



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OR 97232-1274

Refer to NMFS No:
WCRO-2020-02432

July 7, 2021

Kurt K. Pindel
United States Department of the Interior
Bureau of Land Management
District Manager
Spokane District Office
1103 N. Fancher Rd.
Spokane Valley, Washington 99212

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the San Juan Island National Monument Resource Management Plan (BLM Project 6840 (ORW000) P) in San Juan County, Washington (HUC 171100030300).

Dear Mr. Pindel:

Thank you for your letter of September 3, 2020, requesting initiation of 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 San Juan Island National Monument Resource Management Plan (SJINM RMP). This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

The enclosed document contains a framework programmatic biological opinion (Opinion) prepared by the NMFS pursuant to section 7(a)(2) of the ESA on the effects of the proposed action. In this Opinion, the NMFS concludes that the proposed action is not likely to jeopardize the continued existence of Puget Sound (PS) Chinook salmon, PS steelhead, Puget Sound/Georgia Basin (PS/GB) bocaccio and yelloweye rockfish, and will not result in the destruction or adverse modification of designated critical habitat for PS Chinook salmon and PS/GB bocaccio.

The NMFS has not provided an incidental take statement with this Opinion because this consultation is for a framework of actions that would be undertaken by BLM at a later time. The BLM has included a framework for undertaking hard shoreline armoring in its San Juan Island National Monument Resource Management Plan (RMP), which is a 20-year planning document. Within the framework, BLM has identified specific sites of cultural and historic value that *may* need to be armored against shoreline erosion with hard methods (e.g. rip rap) in the future due to storm events, sea level rise, or ongoing natural erosion. The BLM does not have any specific near term plan for hard shoreline armoring at this time. If BLM does move forward with hard shoreline armoring in the future, incidental take of listed species could result at that time and would require BLM to request further individual ESA Section 7 consultations. Any incidental take of listed species for those activities would be covered by these future ESA Section 7 consultations.

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Likewise, the RMP identifies vegetation management (Fire and Fuels Management) with prescribed fire and herbicides among the methods that the BLM may employ. The NMFS previously consulted with the BLM on use of herbicides and other vegetation management techniques, which included the action area under consideration in this opinion (NMFS 2015 and NMFS 2007). Those biological opinions concluded that the vegetation management techniques with associated Best Management Practices would not jeopardize listed species, including those in the action area of the Monument. Those biological opinions also include the requirement to seek individual section 7 consultation on specific actions. Because the RMP is a framework planning document without specific actions described, this consultation does not evaluate specific actions and does not constitute individual consultation. The BLM may request further individual ESA section 7 consultations on vegetation management using herbicides. Any incidental take of listed species for those activities would be covered by these future ESA section 7 consultations.

NMFS also reviewed the likely effects of the proposed action on essential fish habitat (EFH), pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)), and concluded that the action would adversely affect the EFH of Pacific Salmon essential fish habitat (EFH). Therefore, we have included the results of that review in Section 2 of this document.

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)). The NMFS concluded that the action would adversely affect designated EFH for Pacific Coast groundfish, coastal pelagic species, and Pacific Coast salmon. Therefore, we have included the results of that review in Section 2 of this document with two conservation recommendations.

Please contact Janet Curran in the North Puget Sound Branch of the Oregon Washington Coastal Office at janet.curran@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,



Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Lauren Pidot, BLM Planner
Marcia DeChadenedes, SJINM, Manager
Cindy Weston, Resource Coordinator, BLM

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

San Juan Islands National Monument Resource Management Plan
San Juan County, Whatcom County, Island County, Skagit County, Washington

NMFS Consultation Number: WCRO-2020-02432

Action Agency: Bureau of Land Management


Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Puget Sound steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	Yes	No	N/A	N/A
Puget Sound Chinook (<i>O. tshawytscha</i>)	Threatened	Yes	No	Yes	No
Puget Sound/ Georgia Basin bocaccio (<i>Sebastes paucispinis</i>)	Endangered	Yes	No	Yes	No
Yelloweye Rockfish (<i>S. ruberrimus</i>)	Threatened	Yes	No	No	N/A
Southern Resident killer whale (<i>Orcinus orca</i>)	Endangered	No	No	No	No

Fishery Management Plan That Identifies EFH in the Project 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:



Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

Date: July 7, 2021

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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 Section 2, below.

1.1 Background

The 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 402, as amended.

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 Oregon Washington Coastal Office.

1.2 Consultation History

On September 3, 2020, NMFS received a request to initiate ESA section 7 consultation from the Bureau of Land Management (BLM) for the Cultural and Paleontological (C&P) management section of their San Juan Islands National Monument Resource Management Plan (RMP). The initiation package included an ESA section 7 consultation initiation letter and biological assessment (BA) focused on their C&P management practices. We initiated consultation on October 3, 2020, based on the information provided in the BA and in the BLM's Proposed RMP and Final Environmental Impact Statement for the Monument (RMP EIS) (BLM 2019). BLM determined that certain actions related to C&P management, specifically hard shoreline armoring, may affect and is likely to adversely affect (LAA) Puget Sound (PS) steelhead, PS Chinook salmon and their critical habitat, Puget Sound/Georgia Basin (PS/GB) bocaccio and their critical habitat, and yelloweye rockfish. The BLM determined that implementation of the C&P management actions are not likely to adversely affect (NLAA) yelloweye rockfish critical habitat and Southern Resident killer whales (SRKW) and their critical habitat. The BLM also determined that implementation of the C&P management actions would adversely affect EFH for Pacific Salmon, Pacific Coast groundfish, and coastal pelagic species.

We have included a detailed analysis of potential effects of the C&P activities in this section of this opinion. The BLM determined that other activities under the RMP such as partnerships, visual resource management, science, education and interpretation would have no effects on listed species or that the BLM's best management practices (e.g. vegetation and trail maintenance) prevent the possibility of any effects to listed species or critical habitat. For these

other activities, we referred to the information in the BLM's RMP EIS and Appendix A of BA and have included a brief description of these activities and associated BMPs in Section 1.3, and a brief analysis of the likely effects of these activities.

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). For EFH consultation, federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

The BLM is developing a resource management plan (RMP) for the San Juan Islands National Monument (Monument) (BLM 2019). On March 25, 2013, President Obama signed Proclamation 8947 designating the Monument. The Monument consists of 1,021 acres of BLM managed land scattered across the San Juan Islands, which lie in the heart of the Salish Sea (Figure 1). The Monument makes up less than one percent of the total land base within the planning area, which is approximately 125,000 acres. The RMP will provide the overarching objectives and direction for the Monument. There is currently no RMP for this area. The Proposed RMP provides guidance and direction for the management of the following categories: cultural and paleontological resources, education and interpretation, habitat and plants, hazardous materials, lands and realty, natural materials collection, paleontology, partnerships, recreation and visitor services, science, tribal interests, travel and transportation, visual resource management, wilderness characteristics, wildfire response, and wildlife and fisheries resources. These activities are described below.

Cultural and Paleontological Resources (C&P)

Proclamation 8947 identified historic and cultural values and paleontological resources as objects for which the Monument was designated. The cultural importance of the Monument lands to Coast Salish tribes continues today. Cultural resources include buildings, structures, places, and archaeological sites with historical and/or cultural values, as well as sacred sites and traditional cultural properties and landscapes. There are three maritime heritage areas which are aids to navigation (i.e., lighthouse) facilities and surrounding lands at Turn Point, Patos Island, and Cattle Point. These lands also include Coast Salish cultural/ resources. The three maritime heritage areas total approximately 28 acres of Monument land. The BLM is currently aware of one paleontological resource locality within the Monument. It is likely that additional paleontological resources exist.

The proposed C&P management actions would allow both soft and hard (e.g. rip rap) shoreline stabilization methods to protect cultural and paleontological resources, except in areas within Visual Resource Management Class 1. Under the proposed RMP, 242 acres of rocks and islands would be designated as Visual Resource Management Class 1 and would not be eligible for shoreline armoring. For other properties, the BLM will only consider hard stabilization where soft shoreline stabilization would not effectively protect resources. Possible uses of hard stabilization would be to protect lighthouses and associated structures, burial sites, and other cultural resources. To date, only soft stabilization methods have been used (vegetation planting,

fabric, etc.) within the Monument. Based on the amount of erodible shoreline within the Monument and the BLM's current knowledge of the resources, the BLM estimates that over the approximate 20 year planning horizon, up to a total of 1,800 linear feet of shoreline may require stabilizing with hard armoring methods. The proposed action establishes a framework for future planning of shoreline armoring.

Any hard shoreline stabilization during the life of the plan would require additional project-level planning, including project-specific section 7 ESA consultation with NMFS. It is possible that no hard stabilization would be implemented over the 20-year life of the plan. If shoreline arming is needed, the BLM would follow the 2014 Washington State Marine Shoreline Design Guidelines (Johannessen et al 2014), U.S. Army Corps of Engineers in-water work timing, and all other applicable regulations and guidance. If hard stabilization becomes necessary, the BLM would look for opportunities to provide in kind offsetting habitat improvements, such as removing shoreline armoring elsewhere. Since the BLM has not used hard stabilization to date, restoration of armored sites would require partnerships with other landowners/land managers and may or may not be a feasible option. Otherwise, the BLM will minimize project effects to the extent possible onsite through project design and conservation measures as riparian vegetation planting.

Other Management Activities

Non-Land Disturbing Activities

The following categories of activities do not involve land disturbance or other actions that necessitate best management practices or impact reduction measures:

- Partnerships
- Visual Resource Management
- Science
- Education and Interpretation

Land Disturbing Activities

Among other management categories (habitat and plants, hazardous materials, lands and realty, natural materials collection, recreation and visitor services, tribal interests, travel and transportation, wilderness characteristics, wildfire response, and wildlife and fisheries resources), the BLM identified core activities that might affect water quality as follows:

- Vegetation Management (Fire and Fuels Management, Habitat Restoration)
- Recreation management (Boating and Upland Visitation)
- Road and Trail Maintenance and Construction
- Spill Prevention and Abatement.

Appendix A of the BA details the BMPs that will be implemented with these core activities. The BMPs focus on avoidance, structural and nonstructural treatments, and operations and maintenance procedures to minimize soil disturbance and protect water quality. The Monument does not include any lotic (flowing) riparian systems/streams. On Lopez Island there are ponded and wetland areas that do not contain listed fish species (Chadwick Marsh). The BLM will focus the application of BMPs so as to prevent or minimize the potential to affect the water quality of

non-flowing freshwater riparian-wetland systems and marine areas adjacent to the Monument, primarily through establishing work zone setbacks from aquatic areas, minimizing soil disturbance, and utilizing erosion control techniques.

Vegetation Management (Fire and Fuels Management, Habitat Restoration)

The purpose of vegetation management under the RMP is to enhance the San Juan Islands' ecological resistance and resilience to threats including high intensity wildfire, drought, insect pests, disease, and climate change by increasing the extent of native plant communities, specifically grasslands and wetlands (BLM EIS 2019). For vegetation management using herbicides and fire, the BLM will follow its mandated standard operating procedures (Appendix A of the BA, Appendix U of BLM EIS). Some of the standard operating procedures address water quality and serve the function of BMPs, such as establishing herbicide-free buffer zones adjacent to aquatic habitat.

The BLM would also implement some vegetation treatments to protect human health and safety (i.e., hazard tree removal) and to control invasive plant species. Vegetation management can include mechanical, biological, chemical, and prescribed fire treatments. Vegetation treatments include hand pulling, digging, surface scarring, tilling, and tree removal. No specific vegetation management plans are yet proposed.

Recreation Management (Boating and Upland Visitation)

The BLM has divided the Monument into 16 Recreation Management Areas (RMAs). The RMAs are managed to facilitate recreation that is compatible with protecting sensitive cultural and ecological resources. The management scheme includes allowing recreation in certain areas, prohibiting access to sensitive areas, and establishing rules for the public while on Monument lands. The rules include staying on designated trails, obtaining permits for camping in designated areas, and prohibiting many activities (e.g. fireworks) that are not compatible with the objectives of the Monument. Under the proposed RMP, the following activities are allowed in certain areas camping, hunting, hiking (14.9 miles), horse trails (2.1 miles), motorized road access (1 mile).

Recreational access to the Monument also includes landing small boats and kayaks on accessible shorelines. Under the Proposed RMP, 18.3 miles of Monument shoreline will remain open to recreational boat landing. The BLM will prohibit recreational use, including boat landing, on 29 acres of islands (Toad Island, Fauntleroy rock, Little Patos Island, Lummi rocks, McConnell rocks, Mud Island, Oak Island, Parks Bay Island, Richardson rock, and Twin rocks). It will also prohibit motorized boat landing at Watmough Bay in order to reduce potential disruption to juvenile forage fish close to shore, though recreational use of the area would otherwise be permitted. Under the proposed RMP, the Monument shoreline available for recreational boat landing would decrease by 14 percent. Small motorboats occasionally land at Watmough Bay; this prohibition will remove this opportunity on 0.2 miles of shoreline to protect potential forage fish spawning.

Road and Trail Maintenance

There are currently no officially designated roads or trails in the Monument. All existing roads (1 mile total) are currently open to motorized and non-motorized public access. Existing trails are user created and lack planning for best location to avoid user conflicts and impacts. Under the proposed RMP, the road and trail network will undergo official designation for uses and include 14.9 miles of hiking trail. This 14.9 miles of trail will constitute a reduction of 7 percent compared to existing conditions of the unofficial trail network and will also include 2.9 miles of new trail. The Monument will have 2.1 miles of horse trail and one mile of motorized road access, although implementation level planning is pending that may alter specific locations and uses as the BLM implements the proposed RMP. Any new trail development/relocation or maintenance of existing trails will follow BMPs for erosion control to protect water quality and cultural resources.

Spill Prevention and Abatement

The RMP includes utilizing standard BMPs for spill prevention, such as establishing setbacks for refueling equipment (e.g. no refueling with 100 feet of surface waters), and procedures for handling, using, and storing hazardous materials. The RMP also establishes a framework for creating spill prevention and abatement plans at an implementation level for potential future actions and response plans for accidental spills.

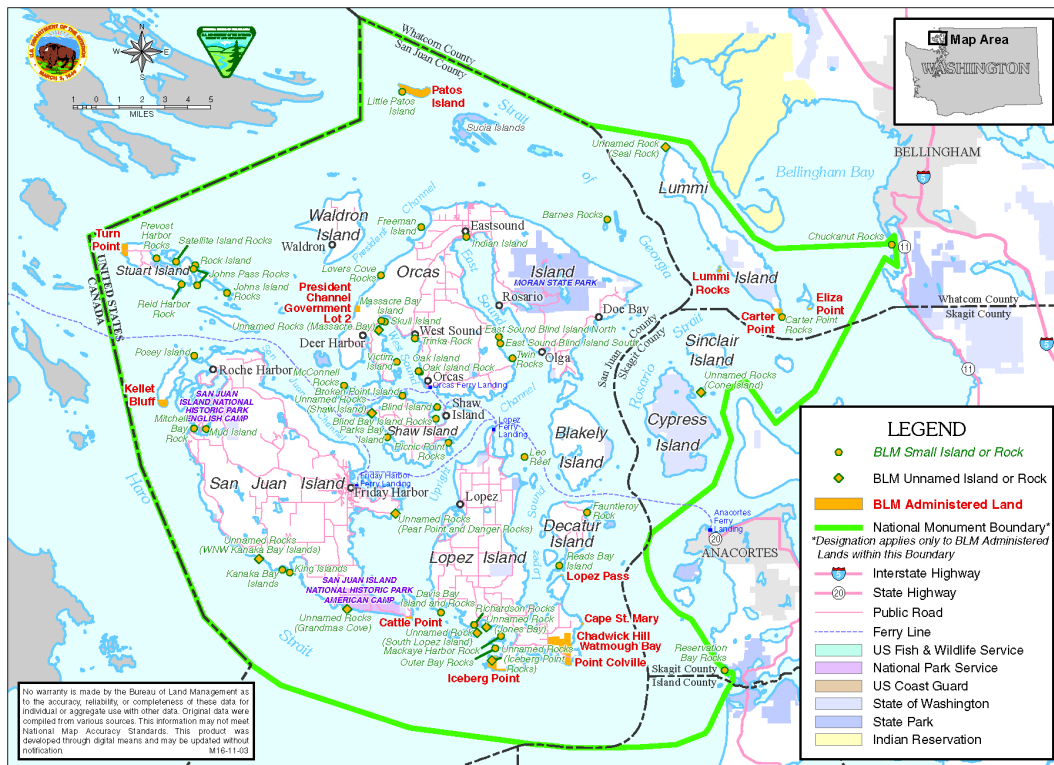


Figure 1. Map of the San Juan Island National Monument Planning Area. The BLM properties are scattered throughout the San Juan Islands and also include sites in neighboring Skagit and Whatcom Counties. Endangered Species Act: Biological Opinion And Incidental Take Statement

1.5.1 Rangewide Status of the Species

This section provides a summary of listing and recovery plan information, status, and limiting factors for the species addressed in this opinion (Table 1). These documents are available on the NMFS West Coast Region website (<http://www.fisheries.noaa.gov/>). Acronyms appearing in the table include DPS (Distinct Population Segment), ESU (Evolutionarily Significant Unit), MPG (Multiple Population Grouping), NWFSC (Northwest Fisheries Science Center), TRT (Technical Recovery Team), and VSP (Viable Salmonid Population).

The NMFS issued results of a five-year status review of all ESA-listed salmon and steelhead species on the West Coast, on May 26, 2016 (81 FR 33469), and concluded that PS Chinook salmon and PS steelhead should remain listed as threatened. As part of the review, NOAA's Northwest Fisheries Science Center evaluated the viability of the listed species undergoing 5-year reviews and issued a review providing updated information and analysis of the biological status of the listed species (NWFSC 2015). The NMFS' 2016 Status Review incorporated the findings of the Science Center's report, summarized new information concerning the delineation of the ESU and inclusion of closely related salmonid hatchery programs, and included an evaluation of the listing factors (NMFS 2017a). On October 4, 2019 NMFS published 84 FR 53117, requesting updated information on all listed Puget Sound salmonid populations to inform the most recent five-year status review anticipated for completion in 2021¹.

¹ Because the newer status reviews for Puget Sound salmonids are pending completion in 2021, NMFS examined newer information in the latest biological opinion for the harvest management in Puget Sound (WCR-2020-00960, May 2020) (NMFS 2020). In that opinion, where possible, the status review information is supplemented with more recent information and other population specific data that may not have been considered during the 2015 status reviews so that NMFS was assured of using the best available information within its biological opinion for harvest management. That information is incorporated here by reference. It shows more detailed trends in adult returns for particular subpopulations, but we note here that the proposed action under consideration in this opinion does not affect any one particular subpopulation over another, such that the inclusion of this additional information did not change our analysis or conclusions. For the rockfish species, the harvest opinion relied upon the same information as the references in this document in Table 1.

Table 1 Listing classification and date, recovery plan reference, most recent status review, status summary, and limiting factors for each species considered in this opinion.

Species	Listing Classification and Date	Recovery Reference	Plan	Most Recent Status Review	Status Summary	Limiting Factors
Puget Sound steelhead	Threatened 5/11/07	NMFS 2019		NWFSC 2015	This DPS comprises 32 populations. The DPS is currently at very low viability, with most of the 32 populations and all three population groups at low viability. Information considered during the most recent status review indicates that the biological risks faced by the Puget Sound Steelhead DPS have not substantively changed since the listing in 2007, or since the 2011 status review. Furthermore, the Puget Sound Steelhead TRT recently concluded that the DPS was at very low viability, as were all three of its constituent MPGs, and many of its 32 populations. In the near term, the outlook for environmental conditions affecting Puget Sound steelhead is not optimistic. While harvest and hatchery production of steelhead in Puget Sound are currently at low levels and are not likely to increase substantially in the foreseeable future, some recent environmental trends not favorable to Puget Sound steelhead survival and production are expected to continue.	<ul style="list-style-type: none"> • Continued destruction and modification of habitat • Widespread declines in adult abundance despite significant reductions in harvest • Threats to diversity posed by use of two hatchery steelhead stocks • Declining diversity in the DPS, including the uncertain but weak status of summer-run fish • A reduction in spatial structure • Reduced habitat quality • Urbanization • Dikes, hardening of banks with riprap, and channelization
Puget Sound Chinook salmon	Threatened 6/28/05 (70 FR 37159)	Shared Strategy for Puget Sound 2007 NMFS 2006		NWFSC 2015	This ESU comprises 22 populations distributed over five geographic areas. Most populations within the ESU have declined in abundance over the past 7 to 10 years, with widespread negative trends in natural-origin spawner abundance, and hatchery-origin spawners present in high fractions in most populations outside of the Skagit watershed. Escapement levels for all populations remain well below the TRT planning ranges for recovery, and most populations are consistently below the spawner-recruit levels identified by the TRT as consistent with recovery.	<ul style="list-style-type: none"> • Degraded floodplain and in-river channel structure • Degraded estuarine conditions and loss of estuarine habitat • Degraded riparian areas and loss of in-river large woody debris • Excessive fine-grained sediment in spawning gravel • Degraded water quality and temperature • Degraded nearshore conditions • Impaired passage for migrating fish • Severely altered flow regime

Species	Listing Classification and Date	Recovery Reference	Plan	Most Recent Status Review	Status Summary	Limiting Factors
Puget Sound/ Georgia Basin DPS of Bocaccio	Endangered 04/28/10	NMFS 2017		NMFS 2016	Though bocaccio were never a predominant segment of the multi-species rockfish population within the Puget Sound/Georgia Basin, their present-day abundance is likely a fraction of their pre-contemporary fishery abundance. Most bocaccio within the DPS may have been historically spatially limited to several basins within the DPS. They were apparently historically most abundant in the Central and South Sound with no documented occurrences in the San Juan Basin until 2008. The apparent reduction of populations of bocaccio in the Main Basin and South Sound represents a further reduction in the historically spatially limited distribution of bocaccio, and adds significant risk to the viability of the DPS.	<ul style="list-style-type: none"> • Over harvest • Water pollution • Climate-induced changes to rockfish habitat • Small population dynamics
Puget Sound/ Georgia Basin DPS of yelloweye Rockfish	Threatened 04/28/10	NMFS 2017		NMFS 2016	Yelloweye rockfish within the Puget Sound/Georgia Basin (in U.S. waters) are very likely the most abundant within the San Juan Basin of the DPS. Yelloweye rockfish spatial structure and connectivity is threatened by the apparent reduction of fish within each of the basins of the DPS. This reduction is probably most acute within the basins of Puget Sound proper. The severe reduction of fish in these basins may eventually result in a contraction of the DPS' range.	<ul style="list-style-type: none"> • Over harvest • Water pollution • Climate-induced changes to rockfish habitat • Small population dynamics

1.5.2 Rangewide Status of the Critical Habitat

This section describes the status of designated critical habitat affected by the proposed action by examining the condition and trends of the essential physical and biological features of that habitat throughout the designated areas. These features are essential to the conservation of the ESA-listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration and foraging).

For most salmon and steelhead, NMFS's critical habitat analytical review teams (CHARTs) ranked watersheds within designated critical habitat at the scale of the fifth-field hydrologic unit code (HUC5) in terms of the conservation value they provide to each ESA-listed species that they support (NMFS 2005). The conservation rankings were high, medium, or low. To determine the conservation value of each watershed to species viability, the CHARTs evaluated the quantity and quality of habitat features, the relationship of the area compared to other areas within the species' range, and the significance to the species of the population occupying that area. Even if a location had poor habitat quality, it could be ranked with a high conservation value if it were essential due to factors such as limited availability, a unique contribution of the population it served, or is serving another important role.

A summary of the status of critical habitats considered in this opinion is provided in Table 2 below. Steelhead critical habitat is not designated in the action area. Yelloweye rockfish critical habitat (deep water) is addressed in Section 1.15.

Table 2. Critical habitat, designation date, federal register citation, and status summary for critical habitat considered in this opinion

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Puget Sound Chinook salmon	9/02/05 70 FR 52630	Critical habitat for Puget Sound Chinook salmon includes 1,683 miles of streams, 41 square mile of lakes, and 2,182 miles of nearshore marine habitat in Puget Sounds. The Puget Sound Chinook salmon ESU has 61 freshwater and 19 marine areas within its range. Of the freshwater watersheds, 41 are rated high conservation value, 12 low conservation value, and eight received a medium rating. Of the marine areas, all 19 are ranked with high conservation value.
Puget Sound/Georgia Basin DPS of bocaccio	11/13/2014 79 FR68042	Critical habitat for bocaccio includes 590.4 square miles of nearshore habitat and 414.1 square miles of deepwater habitat. Critical habitat is not designated in areas outside of United States jurisdiction; therefore, although waters in Canada are part of the DPSs' ranges for all three species, critical habitat was not designated in that area. Based on the natural history of bocaccio and their habitat needs, NMFS identified two physical or biological features, essential for their conservation: 1) Deepwater sites (>30 meters) that support growth, survival, reproduction, and feeding opportunities; 2) Nearshore juvenile rearing sites with sand, rock and/or cobbles to support forage and refuge. Habitat threats include degradation of rocky habitat, loss of eelgrass and kelp, introduction of non-native species that modify habitat, and degradation of water quality as specific threats to rockfish habitat in the Georgia Basin.

1.6 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 this project includes the immediate shorelines of the Monument, which are scattered across the San Juan Islands (Figure 1), that the BLM has identified as potentially needing hard shoreline armoring. In total this includes 1,800 linear feet among scattered locations. The action area also includes upland staging areas and nearshore marine waters within 300 feet where construction related turbidity may occur briefly during construction.

1.7 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).

Status of Species in Action Area

The majority of the Monument lands are on the coastline of San Juan Islands within San Juan County (Figure 1). There are several small rock islands in neighboring counties. These rock islands are in areas within BLM’s Visual Resource Management Class 1. Under the proposed RMP, 242 acres of these rocks and islands would be designated as Visual Resource Management Class 1 and would not be eligible for shoreline armoring.

Much of the shoreline within Puget Sound has been modified (historically and recently) for agricultural, industrial, and residential uses. San Juan County has the lowest modification level in the Puget Sound region, with around 5 percent of its shorelines modified (Friends of the San Juans 2011). The Monument encompasses a small fraction of the total nearshore habitat in the San Juan Islands. Nearshore habitat in the San Juan Islands is predominantly in private ownership. Reasonably foreseeable effects to nearshore habitat both near the Monument and within the San Juan Islands in general include shoreline erosion and modification due to rising sea levels and shoreline development. The majority of shoreline development and impact has occurred historically. Over 600 marine shoreline alterations have been identified in San Juan County (San Juan County 2013), with approximately 20 miles of hard shoreline armoring among the 400 miles of coastline. The contribution of non-federal activities to those conditions include past and on-going shoreline development, vessel activities, and upland urbanization. Those actions were driven by a combination of economic conditions that characterized traditional natural resource-based industries, general resource demands associated with settlement of local

and regional population centers, and the efforts of social groups dedicated to restoration and use of natural amenities, such as cultural inspiration and recreational experiences.

The BLM anticipates that visitorship to Monument Lands and adjacent shorelines will increase over time as a baseline condition as the human population in the region increases. The Monument lands and shorelines are currently open to the public, but without a comprehensive lands management plan.

Monument Lands

Forest and woodlands cover more than 800 acres of the Monument. Non-wetland grassland and shrubland constitute 126 acres of the Monument and wetlands cover 32 acres. No streams or flowing wetlands occur on Monument lands. Conditions of the nearshore environment are described below under Critical Habitat. Within the uplands, there are 14.9 miles of existing unofficial foot trails and one mile of motorized road.

Within the San Juan Islands, there are no spawning streams for salmon or steelhead. Salmonids in the action area spawn outside of the action area and move through the San Juans on their way to and from the Pacific Ocean as they complete their anadromous lifecycle. According to the San Juan County Salmon Recovery Plan, Puget Sound Chinook salmon from all 22 extant populations have the potential to occupy the area (SSPS 2007). Outmigrating young of the year PS Chinook salmon generally occur in the San Juans from May through September. These juvenile fish utilize the shoreline but are no longer strictly nearshore dependent. These fish have left their natal rivers and traveled through open water to reach the San Juans.

Chinook salmon rely heavily on terrestrial invertebrates while transitioning from their natal rivers, through estuaries, and into Puget Sound, with the Puget Sound shoreline being vital habitat for Chinook salmon juveniles. Diet studies in the San Juans indicate that juvenile Chinook salmon rely more heavily on forage fish, particularly sandlance and herring, compared to juvenile Chinook salmon near their natal rivers (the Chinook salmon are becoming larger and more piscivorous as they mature) (Barsh et al. c2011). There is still seasonal use of crustaceans and terrestrial invertebrates in the San Juans, but Chinook juveniles appear to forage on sandlance and herring more heavily when this prey is available in the waters around the San Juan Islands (Barsh et al. c2011). This indicates that Chinook salmon are no longer strictly shoreline dependent while in the San Juans, yet the shoreline habitat of the San Juans is still vitally important to Chinook salmon, particularly where there is suitable forage fish spawning habitat. Puget Sound steelhead also use the shoreline of the San Juans, although these fish are known to travel quickly out to the Pacific Ocean once they leave their natal rivers.

NMFS adopted a recovery plan for both PS/GB bocaccio and yelloweye rockfish in 2017. There are no estimates of historic or present-day abundance of yelloweye rockfish, or PS/GB bocaccio across the full DPSs area. In 2013, the WDFW published abundance estimates from a remotely operated vehicle survey conducted in 2008 in the San Juan Island area (Pacunski et al. 2013). This survey was conducted exclusively within rocky habitats and represents the best available abundance estimates to date for one basin of the DPS. The survey produced estimates of 47,407 (25 percent variance) yelloweye rockfish, and 4,606 (100 percent variance) PS/GB bocaccio in the San Juan area (Tonnes et al. 2016).

Further, data suggest that total rockfish declined at a rate of 3.1 to 3.8 percent per year from 1977 to 2014 or a 69 to 76 percent total decline over that period. The two listed DPSs declined over-proportionally compared to the total rockfish assemblage. Therefore, long-term population growth rate for the listed species was likely even lower (more negative) than that for total rockfish assemblage.

Larval rockfish rely on nearshore habitat. The nearshore is generally defined as habitats contiguous with the shoreline from extreme high water out to a depth no greater than 98 feet (30 m) relative to mean lower low water. This area generally coincides with the maximum depth of the photic zone and can contain physical or biological features essential to the conservation of many fish and invertebrate species, including PS/GB bocaccio. A study of rockfish in Puget Sound found that larval rockfish appeared to occur in two peaks (early spring, late summer) that coincide with the main primary production peaks in Puget Sound. Both measures indicated that rockfish ichthyoplankton essentially disappeared from the surface waters by the beginning of November. Densities also tended to be lower in the more northerly basins (Whidbey and Rosario), compared to Central and South Sound (Greene and Godersky 2012).

Young-of-year juvenile bocaccio occur on shallow rocky reefs and nearshore areas (Moser 1967; Anderson 1983; Kendall and Lenarz 1986; Carr 1991; Love et al. 1991; Love 1996; Murphy et al. 2000; Love et al. 2002). Young bocaccio associate with macroalgae, especially kelps (*Laminariales*), and sandy areas that support seagrasses. They form aggregations near the bottom in association with drift algae and throughout the water column in association with canopy-forming kelps. It is likely that nearshore habitats used by juvenile bocaccio and other rockfish juveniles offer a beneficial mix of warmer temperatures, food, and refuge from predators (Love et al. 1991). Habitat formed by kelp provides structure for feeding, refuge from predators, and reduced currents that enable energy conservation for juvenile bocaccio.

Juvenile yelloweye rockfish are not typically found in intertidal waters (Love et al. 1991; Studebaker et al. 2009). A few juveniles have been documented in shallow nearshore waters (Love et al. 2002; Palsson et al. 2009), but most settle in habitats along the shallow range of adult habitats in areas of complex bathymetry and rocky/boulder habitats and cloud sponges in waters greater than 98 feet (30 m) (Richards 1986; Love et al. 2002; Yamanaka et al. 2006). In British Columbia, juvenile yelloweye rockfish have been observed at a mean depth of 239 feet (73 m), with a minimum depth of 98 feet (30 m) (Yamanaka et al. 2006). Juvenile yelloweye rockfish occur in similar habitats as adults, though in areas with smaller crevices, including cloud sponge formations, crinoid aggregations on top of rocky ridges, and over cobble substrates (Weispenning 2006; Yamanaka et al. 2006).

Status of Critical Habitat in the Action Area

Steelhead critical habitat is not designated in the action area. We made a “not likely to adversely affect” determination for yelloweye rockfish critical habitat (deep water). Therefore, yelloweye critical habitat is addressed in Section 1.15 of this opinion. For Puget Sound Chinook salmon and for PS/GB bocaccio, the nearshore marine habitat of the San Juan Islands overlaps with the critical habitat of both these species from the upper beach area at the extreme high tide line to a depth no greater than 30 meters relative to mean lower low water. For Puget Sound Chinook

salmon, properly functioning PBFs in the nearshore marine areas are described as: (1) Areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and (2) Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

For PS/GB bocaccio, properly functioning PBFs are described as: (1) Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and (2) Water quality and sufficient levels of dissolved oxygen (DO) to support growth, survival, reproduction, and feeding opportunities. Important habitat features include juvenile rearing sites with sand, rock and/or cobbles to support forage and refuge. Habitat threats include degradation of rocky habitat, loss of eelgrass and kelp, introduction of non-native species that modify habitat, and degradation of water quality. PS/GB bocaccio also have a deepwater component to critical habitat at depths greater than 30 meters that supports feeding opportunities and predator avoidance.

Nearshore habitats within the action area include shoreline, high impact surf zones, kelp forest, and seagrass beds. Shoreline habitat in the action area comprises both sandy/gravelly (unconsolidated) shoreline and rocky shoreline. San Juan County has the lowest modification level in the Puget Sound region, with around 5 percent of its shorelines modified (Herrera 2011, Friends of the San Juans 2011). In addition to being less heavily developed than other parts of the Puget Sound region, much of the San Juan County shoreline is rocky, and so less vulnerable to erosion. Based on lack of disturbance and minimal shoreline stabilization, shorelines in (above mean high tide) and adjacent to (below mean high tide) the Monument are assumed to be in good condition. Under current conditions (without the adoption of the RMP), 21.2 miles of the Monument shoreline are open to boat/kayak landing on the Monument shoreline. Of the one mile of road on Monument lands, 0.1 mile of road is open to the public for motorized use with 200 feet of nearshore marine habitat. Of the existing trails (14.9 miles) on the Monument, 8.7 miles of foot trails occur within 200 feet of the nearshore marine area. With no flowing surface waters on Monument lands, under these existing conditions, the trail network may contribute low level sediment runoff to marine waters. Existing stormwater runoff from the one mile of motorized roadway either flows to roadside ditches and infiltrates into the adjacent soil or, at Watmough Bay, there are few culverts that direct stormwater into some seasonal freshwater wetlands. These wetlands do not have any direct connection to marine waters and do not contain listed fish (J. Townley, pers. comm. 6/3/2021).

Native eelgrass covers an estimated nine percent of Puget Sound below the mean lower low water mark, and is found along roughly 20 percent of San Juan County shoreline. Eelgrass occurs as patches or narrow bands near the shore, or as solid meadows in the subtidal zone. Eelgrass and other seagrasses provide physical structure and trophic support for the biological community and is nursery habitat for many sensitive species including salmon (Murphy et al. 2000, Mumford 2007).

The condition (quality and extent) of seagrass beds can be reduced by introduction of toxicants, sediment delivery leading to mechanical abrasion, burying, turbidity, and mechanical loss during moorings. Seagrass conditions have remained stable or improved in the San Juan Islands

generally, but eelgrass beds in bays such as Watmough Bay have seen substantial long-term declines (Christiaen et al. 2017). Seagrass beds are indicators of adequate water quality and absence of heavy disturbance or nuisance algae.

Based on observed declines, the BLM assumes the quality of seagrass habitat in Watmough Bay is reduced from reference conditions, while seagrass communities in less enclosed inlets adjacent to the remainder of the Monument are in better condition. Sediment cycles in the Monument appear to be within historic ranges. No sediment plumes from Monument lands have been observed, and existing nearshore habitat does not show evidence of high sediment delivery, such as silting-in of seagrass beds or forage fish spawning areas. However, water quality impacts from non-point source pollutants (roads, boats, etc.) appear to be high enough to lead to seagrass bed declines in adjacent nearshore areas with less flushing (e.g., Watmough Bay) (Christiaen et al. 2019). The unusually high temperatures in 2015 and 2016 also may have played a role in localized eelgrass declines (Christiaen et al. 2019).

Kelp forests in the San Juan Islands may include multiple species of algae, often dominated by bull kelp (*Nereocystis luetkeana*). Most kelp forests occur in the shallow subtidal zone from the mean low water mark to about 65 feet below this mark and are associated with high-energy environments (Mumford 2007). Floating kelp species occur along approximately 31 percent of San Juan County's shoreline, while non-floating kelps occur along 63 percent (Mumford 2007). Kelp forests provide refuge habitat for a number of fish species (Mumford 2007). Through food web interactions, kelp forests are an important community for sea urchins, herring, crabs, mollusks, and a variety of marine mammals including sea otters and whales (Steneck et al. 2002, Mumford 2007, NOAA 2010).

Kelp forests showed declines in recent state-wide surveys, including substantial declines in the Straits of Juan de Fuca (WDNR 2015). Diverse factors influence kelp forest stability including kelp harvest, plant competition, storms, El Niño events, sedimentation, pollution, and grazing by fishes, sea urchins, and crustaceans (NOAA 2017). Non-point and point source pollution including sewage, industrial disposal, and runoff might contribute to this decline. High sedimentation from run-off may bury new plant shoots. Studies on microscopic stages of kelp suggest it is sensitive to poor water and sediment quality (NOAA 2017). Based on lack of point source pollution, limited non-point pollution, and mostly open marine systems, it is assumed that kelp forests adjacent to the Monument support moderately healthy conditions. Threats facing the shorelines of San Juan Islands include climate change-induced sea level rise, geologic events, invasive species, human disturbance, contaminants, and marine debris.

1.8 Effects of the Action

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (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). Our analysis for this framework action

considers the effects of carrying out shoreline stabilization within the action area given the BLM's proposed management practices for this activity. Individual shoreline stabilization projects will be evaluated in future section 7 consultations.

1.8.1 Effects to Listed Species

The BLM anticipates that visitorship to Monument Lands and adjacent shorelines will increase over time as a baseline condition as the human population in the region increases. Overall, the RMP takes this increase in visitorship into account in its management schemes (e.g. designating official trails, increasing signage) and implementation BMPs (trail erosion maintenance) to reduce the existing effects that humans have on the natural and cultural resources within the Monument and to reduce the effects associated with increased visitorship over time.

Cultural and Paleontological Resources (C&P)

Hard shoreline armoring would adversely affect listed species and designated critical habitat. The BLM determined that over the course of the 20-year planning horizon of the RMP that a maximum of 1,800 linear feet of shoreline may require hard shoreline armoring. The BLM also acknowledges that no shoreline armoring or less than 1,800 linear feet may actually occur over the next 20 years. The 1,800 linear feet is a maximum estimate based on potential future erosion at known cultural burial sites and historic structures. The BLM would first consider softer stabilization methods and only use hard armoring when necessary. Other aspects of the RMP will not affect listed species or critical habitat by the nature of the activity (e.g. partnerships) or BMPs will avoid effects to species and habitat (trail maintenance with BMPs that prevent soil erosion).

The pathway for potential effects to listed species and critical habitat is from short-term construction related disturbance and long-term habitat alteration. The BLM will first consider the feasibility of softer methods of stabilization such as vegetation planning and fabrics. If hard shoreline stabilization is required, the BLM will use best management practices (BMPs) to reduce the potential for directly harming listed species. Work would involve placing rip-rap along the shoreline using land based equipment. The work will be performed in the dry at low tides over the course of days to a few weeks per site. The BLM will minimize the intensity of turbid waters by working in the dry and stabilizing the work area before the next high tide. BMPs will limit the extent of any turbidity plume to approximately 200 to 300 feet from the construction area. The BLM will also follow established in-water work windows per US Army Corps of Engineers permitting requirements at the time of construction. The work windows avoid peak migration times for juvenile salmonids in the spring and early summer with an additional overlay for forage fish spawning if suitable forage fish spawning habitat is in the project area.

Short Term Effects to Salmonids

Despite in-water work window restrictions, small numbers, relative to their respective subpopulations, of Puget Sound Chinook salmon and PS steelhead could potentially occur in the action area during the in-water construction activities. If present, fish could be exposed to excess

turbidity and noise. However, few, if any, PS steelhead are likely to occur in the immediate area during construction. Steelhead smolts are generally 2-3 years old and over 160 mm long by the time they enter marine water. At this age and size, they are not dependent on shallow nearshore areas and are not commonly caught in beach seine surveys. Steelhead generally head out to sea quickly after leaving their natal rivers. Moore et al. (2010) used acoustic tags to track steelhead smolt outmigration. Steelhead travel time from river mouth to Pacific Ocean ranged from an average of 6.2 days (Green River smolts) to 17.4 days (Skokomish River smolts). Therefore, juvenile steelhead are unlikely to be exposed to construction activities. Any steelhead near a construction site would be mobile enough to move away from the disturbance without harm.

If present, PS Chinook juveniles would likely be 2 gram yearlings or older and they would not be nearshore dependent. Barsh et al. (c2012) found juvenile Chinook salmon in the San Juans were between 100 and 130 mm fork length with slightly larger fish at Watmough Bight. Not being shoreline obligated at this point in their life history, most if not all would be unlikely to be exposed to a localized sediment plume or the fish would be large and mobile enough to avoid the work area without harm. The effects of turbidity on fish are species and size dependent. In general, severity typically increases with sediment concentration and duration of exposure, and decreases with the increasing size of the fish. Newcombe and Jensen (1996) reported minor physiological stress in juvenile salmon only after about three hours of continuous exposure to concentration levels of about 700 to 1,100 mg/L. To the extent that PS Chinook salmon are present in the areas with elevated suspended sediment, they are expected to be of sufficient size to swim away from these areas, which would also limit the potential for, and duration of, exposure. Construction-related turbidity would be very short-lived and at concentrations too low to cause more than temporary, non-injurious behavioral effects (e.g., avoidance of the plume) or a temporary reduction in feeding activity (Newcombe and Jensen 1996). Furthermore, any migrating adult PS Chinook salmon or PS steelhead would be migrating in deeper waters, outside of the immediate construction area, and would not be affected by low level, localized turbidity.

Minor construction noise from land based equipment may startle fish, but would not cause direct harm or significant behavioral or physiological effects on PS Chinook salmon and PS steelhead. Construction equipment will work from land. Land based equipment will generate noise levels far below the 150 dB_{SEL} threshold known to physically harm fish because the project does not include impact pile driving (Stadler and Woodbury 2009). The equipment may cause low-level, rumbling sounds that may dissuade fish from passing by the work area temporarily and intermittently within tens of feet of the work area over the course of days to a few weeks of construction. This low-level disturbance is considered biologically and behaviorally inconsequential because the life stages of PS Chinook salmon and PS steelhead that could occur in the action area would no longer be nearshore dependent; they will be highly mobile and able to avoid the work area without harm or significant behavioral modification.

Short Term Effects to Rockfish

We analyzed potential impacts of construction on three life stages of PS/GB bocaccio and yelloweye rockfish and determined that these fish species would be unlikely to be harmed during construction. Adult life stages of both species typically occupy waters deeper than 120 feet and

therefore would not be exposed to disturbance within the shallow waters of the construction areas along the shoreline. The overall abundance of rockfish is far smaller than salmon, thus the likelihood of exposure of these species to construction impacts is far lower.

Juvenile bocaccio utilize cobble substrates that support kelp or other aquatic vegetation in nearshore areas, therefore juvenile bocaccio could be within the vicinity of a construction area and exposed to brief pulses of turbid waters and construction noise. It is unlikely that juvenile bocaccio would be directly harmed by low levels of turbidity and sound. The BLM will use BMPs to minimize the severity of turbidity and incoming and outgoing tides, currents, and waves will rapidly dilute disturbed sediments. Construction equipment working from land may generate rumbling noise that could startle juvenile bocaccio, but this disturbance will be transitory and unlikely to cause harm or significant behavioral changes. Juvenile yelloweye rockfish typically occupy deep water and would not be exposed to turbidity and noise close to the shoreline in relatively shallow waters.

Larval bocaccio and larval yelloweye rockfish are also unlikely to occur near any one particular construction area. Larvae are readily dispersed by currents after they are born, making the concentration or probability of presence of larvae in any one location extremely small. Accordingly, any temporary construction-related disturbance effects to larval rockfish are extremely unlikely to occur.

Long Term Effects to Salmonids and Rockfish

The long term effects to PS Chinook salmon, PS steelhead, and PS/GB bocaccio and yelloweye rockfish are from reduced prey resources associated with shoreline armoring. Shoreline armoring reduces terrestrial and aquatic invertebrate abundance and can inhibit forage fish spawning. This is explained in more detail below under Effects to Critical Habitat. The loss of prey resources will adversely affect PS Chinook salmon and PS/GB bocaccio juveniles more acutely than PS steelhead and PS/GB yelloweye rockfish because these latter two species are less shoreline associated. The scale of this effect among individual fish is not calculable but the total amount of shoreline that could be armored under this proposed action is tiny when compared to the total amount of shoreline in the action area. A very small number of individual fish, relative to their respective populations, may experience reduced fitness and survival stemming from reduced food availability caused by the proposed action.

Other Management Activities

Non-Land Disturbing Activities

The following categories of activities do not involve land disturbance or other actions that necessitate best management practices or impact reduction measures:

- Partnerships
- Visual Resource Management
- Science
- Education and Interpretation

These activities do not have the potential to adversely affect any of the listed fish species or critical habitat because the activities do not directly disturb fish, aquatic habitat, or affect water quality.

Land Disturbing Activities

Among other management categories (habitat and plants, hazardous materials, lands and realty, natural materials collection, recreation and visitor services, tribal interests, travel and transportation, wilderness characteristics, wildfire response, and wildlife and fisheries resources), the BLM identified core activities that might affect water quality as follows:

- Vegetation Management (Fire and Fuels Management, Habitat Restoration)
- Recreation Management (Boating and Upland Visitation)
- Road and Trail Maintenance and Construction
- Spill Prevention and Abatement

Appendix A of the BA details the BMPs that will be implemented with these core activities. The BMPs focus on avoidance, structural and nonstructural treatments, operations, and maintenance procedures. The Monument does not include any lotic (flowing) riparian systems/streams. On Lopez Island there are ponded and wetland areas that do not contain listed fish species (Chadwick Marsh). The BLM will focus the application of BMPs so as to prevent or minimize the potential to affect the water quality of non-flowing freshwater riparian-wetland systems and marine areas adjacent to the Monument, primarily through establishing work zone setbacks from aquatic areas, minimizing soil disturbance, and utilizing erosion control techniques. Because the Monument does not contain any streams, runoff will not affect any freshwater salmonid-bearing streams.

For vegetation management using herbicides and fire (Fire and Fuels Management, Habitat Restoration), the BLM will follow its mandated standard operating procedures as referred to in Appendix A of the BA. Some of the standard operating procedures address water quality and serve the function of BMPs, such as establishing herbicide-free buffer zones adjacent to aquatic habitat.

Effects of Vegetation Management (Fire and Fuels Management, Habitat Restoration)

The BLM will undertake vegetation treatments, including prescribed fire, to expand grasslands and shrublands and increase plant species and structural diversity. Specific treatment locations have not been determined at this time. The BLM assumes that treatments will occur within 200 feet of the shoreline (RMP EIS). Treated forest stands will be thinned, retaining trees and limiting soil disturbance. Grasslands and wetlands will also be treated to increase native species presence and diversity. The BMPs are designed to minimize soil erosion, however the proposed RMP may lead to a small increase in sediment delivery to nearshore habitats as new plants and groundcover establishes. Once new upland plant communities become established, sediment delivery will stabilize.

Temporary Effects to Listed Salmonids and Rockfish

Considering the design features of the BMPs to minimize sediment production and high flushing rates of most adjacent marine areas and high wave action, the effects of vegetation treatments under the proposed RMP on nearshore habitats is likely to produce temporary, low level sediment input to marine waters. The effects of sediment/turbidity to PS steelhead, PS Chinook salmon, bocaccio, and yelloweye rockfish will be similar to those described above for temporary construction impacts from shoreline armoring, but to a lesser degree because vegetation management will occur in the uplands with BMPs in place to minimize or avoid sediment inputs to marine waters. Therefore, no direct harm to these listed fish species is expected to occur because any increases in sediment/turbidity would be temporary and at a very low level.

Effects of Vegetation Management with Herbicides

The Proposed RMP will use herbicides in upland habitats and (rarely) adjacent to marine areas to meet vegetation objectives. BLM will follow standard operating procedures designed to minimize introduction of herbicides into the environment (Appendix A of BA). Herbicide drift and runoff will be unlikely or at extremely low levels following these procedures. For any herbicide contributed to the nearshore environment associated with the Proposed RMP, marine processes (flushing) will dissipate it. For direct or indirect effects to listed fish, the NMFS previously consulted with the BLM on use of herbicides and other vegetation management techniques, which included the action area under consideration in this opinion (NMFS 2015 and NMFS 2007). Those biological opinions concluded that the vegetation management techniques with associated Best Management Practices would not jeopardize listed species, including those in the action area of the Monument. Those biological opinions also include the requirement to seek individual ESA section 7 consultation on specific actions. Because the RMP is a framework planning document without specific actions described, this consultation does not evaluate specific actions or potential effects to individual fish in the action area from exposure to herbicides. The analyses in the previous consultations indicate that population level effects are unlikely.

Recreation Management (Boating and Upland Visitation)

Boating

Under the proposed RMP, the BLM will continue to allow recreational boat landings on approximately 18 miles of Monument shoreline, slightly less than under current conditions. Landings will be limited to non-motorized watercraft at Watmough Bay and landings on some small islands will be further restricted. Limiting boat landings at Watmough Bay will minimize direct impacts to forage fish spawning habitat and reduce non-point source boat contaminants in the immediate area. The closure of some islands will further limit impacts to rocky intertidal and littoral zone resources. Thus, under the proposed RMP disturbance to littoral zone resources will decline compared to current conditions. Impacts to the Monument shoreline that remain open to recreational boat landings will be similar to existing baseline conditions.

Contaminants can be released during recreational boat usage, including oil and gasoline affecting nearshore water quality, sea grasses and nearshore fauna. Discharge of hydraulic fluid, oils, or fuels from boats constitute an unlawful discharge and are not considered here. However, the normal operation of these vessels are likely to have small incidental discharges caused by drippage from engines, which will introduce very small amounts of fuels, oils, or lubricants into the water. Incidental discharge of oils or fuels, and polycyclic aromatic hydrocarbons (PAHs) may also result from exhaust. We expect these PAHs and other contaminants to be introduced into the water column at very low levels indefinitely into the future. Because these materials can disperse quickly, they can become quite widespread at very low concentration. PAHs from the exhaust of these vessels have a similar pattern of dispersal. The environmental fate of each type of PAH depends on its molecular weight. In surface water, PAHs can volatilize, photolyze, oxidize, biodegrade, bind to suspended particles or sediments, or accumulate in aquatic organisms.

There are two pathways for PAH exposure to listed fish species in the action area, direct uptake through the gills and dietary exposure (Lee and Dobbs 1972; Neff et al. 1976; Karrow et al. 1999; Varanasi et al. 1993; Meador et al. 2006; McCain et al. 1990; Roubal et al. 1977). Fish rapidly uptake PAHs through their gills and food but also efficiently remove them from their body tissues (Lee and Dobbs 1972; Neff et al. 1976). Juvenile Chinook salmon prey, including amphipods and copepods, uptake PAHs from contaminated sediments (Landrum and Scavia 1983; Landrum et al. 1984; Neff 1982). Varanasi et al. (1993) found high levels of PAHs in the stomach contents of juvenile Chinook salmon in the Duwamish estuary, a highly contaminated industrial waterway. The primary response of exposed salmonids, from both uptake through their gills and dietary exposure, are immunosuppression and reduced growth. Karrow et al. (1999) characterized the immunotoxicity of PAHs from creosote to rainbow trout (*O. mykiss*) and reported a lowest observable effect concentration for total PAHs of 17 µg/l. Varanasi et al. (1993) found greater immune dysfunction, reduced growth, and increased mortality compared to control fish. In order to isolate the effects of dietary exposure of PAHs on juvenile Chinook salmon, Meador et al. (2006) fed a mixture of PAHs intended to mimic those found by Varanasi et al. (1993) in the stomach contents of field-collected fish. These fish showed reduced growth compared to the control fish.

Among PS Chinook, PS steelhead, bocaccio and yelloweye rockfish in the action area that are exposed to PAHs and other contaminants, a small number are likely to have some degree of immunosuppression and reduced growth, which, generally, increases the risk of death. The scale of this effect to populations of fish is likely to be immeasurable because the marine waters around San Juan Island are subject to high mixing and flushing rates from tides, currents, and wave action, which would rapidly disburse any incidental releases of PAHs, with very few individual fish, relative to the respective populations, actually being exposed to harmful levels of PAHs in the action area.

Upland Visitation

The proposed RMP will establish rules for visitors so as to reduce the effects of people on the natural and cultural resources of the Monument. Continued visitation will increase the potential for trail erosion and resulting sedimentation to marine waters. The proposed RMP will designate

official trails and establish rules and create signage to keep people on designated trails. This will reduce severity of erosion to minimal levels. The effect of sedimentation on marine waters and listed fish is discussed below under Road and Trail Maintenance and Construction.

Road and Trail Maintenance and Construction

Under the proposed RMP, the BLM will establish official roads and trails. Of the one mile of motorized roadway in the Monument, 0.1 miles of road at Turn Point will be open for public motorized access within 200 feet of nearshore habitat, though, if current trends continue, the BLM anticipates that it will be used almost exclusively for administrative access and not by the public. The remaining 0.9 miles of Monument road occurs greater than 200 feet from the marine shoreline. Vehicle-related contaminants include petroleum-based PAHs, heavy metals, tire fragments, and a growing list of other contaminants that are just beginning to be identified that are harmful to fish (Peter et al. 2018). None of the roadways discharge stormwater directly to marine waters. Stormwater runoff infiltrates into the soil adjacent to the roadway or, at Watmough Bay, there are a few culverts that direct stormwater into some seasonal freshwater wetlands. These wetlands do not have any direct connection to marine waters and do not contain listed fish. Infiltration into the upland and wetland soils provides natural heavy metal and petroleum product sequestration in the soil (Barraud et al., 1999, Dierkes and Geiger, 1999) making it extremely unlikely that any listed fish will be exposed to harmful levels of contaminants from the motorized roadways within the Monument.

The proposed road and trail plan will result in slightly fewer trail miles open within 200 feet of the Monument shoreline than existing trail conditions. Overall, there will be negligible difference in contributed sediment to nearshore habitats from trail use under the proposed RMP compared to current conditions.

With the proposed RMP establishing official trails and implementing BMPs and setbacks from marine waters, the likelihood of adverse levels of sedimentation reaching marine waters is negligible. The effects of sediment/increased turbidity on listed fish is discussed in detail under the Cultural and Paleontological Resources (C&P) above. It is unlikely that listed fish will be directly harmed by upland trail construction and use over time because BMPs will prevent significant levels of sediment from reaching marine waters.

Spill Prevention and Abatement

The RMP includes utilizing standard BMPs for spill prevention, such as establishing setbacks for refueling equipment (e.g. no refueling within 100 feet of surface waters), and procedures for handling, using, and storing hazardous materials. The RMP also establishes a framework for creating spill prevention and abatement plans at an implementation level for potential future actions and response plans for accidental spills. These BMPs reduce the potential effects of accidental spills through avoidance or remediation so as to prevent contaminants from reaching surface waters.

1.8.2 Effects to Critical Habitat

Puget Sound Chinook Critical Habitat

PS Chinook salmon critical habitat consists of six Primary Constituent Elements (PCEs) for the PS Chinook Evolutionary Significant Unit. The action area contains PBF #5. To be properly functioning, this PBF is described as including nearshore marine areas free of obstruction and excessive predation with (1) water quality and quantity conditions and foraging opportunities, including aquatic invertebrates and fishes, supporting growth and maturation, and (2) natural cover including submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

C&P Resources

Shoreline hardening mainly impacts listed species by reducing the quality of nearshore habitat, which includes designated critical habitat for both PS Chinook salmon and PS/GB bocaccio in the action area. Some locations within the Monument may also have suitable habitat for forage fish spawning. Shoreline armoring often results in increased beach erosion waterward of the armoring, which, in turn, leads to beach lowering, coarsening of substrates, increases in sediment temperature, and reductions in invertebrate density (Fresh et al., 2011; Morley et al., 2012; Dethier et al., 2016).

If hard stabilization becomes necessary and the BLM implements specific projects, the BLM would look for opportunities to provide offsetting habitat improvements, such as removing shoreline armoring elsewhere. Since the BLM has not used hard stabilization to date, restoration of armored sites would require new partnerships with other landowners/land managers and the BLM acknowledges that this may not be a feasible option. Therefore, our analysis takes into account that direct in-kind mitigation not occur, but that on-site minimization measures would occur such as riparian planting.

The alteration of Puget Sound shorelines has been found to impact a variety of marine life, ranging from invertebrate fauna (Sobocinski 2003) to surf smelt egg viability (Rice 2006). Rice (2006) found that a modified beach had significantly higher daily mean light intensity, air temperature, and substrate temperature, and significantly lower daily mean relative humidity compared to an unaltered beach, and the number of surf smelt eggs containing live embryos on the altered beach was approximately half that of the natural beach. Though not all the nearshore critical habitat is occupied by the species it was designated for, the critical habitat is providing some feature essential to conservation of the species, such as prey for listed species. Hard stabilization could result in reduced prey for juvenile and adult PS Chinook salmon that feed on forage fish and for juveniles that feed on terrestrial and aquatic invertebrates in the nearshore.

The scale of the effect of shoreline armoring by the BLM in the action area is relatively small. The San Juan Islands contain more than 400 miles of shoreline. San Juan County has the lowest modification level in the Puget Sound region, with around 5 percent (20 miles) of its shorelines modified (Friends of the San Juans 2011). In addition to being less heavily developed than other parts of the Puget Sound region, much of the San Juan County shoreline is naturally rocky and

less vulnerable to erosion. The proposed action could result in an increase of 0.34 miles (1,800 linear feet) of shoreline armoring, an increase of less than one tenth of one percent (0.085 percent) of armoring along the shoreline of the San Juan Islands. If installed, the result may be localized declines in food resources for PS Chinook salmon. This level of impact will not reduce the ability of critical habitat, in the action area, to play its intended conservation role for PS Chinook salmon.

Other Management Activities

The other land disturbing management activities have the potential to effect the water quality PBF through soil disturbance during vegetation management, boat usage in the areas (incidental releases of PAHs), increased sedimentation from trail use, maintenance and construction, and from spill response and abatement. Collectively these management activities, together with the associated BMPs and high natural flushing of marine waters in the action area, will cause low level decreases in water quality in the action area. The severity of this effect is very low as explained under the effects to species sections above, and therefore would not reduce the ability of critical habitat, in the action area, to play its intended conservation role for PS Chinook salmon. Spill response and abatement has a positive effect on water quality from preventing or cleaning up accidental spills and reducing the potential for accidental spills with BMPs. The proposed restriction of motorized boat landings at Watmough Bay will reduce the potential for impacting forage fish spawning beaches compared to existing conditions.

Puget Sound/Georgia Basin Bocaccio Critical Habitat

For PS/GB bocaccio, properly functioning PBFs are described as (1) Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and (2) Water quality and sufficient levels of dissolved oxygen (DO) to support growth, survival, reproduction, and feeding opportunities. In the nearshore, important habitat features include juvenile rearing sites with sand, rock and/or cobbles to support forage and refuge. Habitat threats include degradation of rocky habitat, loss of eelgrass and kelp, introduction of non-native species that modify habitat, and degradation of water quality.

C&P Resources

Nearshore habitats within the action area include shoreline, high impact surf zones, kelp forest, and seagrass beds. Shoreline habitat in the action area comprises both sandy/gravelly (unconsolidated) shoreline and rocky shoreline. The negative effects of shoreline armoring on salmon survival are well documented, but consequences of the alteration of Puget Sound shorelines on rockfish habitat such as kelp are less understood. Some areas around Puget Sound have shown a large decrease in kelp. Areas with floating and submerged kelp support the highest densities of most juvenile rockfish species (Matthews 1989; Halderson and Richards 1987; Carr 1983; Hayden-Spear 2006). Kelp habitat provides structure for feeding, predation refuge, and reduced currents that enable energy conservation for juveniles. Although loss of nearshore habitat quality is a threat to rockfish, the recovery plan for this species list the severity of this threat as low (NMFS 2017).

Similar to PS Chinook salmon, hard stabilization could result in reduced prey for juvenile bocaccio in the nearshore, but the level of impact will not reduce the ability of critical habitat, in the action area, to play its intended conservation role for bocaccio.

Other Management Activities

The other land disturbing management activities have the potential to effect the water quality PBF through soil disturbance during vegetation management, boat usage in the areas (incidental releases of PAHs), increased sedimentation from trail use, maintenance and construction. Collectively these management activities, together with the associated BMPs and high natural flushing of marine waters, will cause low level decreases in water quality in the action area. The severity of this effect is very low and would not reduce the ability of critical habitat, in the action area, to play its intended conservation role for bocaccio. Spill response and abatement has a positive effect on water quality from preventing or cleaning up accidental spills and reducing the potential for accidental spills with BMPs. The proposed restriction of motorized boat landings at Watmough Bay will reduce the potential for impacting forage fish spawning beaches compared to existing conditions.

1.9 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 1.7).

The current condition of ESA-listed species and designated critical habitat within the action area are described previously in the Status of the Species and Critical Habitat and the Environmental Baseline sections. Much of the shoreline of the San Juan Islands is naturally rocky so that extensive armoring in the future is not likely.

Many relatively minor alterations to the shoreline are permitted each year; most shoreline developments are residential (Kuller 2017). The largest recent developments are ongoing projects to expand/upgrade existing marinas at Snug Harbor on San Juan Island and at the Rosario Resort on Orcas Island. San Juan County recently completed a feasibility study to relocate approximately 1 mile of the Mackaye Harbor Road, which runs along the shoreline on the south end of Lopez Island and provides the closest public road access to Monument land at Iceberg Point (San Juan County 2017). While San Juan County has not yet determined a course

of action for Mackaye Harbor Road, given the continuing coastal erosion and projected increases in sea level, some action to move the road is more likely than not.

NMFS is unaware of other specific future non-federal activities that are reasonably certain to affect the action area. However, NMFS is reasonably certain that future non-federal actions are likely to continue and increase in the future as the human population continues to grow across the region. Continued habitat loss and degradation of water quality from development and chronic low-level inputs of non-point source pollutants will likely continue into the future. Recreational and commercial use of nearshore waters within the action area is also likely to increase as the human population grows.

The intensity of these influences depends on many social and economic factors, and therefore is difficult to predict. Further, the adoption of more environmentally acceptable practices and standards may gradually reduce some negative environmental impacts over time. Interest in restoration activities has increased as environmental awareness rises among the public. State, tribal, and local governments have developed plans and initiatives to benefit ESA-listed species in the action area. However, the implementation of plans, initiatives, and specific restoration projects are often subject to political, legislative, and fiscal challenges that increase the uncertainty of their success.

1.10 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 1.8) to the environmental baseline (Section 1.7) and the cumulative effects (Section 1.9), taking into account the status of the species and critical habitat (Section 1.5), 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 as a whole for the conservation of the species.

1.10.1 ESA-Listed Species

The species considered in this Opinion have been listed under the ESA based on declines from historic levels of abundance and productivity, loss of spatial structure and diversity, and an array of limiting factors as a baseline habitat condition. Each species will be affected over time by cumulative effects, some positive – as recovery plan implementation and regulatory revisions increase habitat protections and restoration, and some negative – as climate change and unregulated or difficult to regulate sources of environmental degradation persist or increase. Overall, to the degree that habitat trends are negative, as described below, effects on viability parameters of each species are also likely to be negative. In this context we consider the effects of the proposed action's effect on individuals of the listed species at the population scale.

Puget Sound Chinook Salmon and Steelhead

The C&P management actions in the BLM's RMP allows for up to 1,800 linear feet of hard shoreline armoring over the course of the 20 year planning document. No immediate need exists for hard shoreline armoring. The BLM has identified specific C&P resources along the shoreline that it will protect from erosion if necessary in the future. The BLM also acknowledges that no hard armoring may become necessary. With this uncertainty, we assume that the entire 1,800 linear feet of armoring could occur to inform our jeopardy analysis. Other aspects of the RMP will not affect listed species (e.g. partnerships) or BMPs will avoid effects (trail maintenance with erosion control to prevent soil erosion).

The action area supports PS Chinook salmon and PS steelhead adult and juvenile migration, and juvenile rearing. The long-term trend in abundance of the PS Chinook salmon ESU is slightly negative. Reduced or eliminated accessibility to historically important habitat, combined with degraded conditions in available habitat appear to be the greatest threats to the recovery of PS Chinook salmon. Degraded water quality and temperature, degraded nearshore conditions, and impaired passage for migrating fish also continue to impact this species.

The most recent 5-year review for PS steelhead notes some signs of modest improvement in productivity since the previous review, at least for some populations, especially in the Hood Canal and Strait of Juan de Fuca MPG. However, these modest changes must be sustained for a longer period (at least two generations) to lend sufficient confidence to any conclusion that productivity is improving over larger scales across the DPS. Moreover, several populations are still showing dismal productivity, especially those in the Central and South Puget Sound MPG (NWFSC 2015). Trends in abundance of natural spawners remain predominantly negative. Particular aspects of diversity and spatial structure, including natural spawning by hatchery fish and limited use of suitable habitat, are still likely to be limiting viability of most PS steelhead populations. In the near term, the outlook for conditions affecting PS steelhead is not optimistic. While harvest and hatchery production of steelhead in Puget Sound are currently at low levels and are not likely to increase substantially in the foreseeable future, some recent environmental trends not favorable to PS steelhead survival and production are expected to continue. Predation of steelhead juveniles by pinnipeds as they outmigrate through Puget Sound may also be a significant factor for steelhead survival (Pearson et al. 2015).

The environmental baseline within the action area has been moderately degraded by human development. However, despite this overall degraded condition, the action area remains supportive of PS Chinook salmon and steelhead, and provides important rearing habitat for Chinook salmon. The proposed work windows overlap with the presence of juvenile PS Chinook salmon and steelhead, although the work windows avoid peak migration periods in the spring and early summer. The San Juan Islands are an important foraging area for Chinook salmon as they grow and prepare to head out to sea. Juvenile steelhead are known to transit very quickly through Puget Sound on their way to sea and likely spend very little time foraging in the San Juans. Adults of both species may also be present during construction, but they would be independent of the shoreline.

It is unlikely that PS Chinook salmon and steelhead would be directly injured or killed during construction because any fish in the action would be large enough and highly mobile so that they would avoid the immediate construction areas without harm.

The long term effect of harm shoreline armoring is to reduce nearshore terrestrial and invertebrate prey abundance and reduce forage fish spawning opportunity. With a maximum of 1,800 linear feet of potential shoreline armoring allowed under the BLM's C&P management actions, the scale of the effect of habitat loss will not translate to a measurable effect on populations at the ESU and DPS level. This is because the loss of food resources in any one particular location will have a very small effect on fitness and survival among juvenile salmonids in the action area. Any significant loss of fitness to individual fish would represent a very small fraction of a returning cohort that it will have no detectable effect on any of the characteristics of a viable salmon population (VSP), abundance, productivity, distribution, or genetic diversity) for the affected population(s). The other management activities either have no effect on species (e.g. partnerships) or BMPs for the land disturbing activities (e.g. trail maintenance) will avoid or reduce direct and indirect effects to very low levels. This includes allowances for increased visitation over time with management actions designed to reduce human effects on natural and cultural resources (e.g. establishing official trails and rules for boat landings along the shoreline). Based on the best available information, the scale of the direct and indirect effects of the proposed action, when considered in combination with the degraded baseline, cumulative effects, and the impacts of climate change, will be too small to cause any population level impacts on PS Chinook salmon and PS steelhead. Therefore, the proposed action will not appreciably reduce the likelihood of survival and recovery of these listed species.

Puget Sound / Georgia Basin Rockfish

Yelloweye rockfish juveniles, adult yelloweye, and adult bocaccio typically occupy deep water (>30 meters) and will not experience direct construction related disturbance. The action area may support juvenile rearing of bocaccio. Very small numbers of juvenile PS/GB bocaccio are likely to experience mild disturbance during construction from sediment pulses and construction noise, but are not likely to be directly harmed. Larval rockfish of both species are not likely to be harmed by the proposed action because the chances of these fish occurring in any particular location is extremely small. Very small numbers of juvenile bocaccio, relative to the local population may experience reduced fitness from a reduction in localized prey resources where hard armoring is installed. For adults of both species and for juvenile yelloweye in deep water, the proposed action will indirectly suppress available food resources by suppressing forage fish spawning, which may translate to a very small decrease in available prey via food web interactions.

The effects to the life stages of both rockfish species occupying deep water will be so diffuse as to not cause measurable changes in population abundance in the action area. The food web interactions would be most acutely felt by juvenile bocaccio in shallow nearshore waters adjacent to new hard armoring. No reliable population estimates are available for the DPS, but the best available information indicates that bocaccio were never a predominant segment of the total rockfish abundance in Puget Sound, and suggest that their present-day abundance is likely a fraction of their pre-contemporary fishery abundance. Fishing removals and degraded water

quality appear to be the greatest threats to the recovery of the DPS. The proposed action will not exacerbate these threats. The environmental baseline within the action area has been moderately degraded by human development. The particular land form for the San Juan Islands makes it less vulnerable to erosion and subsequent need of hard armoring because much of the shoreline is naturally rocky. This is evident by the fact that five percent of the shoreline is armored within the San Juans compared to approximately 30 percent of the Puget Sound mainland. The other management activities either have no effect on species (e.g. partnerships) or BMPs for the land disturbing activities (e.g. trail maintenance) will avoid or reduce direct and indirect effects to very low levels. This includes allowances for increased visitation over time with management actions designed to reduce human effects on natural and cultural resources (e.g. establishing official trails and rules for boat landings along the shoreline). Base on the best available information, the scale of the direct and indirect effects of the proposed action, when considered in combination with the mildly degraded baseline, cumulative effects, and the impacts of climate change, will be too small to cause any population level impacts on PS/GB bocaccio and yelloweye rockfish. Therefore, the proposed action will not appreciably reduce the likelihood of survival and recovery of these listed species. This conclusion is also supported by the Recovery Plan that identifies loss of nearshore habitat quality as a threat to rockfish, but ranks the severity of this threat as low (NMFS 2017).

1.10.2 Critical Habitat

As described above, the proposed action is likely to adversely affect designated critical habitat for PS Chinook salmon and PS/GB bocaccio.

Puget Sound Chinook Salmon

For PS Chinook salmon critical habitat, past and ongoing anthropogenic activities have diminished the availability and quality of nearshore marine habitats and reduced water quality across the Puget Sound basin. Marine habitat threats include urbanization, wetland draining and conversion, dredging, armoring of shorelines, and marina and port development. Future non-federal actions and climate change are likely to increase and continue acting against the quality of salmonid critical habitat. The intensity of those influences on salmonid habitats is uncertain, as is the degree to which those impacts may be tempered by adoption of more environmentally acceptable land use practices, implementation of non-federal plans that are intended to benefit salmonids, and efforts to address the effects of climate change.

PS Chinook salmon critical habitat in the action area is limited to nearshore marine areas. As described above, the environmental baseline within the action area has been moderately degraded within the San Juan Islands from human development, although the likelihood of significantly more shoreline armoring in the future is small because much of the shoreline is naturally rocky and not subject to erosion. The action may increase the total amount of hard armoring in the San Juan Islands by less than one tenth of one percent. . The other management activities either have no effect on habitat (e.g. partnerships) or BMPs for the land disturbing activities (e.g. trail maintenance) will avoid or reduce direct and indirect effects to habitat to very low levels. This includes allowances for increased visitation over time with management actions designed to reduce human effects on natural and cultural resources (e.g. establishing official

trails and rules for boat landings along the shoreline). Based on the best available information, the scale of the proposed action's effects on the life stage of PS Chinook salmon in the action area (large young of the year/yearlings), when considered in combination with the baseline, cumulative effects, and the impacts of climate change, will be too small reduce the value of nearshore marine PBFs in the action area. Therefore, the proposed action will not appreciably diminish the value of designated critical habitat for its conservation role for PS Chinook salmon.

Bocaccio

For PS/GB bocaccio critical habitat, nearshore critical habitat has been degraded by past and ongoing shoreline development that has altered shoreline substrates, degraded water quality, and reduced eelgrass and kelp habitats in many areas of Puget Sound. Future non-federal actions and climate change are likely to increase and continue acting against the quality of PS/GB bocaccio critical habitat. The intensity of those influences is uncertain, as is the degree to which those impacts may be tempered by adoption of more environmentally acceptable practices, restoration activities, and efforts to address the effects of climate change.

The PBF for PS/GB bocaccio critical habitat in the action area is limited to nearshore settlement habitats with sand, rock, and/or cobble substrates that also support kelp. The site attributes of that PBF that will be affected by the action are limited to prey quantity, quality, and availability to support individual growth, survival, reproduction, and feeding opportunities. As previously described, the environmental baseline within the action area has been moderately degraded from human development. However, despite this degraded condition, the action area remains supportive of PS/GB bocaccio.

New shoreline armoring will incrementally reduce prey availability among juvenile bocaccio that occupy shallow nearshore areas. Based on the best available information, the scale of the proposed action's effects (less than one tenth of one percent of the shoreline), when considered in combination with the baseline, cumulative effects, and the impacts of climate change, will be too small to cause any detectable long-term negative changes in the quality or functionality of nearshore marine area PBFs in the action area. The other management activities either have no effect on habitat (e.g. partnerships) or BMPs for the land disturbing activities (e.g. trail maintenance) will avoid or reduce direct and indirect effects to habitat to very low levels. This includes allowances for increased visitation over time with management actions designed to reduce human effects on natural and cultural resources (e.g. establishing official trails and rules for boat landings along the shoreline). Therefore, the proposed RMP will not appreciably diminish the value of designated critical habitat as a whole for its conservation value for PS/GB bocaccio.

1.11 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, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of PS Chinook salmon, PS steelhead, PS/GB bocaccio and yelloweye

rockfish, or destroy or adversely modify PS Chinook salmon and PS/GB bocaccio designated critical habitat.

1.12 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.

Framework programmatic action means, for purposes of an incidental take statement, a Federal action that approves a framework for the development of future action(s) that are authorized, funded, or carried out at a later time, and any take of a listed species would not occur unless and until those future action(s) are authorized, funded, or carried out and subject to further section 7 consultation (50 CFR 402.02). This proposed action is a framework programmatic action. Because the BLM does not have specific plans for development activities (hard shoreline armoring) or vegetation management with herbicides and/or large scale soil disturbance, no take authorization is included in this opinion. In the future, the BLM will need to initiate individual consultations with NMFS on those particular actions.

1.13 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).

If shoreline armoring becomes necessary, we recommend that the BLM seek early coordination with NMFS on project design and potential conservation/mitigation measures. The NMFS has developed a Conservation Calculator for nearshore projects that is useful for guiding project design and determining conservation actions that fully offset habitat impacts, including conservation banking options.

1.14 Reinitiation of Consultation

This concludes formal consultation for this action. As 50 CFR 402.16 states, 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 if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

1.15 “Not Likely to Adversely Affect” Determinations

Southern Resident Killer Whales

The San Juan Islands region is a vital feeding area for Southern Resident killer whales (SRKW), particularly in the summer. Short term construction related noise from equipment working on the shoreline will have an insignificant effect on SRKW behavior and feeding efficiency. The low rumbling sounds caused by equipment on the shoreline is not a concern for SRKW, for example, in the way that vibratory pile driving disturbs these animals (NMFS revised its Technical Guidance for Assessing the Effects of Anthropogenic Noise on Marine Mammal Hearing, April 2018). The threshold for behavioral disruption from continuous noise (e.g., vibratory pile driving) is 120 dB (re: 1 μ Pa) RMS. Construction equipment will not generate continuous sound above this threshold (FHWA 2006).

The long term effects of the project occur through food web interactions. Chinook salmon are preferred prey for SRKW. However, the effects to Chinook salmon (Section 1.8.1) will not cause population-level effects among Puget Sound Chinook salmon and thus will not measurably reduce SRKW forage in the action area. Thus, the long term effects of the project on SRKW are insignificant.

Southern Resident Killer Whale Critical Habitat

Critical habitat for SRKW was designated in three specific areas: 1) Summer Core Area in Haro Strait and waters around the San Juan Islands; 2) Puget Sound; and 3) the Strait of Juan de Fuca on November 29, 2006 (71 FR 69054). Critical habitat includes approximately 2,560 square miles of Puget Sound, excluding areas with water less than 20 feet deep relative to extreme high water. Properly functioning PBFs for SRKW critical habitat are:

- (1) Water quality to support growth and development;
- (2) prey species of sufficient quantity, quality, and availability to support individual growth, reproduction and development, as well as overall population growth; and
- (3) passage conditions to allow for migration, resting, and foraging.

As described above, effects of the project on water quality are insignificant, and the project will not measurably reduce SRKW prey species, in particular PS Chinook salmon. The project will also not adversely affect passage conditions, which can be affected by in-water noise disturbance. The use of excavators along the shoreline will not generate disturbance level sound,

which is typically associated with activities that not included in the proposed action (e.g. pile driving). Therefore, the effects of the proposed action on SRKW critical habitat are insignificant.

Yelloweye Rockfish Critical Habitat

Critical habitat for yelloweye rockfish includes 414.1 square miles of deepwater marine habitat in Puget Sound (11/13/201479 FR68042). No nearshore component was included in the critical habitat listing for juvenile yelloweye rockfish as they, different from bocaccio, typically are not found in intertidal waters (Love et al., 1991). Yelloweye rockfish are most frequently observed in waters deeper than 30 meters (98 ft) near the upper depth range of adults (Yamanaka et al., 2006). Habitat threats include degradation of rocky habitat, introduction of non-native species that modify habitat, and degradation of water quality.

Construction-related effects for hard armoring from noise and suspended sediment will be insignificant to deepwater critical habitat because the effects will be localized at the shoreline and not cause a measurable change in ambient conditions in adjacent deep water. The long term effects deepwater habitat would be from reduced prey resources associated with shoreline armoring. Shoreline armoring reduces terrestrial and aquatic invertebrate abundance and can inhibit forage fish spawning in the nearshore which can translate to reduced deep water prey via food web interactions. The scale of this effect associated with 1,800 total linear feet of armoring within the San Juan Islands (less than one tenth of one percent of the shoreline) will be so diffuse as to be insignificant to critical habitat value in the action area. The other management activities either have no effect on habitat (e.g. partnerships) or BMPs for the land disturbing activities (e.g. trail maintenance) will avoid or reduce direct and indirect effects to habitat to very low levels. This includes allowances for increased visitation over time with management actions designed to reduce human effects on natural and cultural resources (e.g. establishing official trails and rules for boat landings along the shoreline). The effects of these land and nearshore management activities are extremely unlikely to extend into deepwater critical habitat.

2. MAGNUSON-STEVENSON 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. The MSA (section 3) defines EFH as “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) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by the BLM and descriptions of EFH for Pacific Coast groundfish (PFMC 2005; 2019), coastal pelagic species (PFMC 1998), and Pacific Coast salmon (PFMC 2014) contained in the fishery management plans developed by the PFMC and approved by the Secretary of Commerce.

2.1 Essential Fish Habitat Affected by the Project

The proposed action and action area for this consultation are described in Section 1 of this document. The action area includes areas designated as EFH for various life-history stages of Pacific Coast groundfish (PFMC 2005, 2019), coastal pelagic species (PFMC 1998), and Pacific Coast salmon (PFMC 2014). The action area is designated as a habitat area of particular concern (HAPC) for seagrass.

2.2 Adverse Effects on Essential Fish Habitat

The ESA portion of this document describes the adverse effects of this proposed action on ESA-listed species and critical habitat, and is relevant to the effects on EFH for Pacific coast groundfish, coastal pelagic species, and Pacific Coast salmon. Based on the analysis of effects presented in Section 1.8, the proposed action will cause small-scale adverse effects on this EFH through direct or indirect physical, chemical, or biological alteration of the water or substrate, and through alteration of benthic communities and forage fish spawning habitat, resulting in a reduction in prey availability. Therefore, we have determined that the proposed action would adversely affect the EFH identified above.

2.3 Essential Fish Habitat Conservation Recommendations

Fully implementing these EFH conservation recommendations would protect, by minimizing and offsetting the adverse effects described in Section 2.2, above, approximately 4 acres of designated EFH for Pacific coast groundfish, coastal pelagic species, and Pacific Coast salmon.

To reduce adverse alteration of the physical, chemical, or biological characteristics of the water and substrates and available prey, the BLM shall (1) seek early coordination with NMFS on project design and conservation/mitigation measures and, and (2) fully offset project effects through project design and conservation actions such as removing hard armoring elsewhere, planting riparian vegetation, replacing lost beach spawning material, and/or paying into a conservation bank.

2.4 Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, the BLM 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.

2.5 Supplemental Consultation

The BLM 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)).

3. 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.

3.1 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 BLM. Other interested users could include WSDOT, tribes, and the operators and users of the ferry terminal and other ferry terminals. Individual copies of this opinion were provided to the BLM. The document will be available within two weeks at the NOAA Library Institutional Repository (<https://repository.library.noaa.gov/welcome>). The format and naming adheres to conventional standards for style.

3.2 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.

3.3 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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