UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

April 6, 2023 **Refer to NMFS No:** WCRO-2023-00135

Captain Daniel R. Ursino
Captain
United States Coast Guard
1301 Clay Street, Suite 700N
Oakland, California 94612-5203

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the United States Coast Guard Station Humboldt Bay Maintenance Dredging Project (2023-2032) in Humboldt County, California

Dear Captain Ursino:

Thank you for your letter of January 26, 2023, requesting formal consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the United States Coast Guard Station (USCG) Humboldt Bay Maintenance Dredging (2023-2032) Project. Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action. This letter transmits NMFS' final biological opinion and EFH response for the proposed USCG Station Humboldt Bay Maintenance Dredging (2023-2032) Project (Project).

The enclosed biological opinion describes NMFS' analysis of effects on threatened Southern Oregon/Northern California Coast (SONCC) coho salmon *(Oncorhynchus kisutch)*, California Coastal (CC) Chinook salmon *(O. tshawytscha)*, Northern California (NC) steelhead (*O.mykiss*), Southern Distinct Population Segment (SDPS) of North American green sturgeon (*Acipenser mediostris*) and their designated critical habitat in accordance with section 7 of the ESA. Based on the best scientific and commercial information available, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, NC steelhead, SDPS green sturgeon, nor is the project likely to destroy or adversely modify designated critical habitat for these species. NMFS expects the proposed action would result in incidental take of SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon. An incidental take statement with terms and conditions is included with the enclosed biological opinion.

The enclosed EFH consultation was prepared pursuant to section 305(b) of the MSA. The proposed action includes areas identified as EFH for species managed under the Pacific Coast Salmon Fishery Management Plan (FMP), Pacific Coast Groundfish FMP, and Coastal Pelagic Species FMP. Based on our analysis, NMFS concludes that the project would adversely affect EFH of all three FMPs and has provided two EFH Conservation Recommendations.

Please contact Matt Goldsworthy, Northern California Office, Arcata, via email at Matt.Goldsworthy@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: FRN # 151422WCR2023AR00042

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

United States Coast Guard Station Humboldt Bay Maintenance Dredging (2023-2032) Project, Humboldt County, California

NMFS Consultation Number: WCRO-2023-00135

Action Agency: United States Coast Guard, Civil Engineering Unit Oakland

Table 1. Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely to Jeopardize the Species?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
Southern Oregon/Northern California Coast (SONCC) coho salmon	Threatened	Yes	No	No
California Coastal (CC) Chinook salmon	Threatened	Yes	No	No
Northern California (NC) steelhead	Threatened	Yes	No	No
Southern DPS North American Green Sturgeon	Threatened	Yes	No	No

Table 2. Essential Fish Habitat and NMFS' Determinations:

Fishery Management Plan with EFH in the Action Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes
Pacific Coast Groundfish	Yes	Yes
Coastal Pelagic Species	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: April 6, 2023

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1 INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR Part 402.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (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 the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at the NMFS Northern California Office in Arcata, California.

1.2 Consultation History

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

On January 30, 2023, NMFS received the United States Coast Guard's (USCG) request for formal ESA consultation, and for EFH consultation, regarding the USCG Station Humboldt Bay Maintenance Dredging (2023-2032) Project. The USCG anticipated adverse effects to Southern Oregon/Northern California Coast (SONCC) coho salmon, California Coastal (CC) Chinook salmon, Northern California (NC) steelhead, Southern Distinct Population Segment (SDPS) of North American green sturgeon and their designated critical habitats. The USCG determined the Project may adversely affect EFH designated by the Pacific Coast Salmon Fishery Management Plan (FMP), Pacific Coast Groundfish FMP, and Coastal Pelagic Species FMP. Formal ESA consultation for the Project was initiated upon receipt of the request from the USCG, on January 30, 2023, as well as consultation for EFH.

On March 16, 2023, the USCG provided an update to their proposed action to: (1) remove the potential use of fish screens when hydraulic or suction dredging; and (2) to include an eelgrass mitigation plan in the event any existing eelgrass in the dredge footprint is affected.

1.3 Proposed Federal Action

Under the ESA, "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). Under the MSA, "Federal action" means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (see 50 CFR 600.910).

The USCG proposes to conduct maintenance dredging of the boat basin at USCG Station Humboldt Bay (Station). In order for the boat basin to remain in operation, sediment removal must be conducted to accommodate the draft of the USCG vessels operating from the basin. The purpose of the project is to maintain functioning boat maneuvering depths at the station to permit the USCG to continue to fulfill its mission.

1.3.1 Project Description

The scope of the proposed project includes dredging and disposal of sediment from within the vessel mooring basin at Station Humboldt Bay (Figure 1). The first maintenance dredge event is proposed to be implemented in 2023 during the proposed in-water work window (July 1 to October 15), with maintenance dredging in subsequent years as needed to maintain operational depth over a 10-year period (2023-2032). Dredging will return the mooring basin area at Station Humboldt Bay to its previously dredged depth of -8 feet below the mean lower low-water (MLLW) mark, plus an additional two feet of over-depth allowance, for a maximum depth of -10 feet MLLW. The total project footprint for maintenance dredging is approximately 0.77 acres.

The total volume to be removed is approximately 3,000 cy of sediment for the first event (2023) with maintenance dredging events in subsequent years expected to remove similar volume amounts. Sloping will occur out to the dredge footprint peripheral extent at a ratio of 2 feet horizontal to 1 foot vertical (2:1). Over the 10-year course of the project, the estimated dredge volume is approximately 10,000 cy. Dredging is anticipated to be performed every three to five years, as needed.

Dredging is anticipated to take approximately one to two weeks to complete. Either mechanical or hydraulic dredging methods may be used. Dredging would be performed from a shallow draft barge equipped with either a crane or excavator clamshell (mechanical dredging) or a suction head (hydraulic dredging). For dredging in and around existing structures, it is anticipated hydraulic dredging may be required.

1.3.1.1 Hydraulic Dredging

If hydraulic dredging is utilized, a temporary dredge pipeline will be assembled to facilitate transport of dredged material to a barge. The dredge pipe diameter may vary depending on the equipment used, but anticipated to be less than 12-inches in diameter. The pipe will be constructed by the contractor in accordance with the specifications for the equipment in a way that would seal the pipe and prevent spills or leakage.

The pipe would connect to a barge that would be anchored nearby the dredging area but outside of (avoiding) any environmentally sensitive areas. The pipe and barge would also be positioned to not obstruct the Federal Navigation Channel (FNC) and still allow access for the USCG to perform regular activities. The contractor may decide to use a floating pipe or anchor or tie equipment to the breakwater to support the pipe without anchoring in the sediment, in which case no additional environmental impacts are expected. The time to assemble and deconstruct the pipe is estimated to be approximately 1-2 weeks.

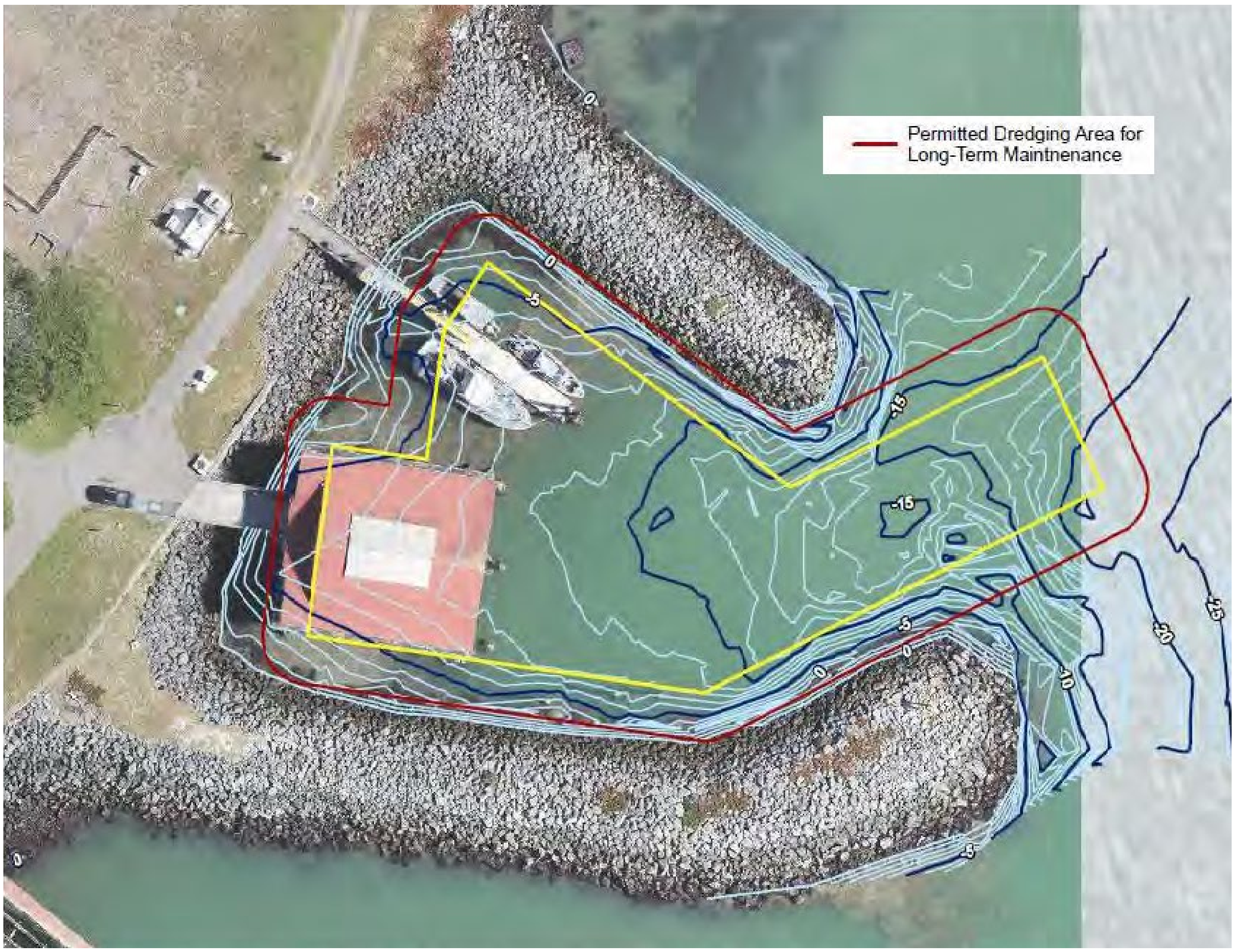

Figure 1: USCG Station Humboldt Bay overview of dredging footprint (red outline).

1.3.2 Sediment Suitability and Disposal

A sediment characterization study would be performed for all dredging events performed during the 10-year permit cycle. Dredge material placed in the barge would likely be transported by a tugboat directly to the preapproved in-water disposal site at the HOODS. If upland disposal is pursued for the project for future dredging episodes, then Best Management Practices (BMPs) to stabilize and dewater the dredged material will be implemented prior to transport. Dewatering would be performed by the dredged material contractor in accordance with their dredged material management plan. Water generated from the operation would be retained until it meets regional water quality criteria before being discharged into existing storm drains that drain to Humboldt Bay or be pumped back into the bay via a pipeline. Discharges would be monitored to the best extent practicable either through direct water quality monitoring in the bay or by periodic testing of discharge water. The dredged material de-watering process would be designed to prevent any accidental discharge.

1.3.3 Eelgrass Mitigation Plan

If any impacts to the existing eelgrass beds occur, the USCG proposes to transplant eelgrass from existing beds and relocate eelgrass into suitable habitats from where the USCG had removed a marine railway from Humboldt Bay. The planting ratio will occur at a 21:1 ratio to ensure the target of 1.2:1 is achieved. The areas planted will be monitored for five years in adherence with CEMP. If the transplanted eelgrass achieves or surpasses the objective of 1.2:1, the mitigation for eelgrass would be considered to cover eelgrass impacted within the Station in perpetuity.

1.3.4 Minimization Measures

The USCG proposes to incorporate the following conservation measures to minimize the effects of the project:

- All work will occur during the in-water work window (July 1 – October 15).
- A pre-dredging eelgrass (*Zostera marina* and *Zostera pacifica*) survey will be conducted during the growing season, and up to a week prior to the start of each dredging episode.
- Best management practices would be employed to prevent impacts on two small clusters of eelgrass totaling 8 square-meters (m^2) of vegetated cover, of which approximately 4.8 m^2 are within the USCG's permitted dredging area for long-term maintenance.
- Eelgrass mitigation plans have been developed to reconcile any effects to eelgrass.
- If a silt curtain cannot be deployed, light monitoring shall be conducted by the Contractor in accordance with light monitoring protocol.
- Vessel operators will follow designated speed zones to and from the project area.
- The potential for grounding will be limited by controlling contractor vessel draft and movements.
- During transport and handling of sediment, containment measures will be used to minimize spillage.
- The USCG will require the contractor to conduct a surface debris survey prior to dredging.
- If needed during offloading, metal spill aprons, upland spill control curbing and collection systems, and other spill control measures will be implemented. If a bucket is used, a dribble apron will be used.
- The contractor will use a Global Positioning System unit to ensure that material is removed from the correct locations.
- The contractor will not be allowed to excavate beyond the maximum authorized depth.
- No bottom stockpiling or multiple bites of the clamshell bucket will be allowed.
- Over-dredging at the base of a slope will not occur.

- If mechanical dredging is employed, the dredge bucket will not be overfilled. The dredge bucket will swing directly to the barge after it breaks the water surface using the minimal swing distance.
- The dump barge will be filled to no more than 80 percent capacity to prevent spillage during transport.
- Although not anticipated to be necessary, surface booms, oil-absorbent pads, and similar materials will be onsite to contain any sheen that may occur on the surface of the water during dredging.
- A debris boom will be installed during in-water construction. Any debris accidentally discharged into the water will be collected, transported to, and disposed of, at an appropriate upland disposal site, or recycled, if appropriate.
- The contractor shall utilize only clean construction materials suitable for use in the aquatic environment.
- The contractor shall ensure no debris, soil, silt, sand, sawdust, rubbish, cement or concrete washings thereof, oil or petroleum products, from construction shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters.
- Upon completion of the project the contractor shall completely remove any and all excess material or debris from the work area and recycle or dispose of these materials in an appropriate upland location.
- No re-fueling of equipment shall occur where it could enter waters of the United States.
- Dredging will be completed to a stable slope to maintain the integrity of the riprap-armored banks.

The USCG proposes the following additional measures to be implemented if hydraulic dredging is used to conduct maintenance dredging:

- Limit all priming, clearing, and pumping of water into the cutterhead within three feet of the bottom to minimize impacts on fish.
- Priming and clearing of the cutterhead shall last no longer than five minutes.
- Monitor cutterhead intakes so that they maintain contact with the Bay floor during suction dredging.
- The suction dredge will not be operating while in the water column to minimize entrainment of sensitive species within the water column.
- Overflow to the hopper will be minimized to reduce turbidity in the surrounding waters in Humboldt Bay.
- Entrainment monitoring: California Department of Fish and Wildlife (CDFW) recommends entrainment monitoring to occur during active hydraulic dredging events in Humboldt Bay to determine if BMPs are successful.

1.3.5 Other Activities

We considered whether or not the proposed action would cause any other activities and determined that although the proposed Project will help maintain existing navigation channels, future implementation of the Project will not increase the number of vessel transits per day, vessel size, or other maritime activities in the action area for the foreseeable future because the Project does not include any additional dredging for new or expanded maritime facilities.

2 ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "to jeopardize the continued existence of" a listed species, which is "to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This biological opinion also relies on the regulatory definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02). The designations of critical habitat use the term primary constituent element (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) that revised the critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The ESA Section 7 implementing regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the final rule revising the definition and adding this term (84 FR 44976, 44977; August 27, 2019), that revision does not change the scope of our analysis, and in this opinion, we use the terms "effects" and "consequences" interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.

- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that is likely to be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" for the jeopardy analysis. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species.

2.2.1 Species Description and General Life History

2.2.1.1 SONCC Coho Salmon

Coho salmon have a generally simple 3-year life history. The adults typically migrate from the ocean and into bays and estuaries towards their freshwater spawning grounds in late summer and fall, and spawn by mid-winter. Adults die after spawning. The eggs are buried in nests, called redds, in the rivers and streams where the adults spawn. The eggs incubate in the gravel until fish hatch and emerge from the gravel the following spring as fry. These 0+ age fish typically rear in freshwater for about 15 months before migrating to the ocean. The juveniles go through a physiological change during the transition from fresh to salt water called smoltification. Coho salmon smolts typically outmigrate between March and July (Ricker *et al.* 2014). Coho salmon typically rear in the ocean for two growing seasons, returning to their natal streams as 3-year-old fish to renew the cycle.

2.2.1.2 CC Chinook Salmon

CC Chinook salmon are typically fall spawners, returning to bays and estuaries before entering their natal streams in the early fall. The adults tend to spawn in the mainstem or larger tributaries of rivers. As with the other anadromous salmon, the eggs are deposited in redds for incubation. When the 0+ age fish emerge from the gravel in the spring, they typically migrate to saltwater shortly after emergence. Therefore, Chinook salmon typically enter the estuary as smaller fish compared to coho salmon. Chinook salmon are typically present in the stream-estuary ecotone, which is located in the downstream portions of major tributaries to estuaries like Humboldt Bay, from early May to early September, with peak abundance in June/July (Wallace and Allen 2007).

Similar to coho salmon, prey resources during out-migration are critical to Chinook salmon survival as they grow and move out to the open ocean.

2.2.1.3 NC Steelhead

Steelhead are the anadromous form of *O. mykiss*, spending time in both fresh and saltwater. Steelhead generally return to freshwater to spawn as 4 or 5-year-old adults. Unlike other Pacific salmonids, steelhead can survive spawning and return to the ocean only to return to spawn in a future year. It is rare for steelhead to survive more than two spawning cycles. Steelhead typically spawn between December and May. Like other Pacific salmonids, the steelhead female deposits her eggs in a redd for incubation. The 0+ age fish emerge from the gravel to begin their freshwater life stage and can rear in their natal stream for 1 to 4 years before migrating to the ocean.

Steelhead have a similar life history as noted above for coho salmon, in the sense that they rear in freshwater for an extended period before migrating to saltwater. As such, they enter the estuary as larger fish (mean size of about 170 to 180 mm or 6.5 to 7.0 inches) and are, therefore, more oriented to deeper water channels. The California Department of Fish and Wildlife (CDFW) data indicate that steelhead smolts generally migrate downstream toward the estuary between March 1 and July 1 each year, although they have been observed as late as September (Ricker *et al.* 2014). The peak of the outmigration timing varies from year to year within this range, and generally falls between early April and mid-May.

2.2.1.4 SDPS Green Sturgeon

Subadult and adult green sturgeon move between coastal waters and estuaries. Lindley *et al.* (2011) report multiple rivers and estuaries are visited by aggregations of green sturgeon in summer months, and larger estuaries (e.g., the action area in Humboldt Bay) appear to be particularly important habitat. During the winter months, green sturgeon generally reside in the coastal ocean. Subadult green sturgeon spend several years at sea before reaching reproductive maturity and returning to freshwater to spawn for the first time (Nakamoto *et al.* 1995).

Juvenile Southern DPS green sturgeon rear in their natal streams in California's Central Valley, so only sub-adult and adult Southern DPS green sturgeon are present in the marine environment offshore of, and inside of, Humboldt Bay and are the only life stages of Southern DPS green sturgeon that could be present. Sub-adults range from 65-150 cm total length from first ocean entry to size at sexual maturity. Sexually mature adults range from 150-250 cm total length.

2.2.2 <u>Status of Species and Critical Habitat</u>

In this biological opinion, NMFS assesses four population viability parameters to help us understand the status of each species and their ability to survive and recover. These population viability parameters are: abundance, population productivity, spatial structure, and diversity (McElhaney *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information, including the Recovery Plan for SONCC Coho Salmon (NMFS 2014) and Coastal Multispecies Recovery Plan (NMFS 2016), to determine the general condition of each population and factors responsible for the current status of each Evolutionarily Significant Unit (ESU). We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.02).

2.2.2.1 Status of SONCC Coho Salmon

SONCC Coho Salmon Abundance and Productivity: Although long-term data on coho salmon abundance are scarce, the available evidence from short-term research and monitoring efforts indicate that spawner abundance has declined since the last status review for populations in this ESU (Williams *et al.* 2016). In fact, 24 of the 31 independent populations in the ESU are at high risk of extinction because they are below or likely below their depensation threshold, which can be thought of as the minimum number of adults needed for survival of a population. No populations are at a low risk of extinction and all core populations are thousands short of the numbers needed for recovery (Williams *et al.* 2016).

SONCC Coho Salmon Spatial Structure and Diversity: The distribution of SONCC coho salmon within the ESU is reduced and fragmented, as evidenced by an increasing number of previously occupied streams from which SONCC coho salmon are now absent (NMFS 2001, Good *et al*. 2005, Williams et al. 2011, Williams et al. 2016). Extant populations can still be found in all major river basins within the ESU (70 FR 37160; June 28, 2005). However, extirpations, loss of brood years, and sharp declines in abundance (in some cases to zero) of SONCC coho salmon in several streams throughout the ESU indicate that the SONCC coho salmon's spatial structure is more fragmented at the population-level than at the ESU scale. The genetic and life history diversity of populations of SONCC coho salmon is likely very low. The SONCC coho salmon ESU is currently considered likely to become endangered within the foreseeable future in all or a significant portion of its range, and there is heightened risk to the persistence of the ESU as Viable Salmonid Population parameters continue to decline and no improvements have been noted since the previous status review (Williams *et al*. 2016).

2.2.2.2 Status of CC Chinook Salmon

CC Chinook Salmon Abundance and Productivity: Low abundance, generally negative trends in abundance, reduced distribution, and profound uncertainty as to risk related to the relative lack of population monitoring in California have contributed to NMFS' conclusion that CC Chinook salmon are likely to become an endangered species within the foreseeable future throughout all or a significant portion of their range. Where monitoring has occurred, Good *et al.* (2005) found that historical and current information indicates that CC Chinook salmon populations are depressed. Uncertainty about abundance and natural productivity, and reduced distribution are among the risks facing this ESU. Concerns regarding the lack of population-level estimates of abundance, the loss of populations from one diversity stratum[1], as well as poor ocean survival contributed to the conclusion that CC Chinook salmon are likely to become an endangered species in the foreseeable future (Good *et al.* 2005, Williams *et al.* 2011, Williams *et al.* 2016).

CC Chinook Salmon Spatial Structure and Diversity: Williams *et al.* (2011) found that the loss of representation from one diversity stratum, the loss of the spring-run history type in two diversity substrata, and the diminished connectivity between populations in the northern and southern half of the ESU pose a concern regarding viability for this ESU. Based on consideration of this updated information, Williams *et al*. (2016) concluded the extinction risk of the CC Chinook salmon ESU has not changed since the last status review. The genetic and life history diversity of

[1] A diversity stratum is a grouping of populations that share similar genetic features and live in similar ecological conditions.

populations of CC Chinook salmon is likely very low and is inadequate to contribute to a viable ESU, given the significant reductions in abundance and distribution.

2.2.2.3 Status of NC Steelhead

NC Steelhead Spatial Structure and Diversity: NC steelhead remain broadly distributed throughout their range, with the exception of habitat upstream of dams on both the Mad River and Eel River, which has reduced the extent of available habitat. Extant summer-run steelhead populations exist in Redwood Creek and the Mad, Eel (Middle Fork, Van Duzen), and Mattole rivers. The abundance of summer-run steelhead was considered "very low" in 1996 (Good *et al.* 2005), indicating that an important component of life history diversity in this DPS is at risk. Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. However, abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure and diversity (Williams *et al*. 2011).

NC Steelhead Abundance and Productivity: With few exceptions, NC steelhead are present wherever streams are accessible to anadromous fish and have sufficient flows. The most recent status review by Williams *et al.* (2016) reports that available information for winter-run and summer-run populations of NC steelhead do not suggest an appreciable increase or decrease in extinction risk since publication of the last viability assessment (Williams *et al.* 2011). Williams *et al.* (2016) found that population abundance was very low relative to historical estimates, and recent trends are downwards in most stocks.

2.2.2.4 Status of SDPS Green Sturgeon

SDPS Green Sturgeon Spatial Structure and Diversity: SDPS green sturgeon continue to rely mostly on one portion of one river (Sacramento River) for spawning, and the most recent status review (NMFS 2021) confirms the amount of spawning habitat has not increased. Spawning has occurred episodically in the Feather and Yuba Rivers but it has not been continuous (Beccio 2019). The limited amount of spawning locations inherently limits the spatial structure and diversity for the DPS.

SDPS Green Sturgeon Abundance and Productivity: The recovery criteria established by the SDPS green sturgeon recovery plan (NMFS 2018) is for the adult census population to remain at or above 3,000 for three generations (this equates to a yearly running average of at least 813 spawning adults for approximately 66 years). In addition, the effective population size must be at least 500 individuals in any given year and each annual spawning run must comprise a combined total, from all spawning locations, of at least 500 adult fish in any given year. The estimated total population of Southern DPS green sturgeon is 17,548 individuals, with an estimated 2,106 adults (Mora *et al.* 2018). The adult population does not meet the criteria of a yearly average 3,000 adults and the reported counts of spawning adults have been less than 500 in the Sacramento River (Mora *et al.* 2018).

2.2.2.5 Status of Critical Habitats

The condition of SONCC coho salmon, CC Chinook salmon, and NC steelhead critical habitat, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined that currently depressed population conditions are, in part, the result of the following human induced factors affecting critical habitat: logging, agriculture, mining, urbanization, stream channelization, dams, wetland loss, and water withdrawals (including unscreened diversions for irrigation). Impacts of concern include altered stream bank and channel morphology, elevated water temperature, lost spawning and rearing habitat, habitat fragmentation, impaired gravel and wood recruitment from upstream sources, degraded water quality, lost riparian vegetation, and increased erosion into streams from upland areas (Williams *et al.* 2016, Weitkamp *et al.* 1995). Diversion and storage of river and stream flow has dramatically altered the natural hydrologic cycle in many of the streams within the ESU's and DPS. Altered flow regimes can delay or preclude migration, dewater aquatic habitat, and strand fish in disconnected pools, while unscreened diversions can entrain juvenile fish.

The current condition of critical habitat for the SDPS green sturgeon is degraded over its historical conditions. It does not provide the full extent of conservation values necessary for the recovery of the species, particularly in the upstream riverine habitat of the Sacramento River. In the Sacramento River, migration corridor and water flow PBFs have been impacted by human actions, substantially altering the historical river characteristics in which the SDPS of green sturgeon evolved. In addition, the Delta may have a particularly strong impact on the survival and recruitment of juvenile green sturgeon due to their protracted rearing time in brackish and estuarine waters.

The construction of dams, water diversions, flood control projects, agricultural development and resources extraction have contributed to the decline of the SDPS green sturgeon. The SDPS Green Sturgeon Recovery Plan's priority actions are intended to restore passage and habitat, reduce mortality from fisheries, entrainment, and poaching, and address threats in the areas of contaminants, climate change, predation, sediment loading and oil and chemical spills. Most of the recovery efforts focus on the Sacramento River Basin and San Francisco Bay Delta Estuary environments, as threats in spawning and rearing habitats were considered the greatest impediments to recovery.

2.2.3 Factors Responsible for the Decline of Species and Critical Habitat

The factors that caused declines of species and degradation of critical habitat include hatchery practices, ocean conditions, habitat loss due to dam building, degradation of freshwater habitats due to a variety of agricultural and forestry practices, water diversions, urbanization, over-fishing, mining, climate change, and severe flood events exacerbated by land use practices (Good *et al*. 2005, Williams *et al.* 2016). Sedimentation and loss of spawning gravels associated with poor forestry practices and road building are particularly chronic problems that can reduce the productivity of salmonid populations. Late 1980s and early 1990s droughts and unfavorable ocean conditions were identified as further likely causes of decreased abundance (Good *et al.* 2005). From 2014 through 2016, drought conditions in California reduced stream flows and increased temperatures, further exacerbating stress and disease. Ocean conditions have been unfavorable in past years due to the El Niño in 2015 and 2016 and other anomalously warm waters in the Gulf of Alaska. Reduced flows can cause increases in water temperature, resulting in increased heat stress to fish and thermal barriers to migration.

Another factor affecting the range wide status of SONCC coho salmon, CC Chinook salmon and NC steelhead, and aquatic habitat at large is climate change. Recent work by the NMFS Science Centers ranked the relative vulnerability of west-coast salmon and steelhead to climate change. In California, listed coho and Chinook salmon are generally at greater risk (high to very high risk) than listed steelhead (moderate to high risk) (Crozier et al 2019).

Impacts from global climate change are already occurring in California. For example, average annual air temperatures, heat extremes, and sea level increased in California over the last century (Kadir *et al.* 2013). Snowmelt from the Sierra Nevada has declined (Kadir *et al*. 2013). Although SONCC coho salmon, CC Chinook salmon and NC steelhead are not dependent on snowmelt driven streams, they have likely already experienced some detrimental impacts from climate change through lower and more variable stream flows, warmer stream temperatures, and changes in ocean conditions. California experienced well below average precipitation during the 2012-2016 drought, as well as record high surface air temperatures in 2014 and 2015, and record low snowpack in 2015 (Williams *et al*. 2016). Paleoclimate reconstructions suggest the 2012-2016 drought was the most extreme in the past 500 to 1000 years (Williams *et al.* 2016, Williams *et al*. 2020, Williams *et al.* 2022). Anomalously high surface temperatures substantially amplified annual water deficits during 2012-2016. California entered another period of drought in 2020. These drought periods are now likely part of a larger drought event (Williams *et al.* 2022). This recent long-term drought, as well as the increased incidence and magnitude of wildfires in California, have likely been exacerbated by climate change (Williams *et al.* 2020, Williams et al. 2022, Williams *et al.* 2019).

The threat to SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon from global climate change is expected to increase in the future. Modeling of climate change impacts in California suggests that average summer air temperatures are expected to continue to increase (Lindley et al. 2007, Moser et al. 2012). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al.* 2004, Moser *et al.* 2012, Kadir *et al.* 2013). Total precipitation in California may decline and the magnitude and frequency of dry years may increase (Lindley *et al.* 2007, Schneider 2007, Moser et al. 2012). Similarly, wildfires are expected to increase in frequency and magnitude (Westerling et al. 2011, Moser *et al.* 2012). Increases in wide year-to- year variation in precipitation amounts (droughts and floods) are projected to occur (Swain *et al*. 2018). Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002, Ruggiero *et al.* 2010).

In marine environments, ecosystems and habitats important to juvenile and adult salmonids are likely to experience changes in temperatures, circulation, water chemistry, and food supplies (Brewer and Barry 2008, Feely 2004, Osgood 2008, Turley 2008, Abdul-Aziz *et al.* 2011, Doney *et al.* 2012). Some of these changes, including an increased incidence of marine heat waves, are likely already occurring, and are expected to increase. In fall 2014, and again in 2019, a marine heatwave, known as "The Blob"[2], formed throughout the northeast Pacific Ocean, which greatly affected water temperature and upwelling from the Bering Sea off Alaska, south to the coastline of Mexico. The marine waters in this region of the ocean are utilized by salmonids for foraging as they mature (Beamish 2018). Although the implications of these events on salmonid

[2] https://www.fisheries.noaa.gov/feature-story/new-marine-heatwave-emerges-west-coast-resembles-blob

populations are not fully understood, they are having considerable adverse consequences to the productivity of these ecosystems and presumably contributing to poor marine survival of salmonids.

Overall, climate change is believed to represent a growing threat, and will challenge the resilience of SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon.

2.3 Action Area

"Action area" means 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 for the proposed action includes the USCG Station Humboldt Bay and as far as 500-feet from the Station, as well as the eelgrass mitigation area, and the expanded HOODS including the routes used to transport the dredge material for disposal.

2.4 Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

In the action area, the threat to SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon from climate change are likely to be similar to those described above in the Species Status section. For example, the action area is likely to experience increases in average summer air temperatures; more extreme heat waves; and an increased frequency of drought (Lindley *et al.* 2007). In addition to the increased frequency of drought, high intensity rainfall events are also expected to become more common, leading to increased erosion and flooding. In future years and decades, many of these changes are likely to further degrade habitat throughout Humboldt Bay by, for example, reducing streamflow entering the bay during the summer and raising summer water temperatures.

Coho salmon occurring in the action area belong to the Humboldt Bay Tributaries population of SONCC coho salmon, which is currently at a moderate risk of extinction (NMFS 2014). Chinook salmon occurring in the action area belong to the Humboldt Bay Tributaries population of CC Chinook salmon (NMFS 2016), which is well below the number needed to be at a low risk of extinction. NC steelhead in the action area belong to the Humboldt Bay Tributaries population of NC steelhead. All of the listed salmonid populations have the same name and encompass all of the tributaries draining into Humboldt Bay. The spatial extent of these populations indicates that fish born in Freshwater Creek (a Humboldt Bay tributary) may return to Humboldt Bay as adults and spawn in any of the Humboldt Bay tributaries, as the entire network of tributaries draining into the bay constitute one population area.

The highest rated threats identified in the recovery plan for SONCC coho salmon include roads, channelization/diking, and agricultural practices (NMFS 2014). The highest rated threats identified in the recovery plan for CC Chinook salmon include roads/railroads and channel modifications such as levees (NMFS 2016). High priority recovery actions in the SONCC Coho Salmon Recovery Plan and the Coastal Multi-Species Recovery Plan (Chinook salmon) are to increase instream structure; construct off channel habitats and oxbows; remove or set back levees; improve grazing practices; and restore tidally influenced areas (NMFS 2014, 2016).

2.4.1 Status of Listed Species and Critical Habitat in the Action Area

Freshwater Creek is one of the major tributaries draining into Humboldt Bay and is likely to represent about half of the anadromous habitat within the Bay. Counts of adult salmonids, including SONCC coho salmon and CC Chinook salmon, at the Freshwater Creek weir from 1994 through 2014 indicates that both wild populations have declined (Ricker *et al.* 2014). Ricker *et al*. (2014) characterized the decline in CC Chinook salmon in Freshwater Creek as dramatic, and raised concerns over depensatory population effects. Once the augmentation of hatchery reared Chinook salmon ceased in 2004, weir captures declined rapidly into the single digits and ultimately reached an all-time low of no returning adults in 2013 (Ricker *et al.* 2014). Freshwater Creek adult abundance estimates for SONCC coho salmon also indicates that adult escapement has declined, ranging from a high of 1,807 in 2002-03 to a low of 89 in 2009-10 (Moore and Ricker 2012). Information on abundance of winter steelhead in Humboldt Bay is limited, but adult steelhead returning to Freshwater Creek from 2000 to 2014 have ranged from a low of 51 to a high of 432 adults (Ricker *et al.* 2014).

Salmonids occurring in estuaries are highly mobile and in Humboldt Bay, low numbers of fish are spread over a large area, which can complicate scientific observations or captures intended to understand their habitat preferences (Garwood *et al.* 2013 and Pinnix *et al.* 2005). Garwood *et al.* (2013) studied fish assemblages in Humboldt Bay by conducting monthly sampling over a period of several years and only captured one listed salmonid during the multi-year study. Pinnix *et al.* (2005) sampled Humboldt Bay over a 2-year period using fyke nets, shrimp trawls, beach seines, purse seines, cast nets, and minnow traps. Pinnix *et al.* (2005) identified a diverse and abundant fish community in Humboldt Bay, including a total of 49 species from 22 families of fishes. However, over the two years of sampling, no salmonid species were captured in any of the six different types of sampling gear. No listed salmonids were captured during regular trawling conducted by the Corps from March through October at five paired locations in and just outside of the federal channels in Humboldt Bay in 2019 and 2020 (Novotny *et al.* 2020a, b).

A recent study related to 1+ age coho salmon smolts in Humboldt Bay, by Pinnix *et al.* (2013) used acoustic transmitters surgically implanted into the out-migrating smolts. Coho salmon smolts spent more time in the stream-estuary ecotone, which is located in the downstream portions of major tributaries to Humboldt Bay. During their residency in Humboldt Bay, coho smolts primarily used deep channels and channel margins and were present in the estuary an average of 10 to 12 days.

The PBF of SONCC coho salmon, CC Chinook salmon, and NC steelhead designated critical habitat pertinent to this consultation are those estuarine areas that support juvenile growth and provide migration corridors free of obstruction. The condition of SONCC coho salmon, CC Chinook salmon, and NC steelhead critical habitat in the action area, specifically its ability to provide for their conservation, is degraded from conditions known to support viable populations. The action area and nearby areas have been subjected to a high degree of historic anthropogenic disturbance and manipulation, starting in the 1880's after the construction of the jetties and subsequent designation and maintenance of the Federal Navigation Channels. These changes have contributed to changes in the widths, depths, and velocities at the Entrance and action area. The Entrance Channel is flanked by the North and South Jetties on either side, where artificial substrates (concrete, boulders, and concrete dolos) have been installed, which create habitat favored by predators of juvenile salmonids. Humboldt Bay is a major deep-water port, where there is frequent vessel activity and other projects under construction. These conditions and obstructions likely increase the number of days required for SONCC coho salmon, CC Chinook salmon, and NC steelhead to navigate their way through the migratory corridor of Humboldt Bay and into the open ocean.

Data collected by the United States Fish and Wildlife Service indicate that green sturgeon are found more frequently in the North Bay (Pinnix 2008). Green sturgeon adults and subadults are temporary residents in Humboldt Bay from April through October, utilizing North Bay as summer-fall holding or feeding habitat, and the deeper waters as a migratory corridor between the Pacific Ocean and Arcata Bay (Pinnix 2008). Green sturgeon are known to move rapidly within an estuary and travel within the top 6.5ft of a water column over deeper water at a speed of approximately 1.8ft per second. According to a study in the San Francisco Bay, green sturgeon that were near the surface of the water were also reported to swim in swift flowing regions of the bay, and were oriented in the direction of the current. The green sturgeon in Humboldt Bay will likely exhibit similar behavior and are expected to use the deeper waters of the Entrance Bay and the North Bay Channel for migration and shallower waters for feeding.

Regular trawling from March through October at five paired locations in and just outside of the federal channels in Humboldt Bay in 2019 and 2020 (Novotny *et al.* 2020a, b) captured only one green sturgeon (total length = 964 mm) in the federal channels in October 2020. Goldsworthy *et al.* 2016 and Pinnix 2008, describe an area of high use for green sturgeon near Sand Island, in the North Bay where the majority of SDPS green sturgeon who enter the Bay tend to reside during the summer.

The PBF of SDPS green sturgeon pertinent to this consultation are those in estuarine areas and nearshore coastal marine areas. The PBF's for estuarine areas include food resources, water flow, water quality, migratory corridor, water depth, and sediment quality. In nearshore coastal marine areas, PBFs are migratory corridor, water quality, and food resources.

2.4.2 Previous ESA Section 7 Consultations in the Action Area

NMFS' ESA Section 10(a)(1)(A) research and enhancement permits and research projects in the annual California Department of Fish and Wildlife ESA Section 4(d) rule research program could potentially occur in Humboldt Bay or within nearby estuarine portions of tributaries, including the reaches within the action area. In general, these activities are closely monitored and require measures to minimize take during the research activities. NMFS determined these research projects are unlikely to affect future adult returns. The United States Environmental Protection Agency consulted with NMFS pursuant to the expansion of HOODS, allowing dredged materials from dredging projects along the Northern California coast to continue to deposit clean dredge spoils at HOODS. NMFS evaluated effects to EFH and ESA listed species and their designated critical habitats from disposals at HOODS and found that they are unlikely to jeopardize the survival and recovery of SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon (NMFS ECO#: WCRO-2019-03626). The United States Army Corps of Engineers expects to routinely dredge the entrance and interior Federal Navigation Channels, which NMFS found would not jeopardize the survival and recovery of these species (NMFS ECO#: WCRO-2022-00817). The USCG consulted with NMFS on the removal of the Marine Railway from Station Humboldt Bay, and NMFS concurred with the USCG that species would not be adversely affected (NMFS ECO#:WCRO-2020-03286). Other activities which have been previously consulted on and expected to routinely occur within or nearby the action area include: dredging of marinas, docks, and boat launches; maintenance and replacement of docks and pilings; maintenance and reconstruction of the North and South Jetties; restoration projects; oyster and macro-algae mariculture; and placement of utility lines.

2.5 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 (see 50 CFR 402.02). 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 (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

NMFS expects both adult and juvenile (smolt) stages of SONCC coho salmon, CC Chinook salmon, and NC steelhead to be present in the action area during the work windows and exposed to the effects of the action. As previously discussed, only sub-adult or adult SDPS green sturgeon are expected to be within the action area during the work window.

2.5.1 Propeller and Vessel Strikes

The most recent five-year status review for SDPS green sturgeon indicated that ship strikes have become a factor affecting the continued existence of SDPS green sturgeon (NMFS 2021). In April 2018, a white sturgeon mortality from a propeller strike was documented in the Carquinez Strait (Demetras *et al.* 2020). Since this reported mortality, other mortality events reported by concerned citizens and local fisheries biologists have occurred. In early 2020, an interagency team was formed to better understand sturgeon mortality associated with propeller and vessel strikes in San Francisco Bay. As of February 2021, in less than one year, the group had received reports of 23 sturgeon carcasses in the Carquinez Strait from members of the public (NMFS 2021). Propeller and vessel strikes are known to be a limiting factor in the recovery of Atlantic sturgeon on the East Coast (Brown and Murphy 2010) and is now a growing concern for SDPS green sturgeon.

2.5.1.1 Factors Relevant to Propeller and Vessel Strikes

For sturgeon to interact with vessels and their propellers, they must overlap spatially and temporally. First, a vessel's activity has to occur in the same portion of the bay where sturgeon are present. Then, the hull, propeller, and the hydrological forces around the vessel have to be at the same depth in the water column as the sturgeon. Factors relevant to determining the risk of vessel strikes include, but may not be limited to, the size and speed of the vessels, navigational clearance (i.e., depth of water and draft of the vessel) in the area where the vessel is operating, and the size and behavior of sturgeon in the area (e.g., foraging, migrating, etc.). Physical characteristics of the area (e.g. narrow channel, embayment, constrictions, etc.) may also be relevant risk factors.

For a vessel strike to occur, the sturgeon must either not respond to an approaching vessel (i.e. moving away) or is unable to avoid the vessel for any number of reasons. It is well documented that adult (and juvenile) sturgeon are specifically killed by interactions with vessel propellers of large vessels (Balazik *et al.* 2021, Brown and Murphy 2010, Demetras *et al.* 2020, Killgore *et al.* 2011). Therefore, it is clear that not all sturgeon respond to an approaching vessel by moving out of its way, and are not able to evade the propeller(s) even if they do attempt to move when approached by a vessel. A few studies have used VEMCO Positioning System (VPS) receiver arrays to study Atlantic sturgeon response to approaching vessels. Preliminary tracking studies in the James River indicate that Atlantic sturgeon seem to be oblivious to the threat of vessel propellers. In other words, they do not make any effort to leave the navigation channel or avoid approaching and passing deep draft vessels (Balazik *et al.* 2021), and, occasionally, the researchers observed sturgeon move into the path of an approaching vessel (Balazik *et al*. 2021).

DiJohnson (2019) studied Atlantic sturgeon responses to approaching vessels in the Delaware River similarly using a VEMCO Positioning System to monitor fine-scale movements of telemetered adults and subadults as large vessels approached. The recently completed study found no evidence that Atlantic sturgeon altered their behavior in the presence of approaching commercial vessel traffic in the Delaware River (DiJohnson 2019). Both Balazik *et al.* (2021) and DiJohnson (2019) concluded that their findings suggest that either Atlantic sturgeon do not consider vessels a threat or they cannot detect them until it is too late.

The hull of the vessel itself may hit sturgeon that fail to avoid a vessel and cause injury or mortality. It seems likely that the chance of injury and death by impact increases with the vessel's speed and mass but we do not know at what speed mortality occurs for different types of vessels or for different sizes of sturgeon. Fast vessels have been implicated in shortnose sturgeon vessel strikes but there is no information available to suggest a threshold speed at which a sturgeon is injured or killed by a vessel hull been defined. More often observed is evidence that vessel strike mortalities occur when a propeller hits a sturgeon. The propeller may hit a sturgeon that is directly in the path of a vessel or when the water being sucked through a propeller entrains a sturgeon. Entrainment of an organism occurs when a water current (in this case the current created by the propeller) carries the organism along at or near the velocity of the current without the organism being able to overcome or escape the current. Thus, as the boat propeller draws water through the propeller, it can also consequently entrain an organism in that water. Fish that cannot avoid a passing vessel, that are entrained by the propeller current, and who are unable to escape the low-pressure area in front of the propeller, will go through the propeller.

Not all fish entrained by a propeller will necessarily be injured or killed. Killgore *et al.* (2011) in a study of fish entrained in the propeller wash from a towboat in the Mississippi River, found that 2.4 percent of all fish entrained and 30 percent of shovelnose sturgeon entrained showed direct signs of propeller impact (only estimated for larger specimens). The most common injury was a severed body, severed head, and lacerations. This is consistent with injuries reported for sturgeon carcasses in the Carquinez Straight of San Francisco Bay (Demetras *et al*. 2020) and other studies on Atlantic sturgeon (Balazik *et al.* 2021, Brown and Murphy 2010).

Killgore *et al.* (2011) found that the probability of propeller-induced injury (i.e. propeller contact with entrained fish) depends on the propellers revolution per minute (RPM) and the length of the fish. Simply put, the faster the propeller revolves around its axis, the less time a fish has to move through the propeller without being struck by a blade. Similarly, the longer the fish is, the longer time it needs to move through the propeller, thereby increasing the chance that a blade hits it.

The injury probability model developed by Killgore *et al.* (2011) shows a sigmoid (or "S" shaped) relationship between fish length and injury rate at a given RPM. The model estimates that the probability of injury increased from 1% for a 12.5 cm fish to 80% for a 90 cm long fish. However, Killgore *et al.* (2011) did not find that the number of fish entrained by the propeller was dependent on RPM even though the percentage of fish killed increased with increasing RPM.

Other factors affect the probability of vessel interactions with sturgeon. For example, narrow channels can concentrate both sturgeon and vessels into smaller areas and thus increase the risk of propeller and vessel strike. Balazik *et al*. (2012b) notes that there is an inverse relationship between channel width and the number of observed vessel strike mortalities in the James River. It has been suggested that sturgeon swimming higher in the water column during migration increases their exposure to vessels (Balazik *et al*. 2021, Brown and Murphy 2010, Fisher 2011). There is a growing body of research which has shown that many Sturgeon species may not be as benthic oriented as once believed (Kelly and Klimley 2012, Watanabe *et al.* 2013, Beardsall *et al.* 2016, Goldsworthy *et al.* 2016, Breece *et al.* 2018). Using vector analysis, Kelly and Klimley (2012) found that Green sturgeon spent the majority of their time in the upper water column, often at the surface, while undergoing rapid long-distance movements in deep, high-current areas such as portions of Humboldt Bay.

2.5.1.2 Propeller and Vessel Strikes of SDPS Green Sturgeon

The work windows employed to avoid exposure to listed salmonids are not protective of the periods of time when SDPS green sturgeon are at peak abundance in the action area. While engaged in hydraulic dredging of the Station, a vessel will likely be continuously maneuvering the suction/cutter head to dredge sediment accumulations. These areas are expected to be rather shallow and located within the confined embayment of the Station, which increases the likelihood of a propeller striking an SDPS green sturgeon. SDPS green sturgeon who enter the Station while pursuing prey or to feed may encounter vessel(s) who are maneuvering and running propellers for long periods of time within a confined area. Sub-adult and adult SDPS green sturgeon are rather large fish, which increases the likelihood of being struck (Killgore *et al.* 2011). Given the relatively small numbers of SDPS green sturgeon estimated to enter Humboldt Bay each year, vessel or propeller strikes are expected to occur infrequently

The amount of time vessels are operating hydraulic suction dredge equipment within the confinement of the Station is the variable most likely to be predictive of exposures of SDPS green sturgeon to propeller strikes (it is assumed vessel speed will be very low while dredging, and the risk would of strikes would be predominantly from propeller strikes). The actual dredging portion of the Project is expected to require as long as two weeks to complete the removal of as much as 3,000cy of sediment accumulations during each dredging episode. The maximum volume to be removed over the 10-year permit (10,000cy) represents as many as seven weeks of active dredging. NMFS expects one subadult or adult SDPS green sturgeon would be struck by a propeller during one of the seven weeks of dredging within the Station. NMFS the SDPS green sturgeon individual to be injured and killed (Killgore *et al.* 2011). NMFS does not expect SONCC coho salmon, CC Chinook salmon, or NC steelhead to be struck by vessels or propellers given their small size.

2.5.2 Turbidity

The proposed project will result in temporary and localized increases in turbidity during dredging activities. Overall, increases in turbidity are expected to be temporary and localized, and often not different from conditions that occur naturally. Dredging the maximum volume (3,000cy) would require two weeks of dredging, and NMFS expects turbid conditions may be present for as long as two days after dredging is complete. Turbid conditions would be limited to the Station and a short distance outside of the Station for up to 17 days. Turbidity and increases in suspended sediments may also occur in the eelgrass mitigation area during transplanting events. Given the short duration and amount of suitable habitat available within and outside the action area, NMFS expects the effects of turbidity to not adversely affect individual SONCC coho salmon, CC Chinook salmon, NC steelhead, SDPS green sturgeon, and their designated critical habitats.

2.5.3 Entrainment

McGraw and Armstrong (1990) conducted fish entrainment studies on hopper dredge entrainment in Gray's Harbor, Washington. Results of their studies indicated that juvenile salmonids in estuaries and large river mouths are highly migratory and relatively fast swimmers, and avoided being entrained by hopper dredges. Similarly, dredge entrainment monitoring has been conducted aboard the *Essayons* during most years in San Francisco Bay since 2011, and no juvenile salmonids have been detected although they likely have been present in the area (Novotny *et al.* 2019). Taplin and Hanson (2006) evaluated salmon and steelhead entrainment at a hydraulic suction dredge used for sand mining in the Sacramento-San Joaquin Delta in 2006, and their results suggest that very few juvenile salmon (total of 8 juvenile fall-run Chinook salmon) are entrained. As previously discussed in the Status of the Species in the Action Area section, few juvenile salmonids have been captured in Humboldt Bay, and NMFS expects the small numbers of SONCC coho salmon, CC Chinook salmon, and NC steelhead to be present in the action area during certain portions of the work window. NMFS expects low numbers of

SONCC coho salmon, CC Chinook salmon, and NC steelhead to be entrained during hydraulic or suction dredging.

Available information suggests the potential for green sturgeon entrainment by a suction dredge is low. Five years of entrainment sampling by Mari-Gold Environmental Consulting and Novo Aquatic Sciences (2010) in the Sacramento-San Joaquin Delta did not observe entrainment of any sturgeon, including the more common white sturgeon. All green sturgeon in the San Francisco Estuary are also relatively large in size (i.e., typically 18 inches in length or greater), such as those in the action area in Humboldt Bay. Larger fish have stronger swimming capabilities and, thus, are less vulnerable to entrainment. NMFS does not expect any SDPS green sturgeon to be entrained into the hydraulic, suction, or cutterhead of a dredge.

2.5.4 Disposal

The effects of disposals at HOODS have been previously evaluated by NMFS as described above in the Environmental Baseline section. Therefore, the effects analysis section of this Opinion is focused on the proposed Nearshore Sand Placement Site (NSPS), where there may be turbidity and potential for burial of SONCC coho salmon, CC Chinook salmon, NC steelhead, or SDPS green sturgeon individuals. However, the areas affected by disposal are small relative to the vast area of coastal and ocean habitat available. Therefore, NMFS expects that disposal of dredged materials directly above or close by one or more listed salmonids is extremely unlikely, making risks to listed salmonids negligible.

2.5.5 Reductions in Prey

Benthic organisms and infaunal prey items would be directly removed by dredging, and the routine disturbance from dredging may prevent complete recolonization of benthic communities in dredged areas. Prey species such as Pacific sandlance, Pacific herring, early life history stages of Dungeness crab, and northern anchovies are also entrained in large numbers (Novotny 2020a,b). Northern anchovies have been the most common species collected during entrainment monitoring conducted when the *Essayons* is working in San Francisco Bay (Novotny *et al.* 2019). Because dredging and associated entrainment and removals of prey would be temporary and occur during periods of time when there is a lower abundance of salmonids, NMFS does not expect any fitness consequences to individual SONCC coho salmon, CC Chinook salmon, and NC steelhead. SDPS green sturgeon utilize large portions of the bay and would not be expected to have fitness consequences due to the temporary reduction in prey base. Overall, the direct removal of prey from the water column and from the benthic habitat will reduce the amount of available prey and adversely affect the prey values for SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon.

2.5.6 Acoustics and Noise

Dredging operations would generate noise that may include: dredge engine and exhaust noise; crane engine and exhaust noise; rope noise and bucket water splash; and various noises associated with the boom and grab, the bucket hitting the bottom during dredge, the bucket closing and opening during operation (for clamshell dredging), noise from the cutterhead (suction dredging), and transport of sediments in the floating pipe to the barge (suction dredging). The expected noise levels associated with suction or cutterhead dredging (168-174 decibels) are higher than mechanical clamshell dredging (99-124 decibels), and these levels of sound may influence the behavior of individual fish.

Although noise levels from the movement of the dredging vessels may exceed behavioral disturbance thresholds, individuals that are present within the action area during dredging are not expected to experience interruption to their normal behavior and are not expected to suffer any fitness consequences. After the proposed dredging operations are completed, noise levels would immediately return to ambient levels presently found in the area and mobile species could return. Overall, the potential noise effects from this project are expected to not cause any injuries, occur for a short-term, and be equivalent to background.

2.5.7 Effects to Critical Habitat

Critical habitat for SONCC coho salmon, CC Chinook salmon, and NC steelhead is not designated in the Pacific Ocean and therefore does not apply to portions of the action area outside of Humboldt Bay, such as HOODS. SDPS green sturgeon critical habitat is present within and outside of Humboldt Bay. The turbid conditions associated with the dredging activities is not expected to adversely affect the Migratory Corridor PBF for SONCC coho salmon, CC Chinook salmon, or NC steelhead by obstructing it. These effects are expected to ameliorate rather quickly and return to baseline conditions upon completion of dredging work and not influence the value of designated critical habitats. The adverse effects to critical habitat associated with the removals of prey were previously discussed.

2.6 Cumulative Effects

"Cumulative effects" are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation [50 CFR 402.02 and 402.17(a)]. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities are reasonably certain to contribute to climate effects within the action area. However, it is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon in the action area are likely to be affected by future, ongoing non-federal activities like marine commerce and recreational activities such as fishing. Effects in the action area originating from activities upstream of the action area will also contribute to diminished water quality or quantity, such as agriculture, water diversion, and timber harvest. Water diversions contribute to diminished stream flows and warmer water temperatures, while agriculture may increase nutrients and degrade dissolved oxygen or water clarity. The future effects of timber harvest include continued land disturbance, road construction and maintenance, and higher rates of erosion and sedimentation. These activities contribute additional sediments to Humboldt Bay, which eventually deposit in the action area and necessitate additional sediment removal actions and dredging.

2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat for the conservation of the species.

SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon have declined to a large degree from historic numbers. The small loss of SONCC coho salmon, CC Chinook salmon, and NC steelhead juveniles caused by the Project is not expected to affect future returns. The loss of one subadult or adult SDPS green sturgeon will not appreciably influence future abundance given the periodicity of spawning events. The brief periods of turbidity, reductions in prey, and underwater noise are expected to be temporary and occur on an episodic basis. These effects are not expected to influence future adult returns or contribute to population level effects that could affect either of the ESU's or DPS's.

The action area and ranges of these species are likely to be subject to higher average summer air temperatures and lower total precipitation levels due to climate change. Although the total precipitation levels may decrease, the average rainfall intensity has increased and is expected to continue to increase in the future. Higher air temperatures would likely warm stream temperatures. Reductions in the amount of precipitation would reduce stream flow levels and estuaries may also experience changes in productivity due to changes in freshwater flows, nutrient cycling, and sediment amounts. For this project, all activities would be completed by 2032 and the likely long-term effects of climate change described above are unlikely to be detected within that time frame. The short-term effects of project construction would have completely elapsed prior to these climate change effects. Overall, the project is unlikely to appreciably reduce the likelihood of survival and recovery of SONCC coho salmon, CC Chinook salmon, NC steelhead, and SDPS green sturgeon and the project is unlikely to appreciably diminish the value of designated critical habitat for the conservation of these species.

2.8 Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of SONCC coho salmon, CC Chinook salmon, NC steelhead, SDPS green sturgeon, or destroy or adversely modify their designated critical habitats.

2.9 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

2.9.1 Amount or Extent of Take

NMFS expects the Project to result in the incidental take of small numbers of juvenile SONCC coho salmon, juvenile CC Chinook salmon, and juvenile NC steelhead during one out of the next ten years (2023-2032) when dredging is expected to coincide with when SONCC coho salmon, CC Chinook salmon, and NC steelhead are present in the action area. The amount of incidental take resulting from predation cannot be enumerated because the future abundance of SONCC coho salmon, CC Chinook salmon, and NC steelhead in the action area is unknown. Therefore, NMFS characterizes take by the extent of the maximum volume of the dredging (3,000cy per episode, or 10,000cy over the ten-year permit term). NMFS expects the Project to also result in the incidental take of one sub-adult or adult SDPS green sturgeon because of a propeller strike, this individual is expected to be injured and killed.

2.9.2 Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of SONCC coho salmon, CC Chinook salmon, NC steelhead and SDPS green sturgeon:

1. The USCG shall monitor dredging activity when it is occurring.
2. The USCG shall report dredging activity annually.

2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the USCG or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The USCG or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement reasonable and prudent measure 1:

    a. The USCG shall monitor and observe for interactions with dredging equipment and SDPS green sturgeon each year that dredging is conducted, providing a report to NMFS by December 31 of that year.

2. The following terms and conditions implement reasonable and prudent measure 2:

    a. The USCG shall provide a written report to NMFS by December 31 of each year that dredging occurs, summarizing the number of days of dredging work conducted, the estimated volumes removed, and describing and documenting interactions with, or observations of wounded or killed SDPS green sturgeon, SONCC coho salmon, CC Chinook salmon, and NC steelhead.
    b. The USCG shall submit the annual report, by December 31, to Matt.Goldsworthy@noaa.gov.

2.10 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). NMFS has no conservation recommendations to suggest other than those within the MSA EFH consultation.

2.11 Reinitiation of Consultation

This concludes formal consultation for the United States Coast Guard Station Humboldt Bay Maintenance Dredging Project (2023-2032). Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) 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 the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action."

3 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration 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 or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [50 CFR 600.905(b)].

Habitat Areas of Particular Concern (HAPC) are described in the regulations as subsets of EFH that are identified based on one or more of the following considerations: the importance of the ecological function provided by the habitat; the extent to which the habitat is sensitive to human-induced environmental degradation; whether, and to what extent, development activities are, or will be stressing the habitat type; and the rarity of the habitat type (50 CFR 600.815(a)(8)). Designated HAPC are not afforded any additional regulatory protection under MSA; however, federal projects with potential adverse impacts to HAPC are more carefully scrutinized during the consultation process. The EFH consultation mandate applies to all species managed under a Fishery Management Plan (FMP) that may be present in the action area.

3.1 Essential Fish Habitat Affected by the Project

This analysis is based, in part, on the EFH assessment provided by the USCG and descriptions of EFH for the following fishery management plans (FMPs): Pacific Coast Salmon (Pacific Fishery Management Council (PFMC) 2016), coastal pelagic species (PFMC 2019a), and Pacific Coast Groundfish (PFMC 2019b). The Pacific Coast Groundfish EFH includes all waters from the mean high-water line, and the upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California seaward to the boundary of the EEZ (PFMC 2019b). The east-west geographic boundary of Coastal Pelagic EFH is defined to be all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the EEZ and above the thermocline where sea surface temperatures range between 10ºC and 26ºC. The southern extent of EFH for Coastal Pelagics is the United States-Mexico maritime boundary. The northern boundary of the range of Coastal Pelagics is the position of the 10ºC isotherm, which varies both seasonally and annually (PFMC 2019a). In estuarine and marine areas, Pacific Coast Salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent (200 miles) of the U.S. Exclusive Economic Zone (EEZ) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border (PFMC 2016). Thus, the proposed Project occurs within EFH for various Federally-managed species in the Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species FMPs. Furthermore, the action area is designated as a HAPC for Pacific Coast Salmon (estuary), and Pacific Coast Groundfish (estuary).

3.2 Adverse Effects on Essential Fish Habitat

Most of the adverse effects to EFH for the Pacific Salmon Fishery Management Plan (FMP) were previously described in the ESA portion of this document and NMFS also expects the action to adversely affect the Estuary HAPC designated for the Pacific Coast Salmon FMP. Adverse effects to the Estuary HAPC for the Pacific Coast Salmon FMP are expected to include the removal of prey via entrainment and brief periods of turbidity.

Adverse effects to EFH and Estuary HAPC for the Pacific Coast Groundfish FMP and adverse effects to EFH for Coastal Pelagic Species includes entrainment of prey for numerous managed species; entrainment of managed species; brief periods of turbidity; temporary loss of habitat; temporary or permanent elimination of infaunal prey organisms until recolonization of occurs; and disposal of dredged sediments offshore.

3.3 Essential Fish Habitat Conservation Recommendations

Most of the adverse effects from the proposed action are related to the removals of prey and of managed species themselves during dredging activities. Infaunal prey will be removed along with the dredged sediments, and other prey will be removed from the water column during hydraulic or suction dredging. In their trawling survey of Humboldt Bay, Novotny *et al.* (2020a) captured 12,048 northern anchovy and 100 Pacific herring in 2019. Northern anchovy often has been the most common species collected during entrainment monitoring conducted when the *Essayons* is working in San Francisco Bay (Novotny *et al.* 2019), and given that Northern anchovy was by far the most abundant fish species captured overall, it is reasonable to assume they likely represent one of the most affected species. Northern anchovies are a species managed under the Coastal Pelagic Species FMP, and they also are a prey item for many other species. Large numbers of Dungeness crabs, of various life stages and sizes, are well known to be entrained by hopper dredges and experience mortality rates as high as 86% (Wainwright *et al.* 1992). Larval and juvenile Dungeness crabs are a critical prey resource for a variety of Pacific Coast Groundfish species. Therefore, NMFS suggests the following Conservation Recommendations to offset or otherwise compensate for the significant adverse effects to the Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species FMPs:

1. The USCG should offset the adverse effects caused by the removal of prey species by implementing the proposed eelgrass mitigation project in 2023 or 2024. If eelgrass were restored in the former area occupied by the marine railway, productivity within the action area could be improved.
2. In order to ensure that the two eelgrass beds are not disturbed during dredging episodes: prior to dredging the USCG could insert stakes into the substrate to better mark the locations of the eelgrass beds so that the dredge operator might be able to better avoid impacting the eelgrass.

Fully implementing this EFH conservation recommendation would protect EFH and HAPC, by avoiding or minimizing the adverse effects described in section 3.2 above.

3.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the USCG must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects [50 CFR 600.920(k)(1)].

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The USCG must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations [50 CFR 600.920(l)].

4 DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the U.S. Coast Guard. Other interested users could include the California Department of Fish and Wildlife, Army Corps of Engineers, and others dependent upon dredging activities for commerce, such as commercial fishers and industrial exporters. A copy of this opinion was provided to the USCG. The format and naming adheres to conventional standards for style.

4.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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