle injuries or behavioral changes resulting from elevated sound pressure levels that may result from the removal or installation of piles. In general, NMFS and other federal agencies have relied upon the noise criteria for marine mammals (cetaceans or pinnipeds) and the safety zones that have been employed for projects to minimize the risk of injury to these species as a conservative proxy for managing impacts of very loud sound on sea turtles. While sea turtle hearing has not been studied nearly as much as marine mammal hearing, the general consensus is that, given the relatively complex hearing and communication systems and the wide ranges (sound frequency) of sound detection that are known for many marine mammal species (reviewed in Southhall et al. 2007) compared to the relatively simple hearing systems and limited range of sound detection that has been described to date for sea turtles (see Piniak et al. 2016), it is likely that most, if not all, marine mammal species are more sensitive to underwater sound than sea turtles. Although experimental research on sea turtle response to loud underwater sources is limited, McCauley et al. (2000) documented increased swimming activity for loggerhead and green sea turtles in a caged environment during periods of received sound in excess of 165 dB RMS, and increased erratic swimming behaviors at received sound levels above 175 dB RMS. The authors concluded these behaviors were marking the relative point where avoidance would occur for unrestrained turtles in that acoustic environment. Regardless of the specific noise exposure that sea turtles might experience, we

[1] Threshold value assumed by the Navy in their analysis is a cumulative sound exposure level (SEL) of 204 dB re 1 µPa2-sec or a peak sound pressure level (SPL) of 232 dB re 1 µ Pa (Navy 2017).

conclude that it is likely that any disturbance from this project would lead to turtles avoiding the immediate project area once the activity has commenced, reducing the likelihood of turtles remaining in the area long enough to experience hearing injury.

Although the project description includes the future operation of the dry dock, the Navy did not specifically include an assessment of how dry dock operations may affect green sea turtles. The proposed project is meant to respond to the anticipated capacity needed to accommodate future Navy operations, but does not by itself create that capacity. What the project will do is potentially increase the amount of vessel activity that could occur within and near the project area as more Navy ships can be serviced at the same time at Naval Base San Diego. In this area, vessel speeds are restricted to accommodate the needs for safe navigation within confined waterways with significant other private, commercial, and military traffic. As described before, we conclude that collisions with slow moving vessels moving into, out of, or within Naval Base San Diego are unlikely, especially considering that this area is not considered to be a likely place of green sea turtle occurrence. While operations at the dry dock are not well described, we understand they consist of maintenance activities conducted on vessels while they are "out of the water." As a result, we would not anticipate any risk of interactions between those maintenance activities and green sea turtles.

**Conclusion**

Based on this analysis, NMFS concurs with the Navy that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

**Reinitiation of Consultation**

Reinitiation of consultation is required and shall be requested by the Navy or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take because no incidental take is anticipated; (2) 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; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

Please direct questions regarding this letter to Dan Lawson, Long Beach Protected Resources Division, at 206-526-4740 or Dan.Lawson@noaa.gov.

Sincerely,

Penny Ruvelas
Long Beach Branch Chief
Protected Resources Division

cc: Administrative File: 151422WCR2020PR00063

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