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

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November 4, 2020

Refer to NMFS No: WCRO-2020-02242

Michelle Walker
Seattle District Regulatory Branch Chief
US Army Corps of Engineers
PO Box 3755
Seattle, WA 98124-3755

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the 14th Street dock in the Port of Clarkston in Asotin County, Washington.

Dear Ms. Walker:

Thank you for your letter of August 7, 2020, requesting initiation of informal 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 14th Street Dock Auxiliary Float. NMFS did not concur with your "not likely to adversely affect" determination, as explained in our September 8, 2020 letter to the U.S. Army Corps of Engineers (COE). NMFS did agree, however, that the COE's biological assessment (BA) was complete and considered August 7, 2020, to be the date that formal consultation was initiated. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

In the enclosed biological opinion (Opinion), NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River sockeye salmon, and Snake River Basin steelhead. NMFS also determined the action will not destroy or adversely modify designated critical habitat for Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River sockeye salmon, and Snake River Basin steelhead. Rationale for our conclusions is provided in the Opinion.

As required by section 7 of the ESA, NMFS provides an incidental take statement (ITS) with the Opinion. The ITS describes reasonable and prudent measures (RPMs) NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the COE, and any permittee who performs any portion of the action must comply with to carry out the RPMs. Incidental take from actions that meeting these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of our analysis of the action's effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes one Conservation Recommendation to avoid, minimize, or otherwise offset potential adverse effects on EFH. This Conservation Recommendation is a non-identical set of the ESA Terms and Conditions. Section 305(b)(4)(B) of the MSA requires federal agencies provide a detailed written response to NMFS within 30 days after receiving this recommendation.

If the response is inconsistent with the EFH Conservation Recommendation, the COE must explain why the recommendation will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. 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, in your statutory reply to the EFH portion of this consultation, NMFS asks that you clearly identify the number of Conservation Recommendations accepted.

Please contact Mr. Dennis Daw, Northern Snake Branch, at 208-378-5698 or dennis.daw@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Michael Tehan

Michael Tehan
Assistant Regional Administrator
Interior Columbia Basin Office

Enclosure

cc:

D. Moore – COE
M. Walker – COE
M. Eames - USFWS
K. Sarensen – USFWS
M. Lopez – NPT

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

Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the 14th Street dock in the Port of Clarkston in Asotin County, Washington

14th Street Dock

NMFS Consultation Number: WCRO-2020-02242

Action Agency: U.S. Army Corps of Engineers

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?
Snake River steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	Yes	No
Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*)	Threatened	Yes	No	Yes	No
Snake River fall Chinook salmon (*Oncorhynchus tshawytscha*)	Threatened	Yes	No	Yes	No
Snake River sockeye salmon (*Oncorhynchus nerka*)	Endangered	Yes	No	Yes	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

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

Issued By: Michael Tehan
Assistant Regional Administrator

Date: November 4, 2020

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ACRONYMS

BA	Biological Assessment
BMP	Best Management Practices
COE	U.S. Army Corps of Engineers
CWA	Clean Water Act
dB	Decibel
DPS	Distinct Population Segment
DQA	Data Quality Act
ESA	Endangered Species Act
ESU	Evolutionarily Significant Units
BA	Biological Assessment
CFR	Code of Federal Regulations
CRSO	Columbia River System Operations
DART	Columbia Basin Data Access in Real Time
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FCRPS	Federal Columbia River Power System
FR	Federal Register
GSRO	Washington Governor's Salmon Recovery Office
HAPC	Habitats of Particular Concern (HAPC)
HPA	Hydraulic Project Approval
HUC	Hydrologic Unit Code
ICBTRT	Interior Columbia Basin Technical Recovery Team
ICTRT	Interior Columbia Technical Recovery Team
ITS	Incidental Take Statement
MPG	Major Population Group
MSA	Magnuson-Stevens Fishery Management Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic & Atmospheric Administration
NWFSC	Northwest Fisheries Science Center
Opinion	Biological opinion
PBF	Physical or Biological Features
PCE	Primary Constituent Element
PFMC	Pacific Fishery Management Council
PIT	Passive Integrated Transponder (tags)
PORT	Port of Clarkston
RM	River Mile
RPM	Reasonable Prudent Measures

USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VSP	Viable Salmonid Population
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resources Inventory Area

1. INTRODUCTION

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

1.1. Background

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 2 weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. A complete record of this consultation is on file at Snake River Basin Office, Boise Idaho.

1.2. Consultation History

The NMFS received the U.S. Army Corps of Engineers (COEs) biological assessment (BA) and letter requesting informal consultation for the 14th Street Dock Auxiliary Float project on August 7, 2020. During the review of the BA, NMFS concluded that we could not concur with the Not Likely to Adversely Affect determination for Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River sockeye salmon, and Snake River Basin steelhead and their designated critical habitats. The NMFS informed the COE of this decision in a letter dated September 8, 2020. In this letter, NMFS informed the COE that we determined that the action would Likely Adversely Affect Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River sockeye salmon, and Snake River Basin steelhead and their designated critical habitats, due to an increase in predation on juvenile salmonids, and an increase in over-water structure. We also informed the COE that we felt the information in the BA was sufficient to initiate formal consultation as of August 7, 2020, when the BA was received. On September 14, 2020, NMFS and COE discussed the project, and NMFS further explained why there are likely adverse effects from this action.

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). The COE is proposing to permit the authorization for, the Port of Clarkston to construct a dock, under the authority to administer Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

The Port of Clarkston is proposing to connect a new auxiliary float/dock to an existing pier at an existing freight dock to better accommodate increasing use by the cruise boat industry. The project will occur within the geographic boundaries and habitats of all four Snake River anadromous ESA-listed salmonids.

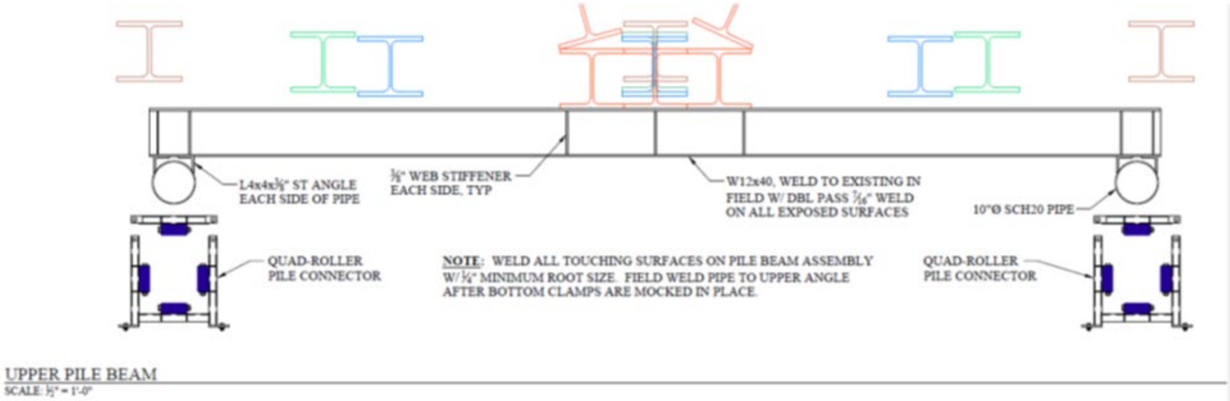
We considered whether or not the proposed action would cause any other activities and determined that it would not.

The BA explained that the Port of Clarkston (Port) has been providing moorage services within Clarkston, WA and Lewiston, ID for the cruise boat industry for 33 years. The Port has had exclusive responsibility for these services for the past seven years. Due to the growth of the cruise boat industry, the single cruise boat dock, the 7th Street Dock, has been inadequate to serve the number of cruise boats traveling the Columbia/Snake River route. Sediment deposition in the navigation channel and decreased river depth have also necessitated increased use of the Port's 14th Street freight dock. Since the Lewis-Clark Valley (i.e., Clarkston, WA) is the terminus for the typical cruise itinerary, stays at the Port's facilities are longer than at most other locations on the Columbia and Snake Rivers. Presently, cruise passengers disembarking at the 14th Street dock must be loaded into busses and driven to the 7th Street Dock for access to jet boat tours. This process requires availability of vehicles, carbon emissions, and transfers of passengers, some of whom are mobility impaired. With the proposed auxiliary float in place, passengers will disembark from bow ramps onto the auxiliary float, which allows direct access to the jet boats for an excursion up Hells Canyon National Recreation Area, North America's deepest gorge. The new dock will decrease the need for busses and parking.

As explained in the BA, the new auxiliary float has the potential to be used year-round (except when the Snake River dam locks are closed for maintenance), but the heaviest use is expected April through November. Having this auxiliary float at the 14th Street dock will also take pressure off the Port's 7th Street dock, where some direct transfers from cruise ships to jet boats occur. The auxiliary float at the 14th Street dock is expected to ease the pressure to such a degree that: a) the 7th Street dock itself will not require immediate expansion, and b) more working space for buses and businesses serving the boats will not need to be developed at the 7th Street site, a culturally sensitive Nez Perce Tribe site. The proposed float will provide increased safety for all passengers, as well as protection of cultural assets.

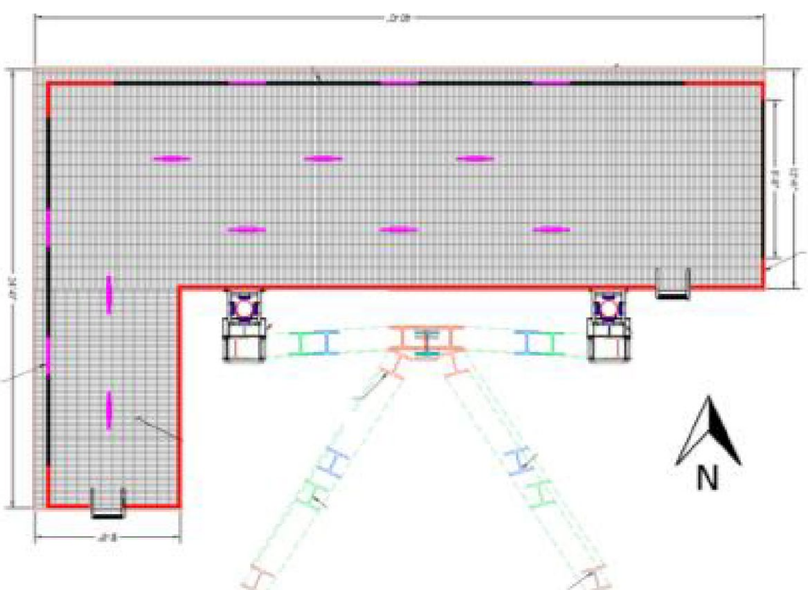
The Port is proposing attachment of the auxiliary float or dock to the western-most existing dolphin pilings that are part of the freight dock facility owned by the Port at the northern end of 14th Street. A steel beam will be welded to the existing two piles. Attached to that will be two 10" steel pipes. (Figure 1) Quad-roller pile connectors will allow the float/dock to move with the water level variations. No new piles are needed.

Figure 1: New beam Schematic



The dock will be L-shaped. The L-shape wraps around the west side of the two existing pilings to which the float/dock is attached. The main section of the new float/dock is 40 feet long by 12 feet wide, and the smaller section is 12 feet long by 8 feet wide. The float's larger part of the "L" (Figure 2), is expected to be over water that is 12 – 14' deep (the depth required for draft by cruise boats). The smaller, wrap-around portion of the "L" is expected to be over water that is 8 – 12' deep. The total footprint of the overwater portion of the project is 576 square feet.

Figure 2: Layout around existing pier and dolphin



Project Tasks:

- Construct auxiliary dock/float offsite.

- Transport dock from preconstruction location to installation location.

- Install during in-water work window of December 15 2020-Feburary28, 2021.

Construction Equipment:

- A jet boat will be used to maneuver the pre-fabricated dock in place and assist in-water welders.

- Appropriate in-water welding equipment will be used.

Construction Materials:

- Surface: 1' Eco62 grating

- Steel frame, beam and pipes

- Eighteen (18) 2' X 4' X 20" Polyfloats, black in color

- Three (3) 4' X 8' X 20" Polyfloats, black in color

- Other miscellaneous: fascia, bullrail, guardrail, grab posts, two (2) life rings, and two (2) safety ladders

Installation:

The following work will be completed in-water: a) A horizontal beam will be welded to the existing pile in the field (some underwater welding will be required); b) two vertical 10" steel pipes will be attached to the ends of the horizontal beam; and c) via quad-roller pile connectors, the pre-fabricated float/dock will be moved into place and attached to the pipes with the aid of a jet boat.

Project Timing and Minimization Measures

Construction of the project will be timed to coincide with the approved in-water work window (December15, 2020-Feburary 28, 2021) associated with COE and Washington Department of Fish and Wildlife (WDFW) permits. The project will obtain and comply with conditions that will be outlined in the Hydraulic Project Approval (HPA) permit issued for the project by WDFW and the Clean Water Act Section 404 Permit issued by COE.

- In-water installation is expected to take less than one week and will be scheduled during the work window, when few juvenile or adult fish are migrating.

- The construction/install firm will be selected based on experience with similar projects in order to minimize the amount of time needed for in-water work.

- The constructed float/dock will be grated to allow a functional 60+percent light penetration.

- Construction activities will be performed during daylight hours, which are expected to be from 7 a.m. to 8 p.m. Monday through Friday and 9 a.m. to 7 p.m. Saturday.

- Equipment staging will be limited to the asphalted area of the 14th Street Dock and will not disturb vegetated surfaces. Jet boat support will launch from a commercial launch site.

- A Spill Prevention Control and Countermeasure Plan will be prepared, approved, and implemented by the contractor. The plan will be site-specific and cover the project scope of work.

- A Construction Stormwater Pollution Prevention Plan will be implemented only if required by local permits.

- Any equipment used for this project shall be free of external petroleum-based fluids while the work is performed in the water. Any boats used shall be free of aquatic invasive species.

- Work will be in compliance with all other applicable local, state and federal regulations and restrictions.

In addition, the Port will remove non-native or noxious species of vegetation (example: black-cap raspberries) along 200 feet of the nearby shoreline and replace them with native vegetation.

2. ENDANGERED SPECIES ACT: BIOLOGICAL OPINION AND INCIDENTAL TAKE STATEMENT

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

2.1. Analytical Approach

This Opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This Opinion relies on the regulatory definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02).

The designation(s) of critical habitat for Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon, Snake River Sockeye salmon, and Snake River Basin steelhead use(s) the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a ''destruction or adverse modification'' analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this Opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not change the scope of our analysis and in this Opinion we use the terms "effects" and "consequences" interchangeably.

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

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

- Evaluate the environmental baseline of the species and critical habitat.

- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.

- Evaluate cumulative effects.

- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) Directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species; or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2. Rangewide Status of the Species and Critical Habitat

This Opinion examines the status of each species that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The Opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species. Table 1 describes the Federal Register notices and notice dates for the species under consideration in this Opinion.

Table 1: Listing status, status of critical habitat designation and protective regulations and relevant Federal Register decision notices for ESA-listed species considered in this Opinion

Species	Listing Status	Critical Habitat	Protective Regulations
Chinook salmon *(Oncorhynchus tshawytscha)*			
Snake River spring/summer-run	T 6/28/05; 70 FR 37160	10/25/99; 64 FR 57399	6/28/05; 70 FR 37160
Snake River fall-run	T 6/28/05; 70 FR 37160	12/28/93; 58 FR 68543	6/28/05; 70 FR 37160
Sockeye salmon *(O. nerka)*			
Snake River	E 6/28/05; 70 FR 37160	12/28/93; 58 FR 68543	ESA section 9 applies
Steelhead (*O. mykiss*)			
Snake River Basin	T 1/05/06; 71 FR 834	9/02/05; 70 FR 52630	6/28/05; 70 FR 37160

Note: Listing status: 'T' means listed as threatened under the ESA; 'E' means listed as endangered.

2.2.1 Status of the Species

This section describes the present condition of the Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, and Snake River sockeye salmon evolutionarily significant units (ESUs), and the Snake River Basin steelhead distinct population segment (DPS). NMFS expresses the status of a salmonid ESU or DPS in terms of likelihood of persistence over 100 years (or risk of extinction over 100 years). NMFS uses McElhaney et al.'s (2000) description of a viable salmonid population (VSP) that defines "viable" as less than a 5 percent risk of extinction within 100 years and "highly viable" as less than a 1 percent risk of extinction within 100 years. A third category, "maintained," represents a less than 25 percent risk within 100 years (moderate risk of extinction). To be considered viable, an ESU or DPS should have multiple viable populations so that a single catastrophic event is less likely to cause the ESU/DPS to become extinct and so that the ESU/DPS may function as a metapopulation that can withstand and sustain population-level extinction and recolonization processes (ICTRT 2007). The risk level of the ESU/DPS is built up from the aggregate risk levels of the individual populations and major population groups (MPGs) that make up the ESU/DPS.

Attributes associated with a VSP are: (1) Abundance (number of adult spawners in natural production areas); (2) productivity (adult progeny per parent); (3) spatial structure; and (4) diversity. A VSP needs sufficient levels of these four population attributes in order to: safeguard the genetic diversity of the listed ESU or DPS; enhance its capacity to adapt to various environmental conditions; and allow it to become self-sustaining in the natural environment (ICTRT 2007). These viability attributes are influenced by survival, behavior, and experiences throughout the entire salmonid life cycle, characteristics that are influenced in turn by habitat and other environmental and anthropogenic conditions. The present risk faced by the ESU/DPS informs NMFS' determination of whether additional risk will appreciably reduce the likelihood that the ESU/DPS will survive or recover in the wild.

2.2.1.1 Snake River Spring/Summer Chinook salmon

The Snake River spring/summer Chinook salmon ESU was listed as threatened on April 22, 1992 (57 FR 14653). This ESU occupies the Snake River basin, which drains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. Several factors led to NMFS' conclusion that Snake River spring/summer Chinook were threatened: (1) Abundance of naturally produced Snake River spring and summer Chinook runs had dropped to a small fraction of historical levels; (2) short-term projections were for a continued downward trend in abundance; (3) hydroelectric development on the Snake and Columbia Rivers continued to disrupt Chinook runs through altered flow regimes and impacts on estuarine habitats; and (4) habitat degradation existed throughout the region, along with risks associated with the use of outside hatchery stocks in particular areas (Good et al. 2005). On May 26, 2016, in the agency's most recent 5-year review for Pacific salmon and steelhead, NMFS concluded that the species should remain listed as threatened (81 FR 33468).

Life History. Snake River spring/summer Chinook salmon are characterized by their return times. Runs classified as spring Chinook salmon are counted at Bonneville Dam beginning in early March and ending the first week of June; summer runs are those Chinook adults that pass Bonneville Dam from June through August. Returning adults will hold in deep mainstem and tributary pools until late summer, when they move up into tributary areas and spawn. In general, spring-run type Chinook salmon tend to spawn in higher-elevation reaches of major Snake River tributaries in mid- through late August; and summer-run Chinook salmon tend to spawn lower in Snake River tributaries in late August and September (although the spawning areas of the two runs may overlap).

Spring/summer Chinook salmon follow a "stream-type" life history characterized by rearing for a full year in and near their natal areas and migrating in early to mid-spring as age-1 smolts (Healey 1991). Eggs are deposited in late summer and early fall, incubate over the following winter, and hatch in late winter and early spring of the following year. Juveniles rear through the summer, and most overwinter and migrate to sea in the spring of their second year of life. Depending on the tributary and the specific habitat conditions, pre-smolt juveniles may migrate extensively from natal reaches into alternative summer-rearing or overwintering areas. Snake River spring/summer Chinook salmon return from the ocean to spawn primarily as 4- and 5-year-old fish, after 2 to 3 years in the ocean. A small fraction of the fish return as 3-year-olds, which are mostly males ("jacks") (Good et al. 2005).

Spatial Structure and Diversity. The Snake River ESU includes all naturally spawning populations of spring/summer Chinook salmon in the mainstem Snake River (below Hells Canyon Dam) and in the Tucannon River, Grande Ronde River, Imnaha River, and Salmon River subbasins (57 FR 23458), as well as the progeny of 15 artificial propagation programs (70 FR 37160). The hatchery programs include the South Fork Salmon River (McCall Hatchery), Johnson Creek, Lemhi River, Pahsimeroi River, East Fork Salmon River, West Fork Yankee Fork Salmon River, Upper Salmon River (Sawtooth Hatchery), Tucannon River (conventional and captive broodstock programs), Lostine River, Catherine Creek, Lookingglass Creek, Upper Grande Ronde River, Imnaha River, and Big Sheep Creek programs. The historical Snake River ESU likely also included populations in the Clearwater River drainage and extended above the Hells Canyon Dam complex.

Within the Snake River ESU, the Interior Columbia Technical Recovery Team (ICTRT) identified 28 extant and 4 extirpated or functionally extirpated populations of spring/summer-run Chinook salmon, listed in Table 2 (ICTRT 2003; McClure et al. 2005). The ICTRT aggregated these populations into five MPGs: Lower Snake River, Grande Ronde/Imnaha Rivers, South Fork Salmon River, Middle Fork Salmon River, and Upper Salmon River. For each population, Table 2 shows the current risk ratings that the ICTRT assigned to the four parameters of a VSP (spatial structure, diversity, abundance, and productivity).

Spatial structure risk is low to moderate for most populations in this ESU (NWFSC 2015) and is generally not preventing the recovery of the species. Spring/summer Chinook salmon spawners are distributed throughout the ESU albeit at very low numbers. Diversity risk, on the other hand, is somewhat higher, driving the moderate and high combined spatial structure/diversity risks shown in Table 2 for some populations. Several populations have a high proportion of hatchery-origin spawners—particularly in the Grande Ronde, Lower Snake, and South Fork Salmon MPGs—and diversity risk will need to be lowered in multiple populations in order for the ESU to recover (ICTRT 2007; ICTRT 2010; NWFSC 2015).

Abundance and Productivity. Historically, the Snake River drainage is thought to have produced more than 1.5 million adult spring/summer Chinook salmon in some years (Matthews and Waples 1991), yet in 1994 and 1995, fewer than 2,000 naturally produced adults returned to the Snake River (ODFW and WDFW 2019). From the mid-1990s and the early 2000s, the population increased dramatically and peaked in 2001 at 45,273 naturally produced adult returns. Since 2001, the numbers have fluctuated between 32,324 (2003) and 4,425 (2017), and the trend for the most recent five years (2014-2018) has been generally downward (ODFW and WDFW 2019). Although most populations in this ESU have increased in abundance since listing, 27 of the 28 extant populations remain at high risk of extinction due to low abundance/productivity, with one population (Chamberlin Creek) at moderate risk of extinction (NWFSC 2015). Furthermore, the most recent returns indicate that all populations in the ESU were below replacement for the 2013 brood year (Felts et al. 2019)[1] which reduced abundance across the ESU. All currently extant populations of Snake River spring/summer Chinook salmon will likely have to increase in abundance and productivity in order for the ESU to recover (Table 2).

[1] The return size is not known until five years after the brood year. Preliminary results for the 2019 redd counts indicate that the 2014 brood year will be below replacement for the vast majority (possibly all) of the populations in the Snake River spring/summer Chinook salmon ESU.

Table 2: Summary of viable salmonid population parameter risks and overall current status of each population in the Snake River spring/summer Chinook salmon ESU. (NWFSC 2015)

MPG	Population	VSP Risk Parameter: Abundance/ Productivity	VSP Risk Parameter: Spatial Structure/ Diversity	Overall Viability Rating
South Fork Salmon River (Idaho)	Little Salmon River	*Insf. data*	Low	High Risk
	South Fork Salmon River mainstem	High	Moderate	High Risk
	Secesh River	High	Low	High Risk
	East Fork South Fork Salmon River	High	Low	High Risk
Middle Fork Salmon River (Idaho)	Chamberlain Creek	Moderate	Low	Maintained
	Middle Fork Salmon River below Indian Creek	*Insf. data*	Moderate	High Risk
	Big Creek	High	Moderate	High Risk
	Camas Creek	High	Moderate	High Risk
	Loon Creek	High	Moderate	High Risk
	Middle Fork Salmon River above Indian Creek	High	Moderate	High Risk
	Sulphur Creek	High	Moderate	High Risk
	Bear Valley Creek	High	Low	High Risk
	Marsh Creek	High	Low	High Risk
Upper Salmon River (Idaho)	North Fork Salmon River	*Insf. data*	Low	High Risk
	Lemhi River	High	High	High Risk
	Salmon River Lower Mainstem	High	Low	High Risk
	Pahsimeroi River	High	High	High Risk
	East Fork Salmon River	High	High	High Risk
	Yankee Fork Salmon River	High	High	High Risk
	Valley Creek	High	Moderate	High Risk
	Salmon River Upper Mainstem	High	Low	High Risk
	Panther Creek			***Extirpated***
Lower Snake (Washington)	Tucannon River	High	Moderate	High Risk
	Asotin Creek			***Extirpated***
Grande Ronde and Imnaha Rivers (Oregon/ Washington)	Wenaha River	High	Moderate	High Risk
	Lostine/Wallowa River	High	Moderate	High Risk
	Minam River	High	Moderate	High Risk
	Catherine Creek	High	Moderate	High Risk
	Upper Grande Ronde River	High	High	High Risk
	Imnaha River	High	Moderate	High Risk
	Lookingglass Creek			***Extirpated***
	Big Sheep Creek			***Extirpated***

The Snake River spring/summer Chinook salmon ESU has suffered from a variety of human caused perturbations. These include mainstem passage due to hydropower infrastructure, alterations from a free flowing river to a series of reservoirs, and increased predation from native and non-native piscivorous fish. The reservoirs increase the amount of time it takes for the out-migrating salmon to reach the ocean. The piscivorous fish species include northern pikeminnow, walleye, and smallmouth bass.

Spring/summer Chinook salmon do not spawn within, and only briefly rear within the action area. Adult Snake River spring/summer Chinook salmon pass through the action area enroute to upstream spawning areas, while out-migrating juveniles use the area for passage and resting as they migrate to the ocean.

2.2.1.2 Snake River Fall-run Chinook Salmon

The Snake River fall Chinook salmon ESU was listed as threatened on April 22, 1992 (57 FR 14653). This ESU occupies the Snake River basin, which drains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. Snake River fall Chinook salmon have substantially declined in abundance from historic levels, primarily due to the loss of primary spawning and rearing areas upstream of the Hells Canyon Dam complex (57 FR 14653). Additional concerns for the species have been the high percentage of hatchery fish returning to natural spawning grounds and the relatively high aggregate harvest impacts by ocean and in-river fisheries (Good et al. 2005). On May 26, 2016, in the agency's most recent 5-year review for Pacific salmon and steelhead, NMFS concluded that the species should remain listed as threatened (81 FR 33468).

Life History. Snake River fall Chinook salmon enter the Columbia River in July and August, and migrate past the lower Snake River mainstem dams from August through November. Spawning takes place from October through early December in the mainstem of the Snake River, primarily between Asotin Creek and Hells Canyon Dam, and in the lower reaches of several of the associated major tributaries including the Tucannon, Grande Ronde, Clearwater, Salmon, and Imnaha Rivers (Connor and Burge 2003; Ford 2011). Spawning has occasionally been observed in the tailrace areas of the four mainstem dams (Dauble et al. 1999; Dauble et al. 1995; Dauble et al. 1994; Mueller 2009). Juveniles emerge from the gravels in March and April of the following year.

Until relatively recently, Snake River fall Chinook salmon were assumed to follow an "ocean-type" life history (Dauble and Geist 2000; Good et al. 2005; Healey 1991; NMFS 1992) where they migrate to the Pacific Ocean during their first year of life, normally within 3 months of emergence from spawning substrate as age-0 smolts, to spend their first winter in the ocean. Ocean-type Chinook salmon juveniles tend to display a "rear as they go" rearing strategy in which they continually move downstream through shallow shoreline habitats their first summer and fall until reaching the ocean by winter (Connor and Burge 2003; Coutant and Whitney 2006). However, several studies have shown that another life history pattern exists in which a significant number of smaller Snake River fall Chinook juveniles overwinter in Snake River reservoirs prior to out-migration. These fish begin migration later than most, arrest their seaward migration and overwinter in reservoirs on the Snake and Columbia Rivers, then resume migration and enter the ocean in early spring as age-1 smolts (Connor and Burge 2003; Connor et al. 2002; Connor et al. 2005; Hegg et al. 2013). Connor et al. (2005) termed this life history strategy "reservoir-type." Scale samples from natural-origin adult fall Chinook salmon taken at Lower Granite Dam have indicated that approximately half of the returns overwintered in freshwater (Ford 2011). Tiffan and Connor (2012) showed that subyearling fish favor water less than six feet deep.

Spatial Structure and Diversity. The Snake River fall Chinook salmon ESU includes one extant population of fish spawning in the mainstem of the Snake River and the lower reaches of several of the associated major tributaries including the Tucannon, Grande Ronde, Clearwater, Salmon, and Imnaha Rivers. The ESU also includes four artificial propagation programs: the Lyons Ferry Hatchery and the Fall Chinook Acclimation Ponds Program in Washington; the Nez Perce

Tribal Hatchery in Idaho; and the Oxbow Hatchery in Oregon and Idaho (70 FR 37160). Historically, this ESU included one large additional population spawning in the mainstem of the Snake River upstream of the Hells Canyon Dam complex, an impassable migration barrier (NWFSC 2015). Four of the five historic major spawning areas in the Lower Snake population currently have natural-origin spawning. Spatial structure risk for the existing ESU is therefore low and is not precluding recovery of the species (NWFSC 2015).

There are several diversity concerns for Snake River fall Chinook salmon, leading to a moderate diversity risk rating for the extant Lower Snake population. One concern is the high proportion of hatchery fish spawning naturally; between 2010 and 2014, only 31percent of spawners in the population were natural-origin, and hatchery-origin returns are widespread across the major spawning areas within the population (NWFSC 2015). The moderate diversity risk is also driven by changes in major life history patterns; shifts in phenotypic traits; high levels of genetic homogeneity in samples from natural-origin returns; selective pressure imposed by current hydropower operations; and cumulative harvest impacts (NWFSC 2015). Diversity risk will need to be reduced to low in order for this population to be considered highly viable, a requirement for recovery of the species. Low diversity risk would require that one or more major spawning areas produce a significant level of natural-origin spawners with low influence by hatchery-origin spawners (NWFSC 2015).

Abundance and Productivity. Historical abundance of Snake River fall Chinook salmon is estimated to have been 416,000 to 650,000 adults (NMFS 2006), but numbers declined drastically over the 20th century, with only 78 natural-origin fish (Joint Columbia River Management Staff 2014) and 306 hatchery-origin fish (FPC 2019) passing Lower Granite Dam in 1990. Artificial propagation of fall Chinook salmon occurred from 1901 through 1909 and again from 1955 through 1973, but those efforts ultimately failed and by the late 1970s, essentially all Snake River fall Chinook salmon were natural-origin. The large-scale hatchery effort that exists today began in 1976, when Congress authorized the Lower Snake River Compensation Plan (LSRCP) to compensate for fish and wildlife losses caused by the construction and operation of the four lower Snake River dams. The first hatchery fish from this effort returned in 1981 and hatchery returns have comprised a substantial portion of the run every year since. From 2007 to 2016, the proportion of hatchery-origin fish has averaged about 70 percent, based on post-harvest, post-broodstock estimates above Lower Granite Dam (NWFSC 2015).

After 1990, abundance increased dramatically and in 2014, the 10-year geometric mean (2005-2014) was 22,196 total adult returns (FPC 2019) and 6,148 natural-origin adult returns (NWFSC 2015). This is well above the minimum abundance of 4,200 natural-origin spawners needed for highly viable status. However, the productivity estimate for the 1990–2009 brood years is 1.5, which is below the 1.7 minimum needed for highly viable status. From 2015 through 2018, annual returns steadily decreased (Personal Communication, Bill Young, Nez Perce Tribe Hatchery Evaluations Coordinator, October 17, 2019), but in spite of this recent decrease, the geometric mean abundance for 2009-2018 was actually slightly higher than for 2005-2014. However, due to the declining trend, the current productivity estimate is slightly less than 1.5, with substantial uncertainty due to large numbers of hatchery-origin fish reaching spawning habitat. Regardless, an increase in productivity will likely be needed to achieve highly viable status. This could possibly be achieved by reducing mortality during specific life stages, such as a reduction in harvest impacts on adults, currently at 40–50 percent, or improvements in juvenile survivals during downstream migration (NWFSC 2015).

Fall Chinook salmon use the lower Snake River for migration, spawning, and rearing, though spawning in the reach that includes the action area is likely fairly limited. Most fall Chinook spawning occurs further upstream in the Snake River, and in the Clearwater River. There is potential for rearing to occur within the action area. Changes in habitat due to hydropower infrastructure has favored native and non-native piscivorous fish that prey on juvenile ESA-listed salmonids. Predator habitat enhancement created by over-water structures can add to the predation-limiting factor for juvenile fall Chinook salmon in the Lower Snake River.

2.2.1.3 Snake River Sockeye Salmon

This ESU includes all anadromous and residual sockeye salmon from the Snake River basin in Idaho, as well as artificially propagated sockeye salmon from the Redfish Lake captive propagation program. The ESU was first listed as endangered under the ESA in 1991, and the listing was reaffirmed in 2005 (70 FR 37160). Reasons for the decline of this species include high levels of historic harvest, dam construction including hydropower development on the Snake and Columbia Rivers, water diversions and water storage, predation on juvenile salmon in the mainstem river migration corridor, and active eradication of sockeye from some lakes in the 1950s and 1960s (56 FR 58619; ICTRT 2003). On May 26, 2016, in the agency's most recent 5-year review for Pacific salmon and steelhead, NMFS concluded that the species should remain listed as endangered (81 FR 33468).

Life History. Snake River sockeye salmon adults enter the Columbia River primarily during June and July, and arrive in the Sawtooth Valley peaking in August. The Sawtooth Valley supports the only remaining run of Snake River sockeye salmon. The adults spawn in lakeshore gravels, primarily in October (Bjornn et al. 1968). Eggs hatch in the spring between 80 and 140 days after spawning. Fry remain in the gravel for three to five weeks, emerge from April through May, and move immediately into the lake. Once there, juveniles feed on plankton for one to three years before they migrate to the ocean, leaving their natal lake in the spring from late April through May (Bjornn et al. 1968). Snake River sockeye salmon usually spend two to three years in the Pacific Ocean and return to Idaho in their 4^{th} or 5^{th} year of life.

Spatial Structure and Diversity. Within the Snake River ESU, the ICTRT identified historical sockeye salmon production in five Sawtooth Valley lakes, in addition to Warm Lake and the Payette Lakes in Idaho and Wallowa Lake in Oregon (ICTRT 2003). The sockeye runs to Warm, Payette, and Wallowa Lakes are now extinct, and the ICTRT identified the Sawtooth Valley lakes as a single MPG for this ESU. The MPG consists of the Redfish, Alturas, Stanley, Yellowbelly, and Pettit Lake populations (ICTRT 2007). The only extant population is Redfish Lake, supported by a captive broodstock program. Hatchery fish from the Redfish Lake captive propagation program have also been outplanted in Alturas and Pettit Lakes since the mid-1990s in an attempt to reestablish those populations (Ford 2011). With such a small number of populations in this MPG, increasing the number of populations would substantially reduce the risk faced by the ESU (ICTRT 2007). The Northwest Fisheries Science Center (NWFSC) (2015) reports some evidence of very low levels of early-timed returns in some recent years from out-migrating naturally-produced Alturas Lake smolts, but the ESU remains at high risk for spatial structure.

Currently, the Snake River sockeye salmon run is highly dependent on a captive broodstock program operated at the Sawtooth Hatchery and Eagle Hatchery. Although the captive brood program rescued the ESU from the brink of extinction, diversity risk remains high without sustainable natural production (Ford 2011; NWFSC 2015).

Abundance and Productivity. Prior to the turn of the 20th century (ca. 1880), around 150,000 sockeye salmon ascended the Snake River to the Wallowa, Payette, and Salmon River basins to spawn in natural lakes (Evermann 1896, as cited in Chapman et al. 1990). The Wallowa River sockeye run was considered extinct by 1905, the Payette River run was blocked by Black Canyon Dam on the Payette River in 1924, and anadromous Warm Lake sockeye in the South Fork Salmon River basin may have been trapped in Warm Lake by a land upheaval in the early 20th century (ICTRT 2003). In the Sawtooth Valley, the Idaho Department of Fish and Game eradicated sockeye from Yellowbelly, Pettit, and Stanley Lakes in favor of other species in the 1950s and 1960s, and irrigation diversions led to the extirpation of sockeye in Alturas Lake in the early 1900s (ICTRT 2003), leaving only the Redfish Lake sockeye. From 1991 to 1998, a total of just 16 wild adult anadromous sockeye salmon returned to Redfish Lake. These 16 wild fish were incorporated into a captive broodstock program that began in 1992 and has since expanded so that the program currently releases hundreds of thousands of juvenile fish each year in the Sawtooth Valley (Ford 2011).

With the increase in hatchery production, adult returns to Sawtooth Valley have increased, ranging from 91 to 1,516 during the most recent 5-year period (2014-2018) (Baker et al. 2015; Baker et al. 2016; Baker et al. 2017; Baker et al. 2018; Phillips 2019). The increased abundance of hatchery reared Snake River sockeye reduces the risk of immediate loss, yet levels of naturally produced sockeye returns remain extremely low (NWFSC 2015). The ICTRT's viability target is at least 1,000 naturally produced spawners per year in each of Redfish and Alturas Lakes and at least 500 in Pettit Lake (ICTRT 2007). Very low numbers of adults survived upstream migration in the Columbia and Snake Rivers in 2015 due to unusually high water temperatures. The implications of this high mortality for the recovery of the species are uncertain and depend on the frequency of similar high water temperatures in future years (NWFSC 2015).

The species remains at high risk across all four-risk parameters (spatial structure, diversity, abundance, and productivity). Although the captive brood program has been highly successful in producing hatchery *O. nerka*, substantial increases in survival rates across all life history stages must occur in order to reestablish sustainable natural production (NWFSC 2015). In particular, juvenile and adult losses during travel through the Salmon, Snake, and Columbia River migration corridor continue to present a significant threat to species recovery (NMFS 2015).

Sockeye salmon have been adversely affected by a variety of human caused perturbations. These include mainstem infrastructure at dams, alterations from a free flowing river to a series of reservoirs, and increased predation from native and non-native piscivorous fish. The reservoirs increase the amount of time it takes for the out-migrating sockeye salmon to reach the ocean.

Sockeye salmon do not spawn or rear within the action area. Adult sockeye salmon pass through the action area enroute to upstream spawning areas (specifically Redfish Lake), while out-migrating juveniles use the area for passage and resting as they migrate to the ocean.

2.2.1.4 Snake River Basin Steelhead

The Snake River Basin steelhead was listed as a threatened ESU on August 18, 1997 (62 FR 43937), with a revised listing as a DPS on January 5, 2006 (71 FR 834). This DPS occupies the Snake River basin, which drains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. Reasons for the decline of this species include substantial modification of the seaward migration corridor by hydroelectric power development on the mainstem Snake and Columbia Rivers, and widespread habitat degradation and reduced streamflows throughout the Snake River basin (Good et al. 2005). Another major concern for the species is the threat to genetic integrity from past and present hatchery practices, and the high proportion of hatchery fish in the aggregate run of Snake River Basin steelhead over Lower Granite Dam (Good et al. 2005; Ford 2011). On May 26, 2016, in the agency's most recent 5-year review for Pacific salmon and steelhead, NMFS concluded that the species should remain listed as threatened (81 FR 33468).

Life History. Adult Snake River Basin steelhead enter the Columbia River from late June to October to begin their migration inland. After holding over the winter in larger rivers in the Snake River basin, steelhead disperse into smaller tributaries to spawn from March through May. Earlier dispersal occurs at lower elevations and later dispersal occurs at higher elevations. Juveniles emerge from the gravels in 4 to 8 weeks, and move into shallow, low-velocity areas in side channels and along channel margins to escape high velocities and predators (Everest and Chapman 1972). Juvenile steelhead then progressively move toward deeper water as they grow in size (Bjornn and Rieser 1991). Juveniles typically reside in fresh water for 1 to 3 years, although this species displays a wide diversity of life histories. Smolts migrate downstream during spring runoff, which occurs from March to mid-June depending on elevation, and typically spend 1 to 2 years in the ocean.

Spatial Structure and Diversity. This species includes all naturally-spawning steelhead populations below natural and manmade impassable barriers in streams in the Snake River basin of southeast Washington, northeast Oregon, and Idaho, as well as the progeny of six artificial propagation programs (71FR834). The hatchery programs include Dworshak National Fish Hatchery, Lolo Creek, North Fork Clearwater River, East Fork Salmon River, Tucannon River, and the Little Sheep Creek/Imnaha River steelhead hatchery programs. The Snake River Basin steelhead listing does not include resident forms of *O. mykiss* (rainbow trout) co-occurring with steelhead.

The ICTRT identified 24 extant populations within this DPS, organized into five MPGs (ICTRT 2003). The ICTRT also identified a number of potential historical populations associated with watersheds above the Hells Canyon Dam complex on the mainstem Snake River, a barrier to anadromous migration. The five MPGs with extant populations are the Clearwater River, Salmon River, Grande Ronde River, Imnaha River, and Lower Snake River. In the Clearwater River, the historic North Fork population was blocked from accessing spawning and rearing habitat by Dworshak Dam. Current steelhead distribution extends throughout the DPS, such that spatial structure risk is generally low. For each population in the DPS, Table 3 shows the current risk ratings for the parameters of a VSP (spatial structure, diversity, abundance, and productivity).

The Snake River Basin DPS steelhead exhibit a diversity of life-history strategies, including variations in fresh water and ocean residence times. Traditionally, fisheries managers have classified Snake River Basin steelhead into two groups, A-run and B-run, based on ocean age at return, adult size at return, and migration timing. A-run steelhead predominantly spend 1-year in the ocean; B-run steelhead are larger with most individuals returning after 2 years in the ocean. New information shows that most Snake River populations support a mixture of the two run types, with the highest percentage of B-run fish in the upper Clearwater River and the South Fork Salmon River; moderate percentages of B-run fish in the Middle Fork Salmon River; and very low percentages of B-run fish in the Upper Salmon River, Grande Ronde River, and Lower Snake River (NWFSC 2015). Maintaining life history diversity is important for the recovery of the species.

Diversity risk for populations in the DPS is either moderate or low. Large numbers of hatchery steelhead are released in the Snake River, and the relative proportion of hatchery adults in natural spawning areas near major hatchery release sites remains uncertain. Moderate diversity risks for some populations are thus driven by the high proportion of hatchery fish on natural spawning grounds and the uncertainty regarding these estimates (NWFSC 2015). Reductions in hatchery-related diversity risks would increase the likelihood of these populations reaching viable status.

Abundance and Productivity. Historical estimates of steelhead production for the entire Snake River basin are not available, but the basin is believed to have supported more than half the total steelhead production from the Columbia River basin (Mallet 1974, as cited in Good et al. 2005). The Clearwater River drainage alone may have historically produced 40,000 to 60,000 adults (Ecovista et al. 2003), and historical harvest data suggests that steelhead production in the Salmon River was likely higher than in the Clearwater (Hauck 1953). In contrast, at the time of listing in 1997, the 5-year geomean abundance for natural-origin steelhead passing Lower Granite Dam, which includes all but one population in the DPS, was 11,462 adults (Ford 2011). Abundance began to increase in the early 2000s, with the single year count and the 5-year geomean both peaking in 2015 at 45,789 and 34,179, respectively (ODFW and WDFW 2019). Since 2015, the numbers have declined steadily with only 10,717 natural-origin adult returns counted in 2018 (ODFW and WDFW 2019). Even with the recent decline, the 5-year geomean abundance for natural-origin adult returns was 23,100 in 2018 (ODFW and WDFW 2019) which is more than twice the number at listing and substantially greater than the 5-year geomean of 18,847 tabulated in the most recent status review (i.e., Ford 2011).

Population-specific abundance estimates exist for some but not all populations. Of the populations for which we have data, three (Joseph Creek, Upper Grande Ronde, and Lower Clearwater) are meeting minimum abundance/productivity thresholds and several more have likely increased in abundance enough to reach moderate risk. Despite these recent increases in abundance, the status of many of the individual populations remains uncertain, and four out of the five MPGs are not meeting viability objectives (NWFSC 2015). In order for the species to recover, more populations will need to reach viable status through increases in abundance and productivity.

Adult steelhead migrate through the action area to spawning grounds further upstream in either the Snake or Clearwater Rivers. Juveniles migrate through, and some rear and overwinter within, the action area. Particularly for juvenile steelhead that rear within the action area, increased over water structure could lead to increased predation on individual fish.

Table 3: Summary of viable salmonid population parameter risks and overall current status for each population in the Snake River Basin steelhead DPS. (NWFSC 2015 Risk rating with "?" are based on limited or provisional data series.

MPG	Population	VSP Risk Parameter: Abundance/ Productivity	VSP Risk Parameter: Spatial Structure/ Diversity	Overall Viability Rating
Lower Snake River	Tucannon River	High?	Moderate	High Risk?
	Asotin Creek	Moderate?	Moderate	Maintained?
Grande Ronde River	Lower Grande Ronde	N/A	Moderate	Maintained?
	Joseph Creek	Very Low	Low	**Highly Viable**
	Wallowa River	N/A	Low	Maintained?
	Upper Grande Ronde	Low	Moderate	**Viable**
Imnaha River	Imnaha River	Moderate?	Moderate	Maintained?
Clearwater River (Idaho)	Lower Mainstem Clearwater River*	Moderate?	Low	Maintained?
	South Fork Clearwater River	High?	Moderate	High Risk?
	Lolo Creek	High?	Moderate	High Risk?
	Selway River	Moderate?	Low	Maintained?
	Lochsa River	Moderate?	Low	Maintained?
	North Fork Clearwater River			*Extirpated*
Salmon River (Idaho)	Little Salmon River	Moderate?	Moderate	Maintained?
	South Fork Salmon River	Moderate?	Low	Maintained?
	Secesh River	Moderate?	Low	Maintained?
	Chamberlain Creek	Moderate?	Low	Maintained?
	Lower Middle Fork Salmon R.	Moderate?	Low	Maintained?
	Upper Middle Fork Salmon R.	Moderate?	Low	Maintained?
	Panther Creek	Moderate?	High	High Risk?
	North Fork Salmon River	Moderate?	Moderate	Maintained?
	Lemhi River	Moderate?	Moderate	Maintained?
	Pahsimeroi River	Moderate?	Moderate	Maintained?
	East Fork Salmon River	Moderate?	Moderate	Maintained?
	Upper Mainstem Salmon R.	Moderate?	Moderate	Maintained?
Hells Canyon	Hells Canyon Tributaries			*Extirpated*

*Current abundance/productivity estimates for the Lower Clearwater Mainstem population exceed minimum thresholds for viability, but the population is assigned moderate risk for abundance/productivity due to the high uncertainty associated with the estimate.

2.2.2 Status of Critical Habitat

In evaluating the condition of designated critical habitat, NMFS examines the condition and trends of physical and biological features (PBFs) which are essential to the conservation of the ESA-listed species because they support one or more life stages of the species. Proper function of these PBFs is necessary to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and the growth and development of juvenile fish. Modification of

PBFs may affect freshwater spawning, rearing or migration in the action area. Generally speaking, sites required to support one or more life stages of the ESA-listed species (i.e., sites for spawning, rearing, migration, and foraging) contain PBF essential to the conservation of the listed species (e.g., spawning gravels, water quality and quantity, side channels, or food) (Table 4).

Table 4: Types of sites, essential physical and biological features (PBFs), and the species life stage each PBF supports.

Site	Essential Physical and Biological Features	Species Life Stage
Snake River Basin Steelhead[a]		
Freshwater spawning	Water quality, water quantity, and substrate	Spawning, incubation, and larval development
Freshwater rearing	Water quantity & floodplain connectivity to form and maintain physical habitat conditions	Juvenile growth and mobility
	Water quality and forage[b]	Juvenile development
	Natural cover[c]	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover[c]	Juvenile and adult mobility and survival
Snake River Spring/Summer Chinook Salmon, Fall Chinook, & Sockeye Salmon		
Spawning & Juvenile Rearing	Spawning gravel, water quality and quantity, cover/shelter (Chinook only), food, riparian vegetation, space (Chinook only), water temperature and access (sockeye only)	Juvenile and adult
Migration	Substrate, water quality and quantity, water temperature, water velocity, cover/shelter, food[d], riparian vegetation, space, safe passage	Juvenile and adult

[a] Additional PBFs pertaining to estuarine, nearshore, and offshore marine areas have also been described for Snake River steelhead and Middle Columbia steelhead. These PBFs will not be affected by the proposed action and have therefore not been described in this Opinion.
[b] Forage includes aquatic invertebrate and fish species that support growth and maturation.
[c] Natural cover includes shade, large wood, log jams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.
[d] Food applies to juvenile migration only.

Table 5 describes the geographical extent within the Snake River of critical habitat for each of the four ESA-listed salmon and steelhead species. Critical habitat includes the stream channel and water column with the lateral extent defined by the ordinary high-water line, or the bankfull elevation where the ordinary high-water line is not defined. In addition, critical habitat for the three salmon species includes the adjacent riparian zone, which is defined as the area within 300 feet of the line of high water of a stream channel or from the shoreline of a standing body of water (58 FR 68543). The riparian zone is critical because it provides shade, streambank stability, organic matter input, and regulation of sediment, nutrients, and chemicals.

Table 5: Geographical extent of designated critical habitat within the Snake River for ESA listed salmon and Steelhead.

ESU/DPS	Designation	Geographical Extent of Critical Habitat
Snake River sockeye salmon	58 FR 68543; December 28, 1993	Snake and Salmon Rivers; Alturas Lake Creek; Valley Creek, Stanley Lake, Redfish Lake, Yellowbelly Lake, Pettit Lake, Alturas Lake; all inlet/outlet creeks to those lakes.
Snake River spring/summer Chinook salmon	58 FR 68543; December 28, 1993. 64 FR 57399; October 25, 1999.	All Snake River reaches upstream to Hells Canyon Dam; all river reaches presently or historically accessible to Snake River spring/summer Chinook salmon within the Salmon River basin; and all river reaches presently or historically accessible to Snake River spring/summer Chinook salmon within the Hells Canyon, Imnaha, Lower Grande Ronde, Upper Grande Ronde, Lower Snake-Asotin, Lower Snake-Tucannon, and Wallowa subbasins.
Snake River fall Chinook salmon	58 FR 68543; December 28, 1993	Snake River to Hells Canyon Dam; Palouse River from its confluence with the Snake River upstream to Palouse Falls; Clearwater River from its confluence with the Snake River upstream to Lolo Creek; North Fork Clearwater River from its confluence with the Clearwater River upstream to Dworshak Dam; and all other river reaches presently or historically accessible within the Lower Clearwater, Hells Canyon, Imnaha, Lower Grande Ronde, Lower Salmon, Lower Snake, Lower Snake–Asotin, Lower North Fork Clearwater, Palouse, and Lower Snake–Tucannon subbasins.
Snake River Basin steelhead	70 FR 52630; September 2, 2005	Specific stream reaches are designated within the Lower Snake, Salmon, and Clearwater River basins. Table 21 in the Federal Register details habitat areas within the DPS's geographical range that are excluded from critical habitat designation.

Spawning and rearing habitat quality in tributary streams in the Snake River varies from excellent in wilderness and roadless areas to poor in areas subject to intensive human land uses (NMFS 2015; NMFS 2017a). Critical habitat throughout much of the Interior Columbia (which includes the Snake River and the Middle Columbia River) has been degraded by intensive agriculture, alteration of stream morphology (i.e., channel modifications and diking), riparian vegetation disturbance, wetland draining and conversion, livestock grazing, dredging, road construction and maintenance, logging, mining, and urbanization. Reduced summer streamflows, impaired water quality, and reduction of habitat complexity are common problems for critical habitat in non-wilderness areas. Human land use practices throughout the basin have caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations.

In many stream reaches designated as critical habitat in the Snake River basin, streamflows are substantially reduced by water diversions (NMFS 2015; NMFS 2017a). Withdrawal of water, particularly during low-flow periods that commonly overlap with agricultural withdrawals, often increases summer stream temperatures, blocks fish migration, strands fish, and alters sediment transport (Spence et al. 1996). Reduced tributary streamflow has been identified as a major limiting factor for Snake River spring/summer Chinook and Snake River Basin steelhead in particular (NMFS 2017a).

Many stream reaches designated as critical habitat for these species are listed on the Clean Water Act 303(d) list for impaired water quality, such as elevated water temperature (IDEQ 2011). Many areas that were historically suitable rearing and spawning habitat are now unsuitable due to high summer stream temperatures, such as some stream reaches in the Upper Grande Ronde. Removal of riparian vegetation, alteration of natural stream morphology, and withdrawal of water for agricultural or municipal use all contribute to elevated stream temperatures. Water quality in spawning and rearing areas in the Snake River has also been impaired by high levels of sedimentation and by heavy metal contamination from mine waste (e.g., IDEQ and USEPA 2003; IDEQ 2001).

The construction and operation of water storage and hydropower projects in the Columbia River basin, including the run-of-river dams on the mainstem lower Snake and lower Columbia Rivers, have altered biological and physical attributes of the mainstem migration corridor. These alterations have affected juvenile migrants to a much larger extent than adult migrants. However, changing temperature patterns have created passage challenges for summer migrating adults in recent years, requiring new structural and operational solutions (i.e., cold-water pumps and exit "showers" for ladders at Lower Granite and Lower Monumental dams). Actions taken since 1995 that have reduced negative effects of the hydrosystem on juvenile and adult migrants include:

- Minimizing winter drafts (for flood risk management and power generation) to increase flows during peak spring passage;
- Releasing water from storage to increase summer flows;
- Releasing water from Dworshak Dam to reduce peak summer temperatures in the lower Snake River;
- Constructing juvenile bypass systems to divert smolts, steelhead kelts, and adults that fall back over the projects away from turbine units;
- Providing spill at each of the mainstem dams for smolts, steelhead kelts, and adults that fall back over the projects;
- Constructing “surface passage” structures to improve passage for smolts, steelhead kelts, and adults falling back over the projects; and,
- Maintaining and improving adult fishway facilities to improve migration passage for adult salmon and steelhead.
- The above listed measures are helping to progress towards recovery.

2.2.3 Climate Change Implications for ESA-listed Species and their Critical Habitat

Climate change is affecting aquatic habitat and the rangewide status of Snake River salmon and steelhead. The U. S. Global Change Research Program reports average warming of about 1.3°F from 1895 to 2011, and projects an increase in average annual temperature of 3.3°F to 9.7°F by

2070 to 2099 (Climate Change Science Program 2014). Climate change has negative implications for ESA listed anadromous fishes and their habitats in the Pacific Northwest (CIG 2004; Scheuerell and Williams 2005; Zabel et al. 2006; ISAB 2007). According to the Independent Science Advisory Board (ISAB 2007), climate change will cause the following:

- Warmer air temperatures will result in diminished snowpack and a shift to more winter/spring rain and runoff, rather than snow that is stored until the spring/summer melt season;

- With a smaller snowpack, watersheds will see their runoff diminished earlier in the season, resulting in lower flows in the June through September period, while more precipitation falling as rain rather than snow will cause higher flows in winter, and possibly higher peak flows; and,

- Water temperatures are expected to rise, especially during the summer months when lower flows co-occur with warmer air temperatures.

These changes will not be spatially homogeneous across the entire Pacific Northwest. Low-lying areas are likely to be more affected. Climate change may have long-term effects that include, but are not limited to, depletion of important cold-water habitat, variation in quality and quantity of tributary rearing habitat, alterations to migration patterns, accelerated embryo development, premature emergence of fry, and increased competition among species.

Climate change is predicted to cause a variety of impacts to Pacific salmon (including steelhead) and their ecosystems (Mote et al. 2003; Crozier et al. 2008a; Martins et al. 2012; Wainwright and Weitkamp 2013). The complex life cycles of anadromous fishes, including salmon, rely on productive freshwater, estuarine, and marine habitats for growth and survival, making them particularly vulnerable to environmental variation. Ultimately, the effects of climate change on salmon and steelhead across the Pacific Northwest will be determined by the specific nature, level, and rate of change and the synergy between interconnected terrestrial/freshwater, estuarine, nearshore, and ocean environments.

The primary effects of climate change on Pacific Northwest salmon and steelhead include:

- Direct effects of increased water temperatures on fish physiology.

- Temperature-induced changes to streamflow patterns.

- Alterations to freshwater, estuarine, and marine food webs; and,

- Changes in estuarine and ocean productivity.

While all habitats used by Pacific salmon will be affected, the impacts and certainty of the change vary by habitat type. Some effects (e.g., increasing temperature) affect salmon at all life stages in all habitats, while others are habitat-specific, such as streamflow variation in freshwater, sea-level rise in estuaries, and upwelling in the ocean. How climate change will affect each stock or population of salmon also varies widely depending on the level or extent of change, the rate of change, and the unique life-history characteristics of different natural populations (Crozier et al. 2008b). For example, a few weeks' difference in migration timing can have large differences in the thermal regime experienced by migrating fish (Martins et al. 2011).

Temperature Effects. Like most fishes, salmon are poikilotherms (cold-blooded animals); therefore, increasing temperatures in all habitats can have pronounced effects on their physiology, growth, and development rates (see review by Whitney et al. 2016). Increases in water temperatures beyond their thermal optima will likely be detrimental through a variety of processes, including increased metabolic rates (and therefore food demand), decreased disease resistance, increased physiological stress, and reduced reproductive success. All of these processes are likely to reduce survival (Beechie et al. 2013; Wainwright and Weitkamp 2013; Whitney et al. 2016).

By contrast, increased temperatures at ranges well below thermal optima (i.e., when the water is cold) can increase growth and development rates. Examples of this include accelerated emergence timing during egg incubation stages, or increased growth rates during fry stages (Crozier et al. 2008a; Martins et al. 2011). Temperature is also an important behavioral cue for migration (Sykes et al. 2009), and elevated temperatures may result in earlier-than-normal migration timing. While there are situations or stocks where this acceleration in processes or behaviors is beneficial, there are also others where it is detrimental (Martins et al. 2012; Whitney et al. 2016).

Freshwater Effects. Climate change is predicted to increase the intensity of storms, reduce winter snow pack at low and middle elevations, and increase snowpack at high elevations in northern areas. Middle and lower-elevation streams will have larger fall/winter flood events and lower late summer flows, while higher elevations may have higher minimum flows. How these changes will affect freshwater ecosystems largely depends on their specific characteristics and location, which vary at fine spatial scales (Crozier et al. 2008b; Martins et al. 2012). For example, within a relatively small geographic area (the Salmon River basin in Idaho), survival of some Chinook salmon populations was shown to be determined largely by temperature, while in others it was determined by flow (Crozier and Zabel 2006). Certain salmon populations inhabiting regions that are already near or exceeding thermal maxima will be most affected by further increases in temperature and, perhaps, the rate of the increases. The effects of altered flow are less clear and likely to be basin-specific (Crozier et al. 2008b; Beechie et al. 2013). However, flow is already becoming more variable in many rivers, and this increased variability is believed to negatively affect anadromous fish survival more than other environmental parameters (Ward et al. 2015). It is likely this increasingly variable flow is detrimental to multiple salmon and steelhead populations, and to other freshwater fish species in the Columbia River basin.

Stream ecosystems will likely change in response to climate change in ways that are difficult to predict (Lynch et al. 2016). Changes in stream temperature and flow regimes will likely lead to shifts in the distributions of native species and provide "invasion opportunities" for exotic species. This will result in novel species interactions, including predator-prey dynamics, where juvenile native species may be either predators or prey (Lynch et al. 2016; Rehage and Blanchard 2016). How juvenile native species will fare as part of "hybrid food webs," which are constructed from natives, native invaders, and exotic species, is difficult to predict (Naiman et al. 2012).

Estuarine Effects. In estuarine environments, the two big concerns associated with climate change are rates of sea level rise and water temperature warming (Wainwright and Weitkamp 2013; Limburg et al. 2016). Estuaries will be affected directly by sea-level rise: as sea level rises, terrestrial habitats will be flooded and tidal wetlands will be submerged (Kirwan et al. 2010; Wainwright and Weitkamp 2013; Limburg et al. 2016). The net effect on wetland habitats depends on whether rates of sea-level rise are sufficiently slow that the rates of marsh plant growth and sedimentation can compensate (Kirwan et al. 2010).

Due to subsidence, sea-level rise will affect some areas more than others, with the largest effects expected for the lowlands, like southern Vancouver Island and central Washington coastal areas (Verdonck 2006; Lemmen et al. 2016). The widespread presence of dikes in Pacific Northwest estuaries will restrict upward estuary expansion as sea levels rise, likely resulting in a near-term loss of wetland habitats (Wainwright and Weitkamp 2013). Sea-level rise will also result in greater intrusion of marine water into estuaries, resulting in an overall increase in salinity, which will also contribute to changes in estuarine floral and faunal communities (Kennedy 1990). While not all anadromous fish species are highly reliant on estuaries for rearing, extended estuarine use may be important in some populations (Jones et al. 2014), especially if stream habitats are degraded and become less productive. Preliminary data indicate that some Snake River Basin steelhead smolts actively feed and grow as they migrate between Bonneville Dam and the ocean (Beckman 2018), suggesting that estuarine habitat is important for this DPS.

Marine Effects. In marine waters, increasing temperatures are associated with observed and predicted poleward range expansions of fish and invertebrates in both the Atlantic and Pacific Oceans (Lucey and Nye 2010; Asch 2015; Cheung et al. 2015). Rapid poleward species shifts in distribution in response to anomalously warm ocean temperatures have been well documented in recent years, confirming this expectation at short time scales. Range extensions were documented in many species from southern California to Alaska during unusually warm water associated with "the blob" in 2014 and 2015 (Bond et al. 2015; Di Lorenzo and Mantua 2016) and past strong El Niño events (Pearcy 2002; Fisher et al. 2015). For example, recruitment of the introduced European green crab (Carcinus maenas) increased in Washington and Oregon waters during winters with warm surface waters, including 2014 (Yamada et al. 2015). Similarly, the Humboldt squid (Dosidicus gigas) dramatically expanded its range northward during warm years of 2004–09 (Litz et al. 2011). The frequency of extreme conditions, such as those associated with El Niño events or "blobs" is predicted to increase in the future (Di Lorenzo and Mantua 2016), further altering food webs and ecosystems.

Expected changes to marine ecosystems due to increased temperature, altered productivity, or acidification will have large ecological implications through mismatches of co-evolved species and unpredictable trophic effects (Cheung et al. 2015; Rehage and Blanchard 2016). These effects will certainly occur, but predicting the composition or outcomes of future trophic interactions is not possible with current models.

Wind-driven upwelling is responsible for the extremely high productivity in the California Current ecosystem (Bograd et al. 2009; Peterson et al. 2014). Minor changes to the timing, intensity, or duration of upwelling, or the depth of water-column stratification, can have dramatic effects on the productivity of the ecosystem (Black et al. 2015; Peterson et al. 2014). Current projections for changes to upwelling are mixed: some climate models show upwelling unchanged, but others predict that upwelling will be delayed in spring and more intense during summer (Rykaczewski et al. 2015). Should the timing and intensity of upwelling change in the future, it may result in a mismatch between the onset of spring ecosystem productivity and the timing of salmon entering the ocean, and a shift toward food webs with a strong sub-tropical component (Bakun et al. 2015).

Columbia River anadromous fishes also use coastal areas of British Columbia and Alaska and mid-ocean marine habitats in the Gulf of Alaska, although their fine-scale distribution and marine ecology during this period are poorly understood (Morris et al. 2007; Pearcy and McKinnell 2007). Increases in temperature in Alaskan marine waters have generally been associated with increases in productivity and salmon survival (Mantua et al. 1997; Martins et al. 2012), thought to result from temperatures that are normally below thermal optima (Gargett 1997). Warm ocean temperatures in the Gulf of Alaska are also associated with intensified downwelling and increased coastal stratification, which may result in increased food availability to juvenile salmon along the coast (Hollowed et al. 2009; Martins et al. 2012). Predicted increases in freshwater discharge in British Columbia and Alaska may influence coastal current patterns (Foreman et al. 2014), but the effects on coastal ecosystems are poorly understood.

In addition to becoming warmer, the world's oceans are becoming more acidic as increased atmospheric carbon dioxide is absorbed by water. The North Pacific is already acidic compared to other oceans, making it particularly susceptible to further increases in acidification (Lemmen et al. 2016). Laboratory and field studies of ocean acidification show that it has the greatest effects on invertebrates with calcium-carbonate shells, and has relatively little direct influence on finfish; see reviews by Haigh et al. (2015) and Mathis et al. (2015). Consequently, the largest impact of ocean acidification on salmon will likely be the influence on marine food webs, especially the effects on lower trophic levels (Haigh et al. 2015; Mathis et al. 2015). Marine invertebrates fill a critical gap between freshwater prey and larval and juvenile marine fishes, supporting juvenile salmon growth during the important early-ocean residence period (Daly et al. 2009, 2014).

Uncertainty in Climate Predictions. There is considerable uncertainty in the predicted effects of climate change on the globe as a whole, and on the Pacific Northwest in particular. Many of the effects of climate change (e.g., increased temperature, altered flow, coastal productivity, etc.) will have direct impacts on the food webs that species rely on in freshwater, estuarine, and marine habitats to grow and survive. Such ecological effects are extremely difficult to predict even in fairly simple systems, and minor differences in life-history characteristics among stocks of salmon may lead to large differences in their response (e.g. Crozier et al. 2008b; Martins et al. 2011, 2012). This means it is likely that there will be "winners and losers," meaning some salmon populations may enjoy different degrees or levels of benefit from climate change while others will suffer varying levels of harm. Climate change is expected to impact anadromous fishes during all stages of their complex life cycle. In addition to the direct effects of rising temperatures, indirect effects include alterations in flow patterns in freshwater and changes to food webs in freshwater, estuarine, and marine habitats. There is high certainty that predicted physical and chemical changes will occur; however, the ability to predict bio-ecological changes to fish or food webs in response to these physical/chemical changes is extremely limited, leading to considerable uncertainty. In additional to physical and biological effects, there is also the question of indirect effects of climate change and whether human "climate refugees" will move into the range of salmon and steelhead, increasing stresses on their respective habitats (Dalton et al. 2013; Poesch et al. 2016).

Summary. Climate change is expected to impact Pacific Northwest anadromous fishes during all stages of their complex life cycle. In addition to the direct effects of rising temperatures, indirect effects include alterations in stream-flow patterns in freshwater and changes to food webs in freshwater, estuarine, and marine habitats. There is high certainty that predicted physical and chemical changes will occur; however, the ability to predict bio-ecological changes to fish or food webs in response to these physical/chemical changes is extremely limited, leading to considerable uncertainty. As we continue to deal with a changing climate, management actions may help alleviate some of the potential adverse effects (e.g., hatcheries serving as a genetic reserve and source of abundance for natural populations, increased riparian vegetation to control water temperatures, etc.).

Climate change is expected to make recovery targets for salmon and steelhead populations more difficult to achieve. Climate change is expected to alter critical habitat by generally increasing temperature and peak flows and decreasing base flows. Although changes will not be spatially homogenous, effects of climate change are expected to decrease the capacity of critical habitat to support successful spawning, rearing, and migration. Habitat action can address the adverse impacts of climate change on salmon and steelhead. Examples include restoring connections to historical floodplains and freshwater and estuarine habitats to provide fish refugia and areas to store excess floodwaters, protecting and restoring riparian vegetation to ameliorate stream temperature increases, and purchasing or applying easements to lands that provide important cold water habitat and cold water refugia (Battin et al. 2007; ISAB 2007).

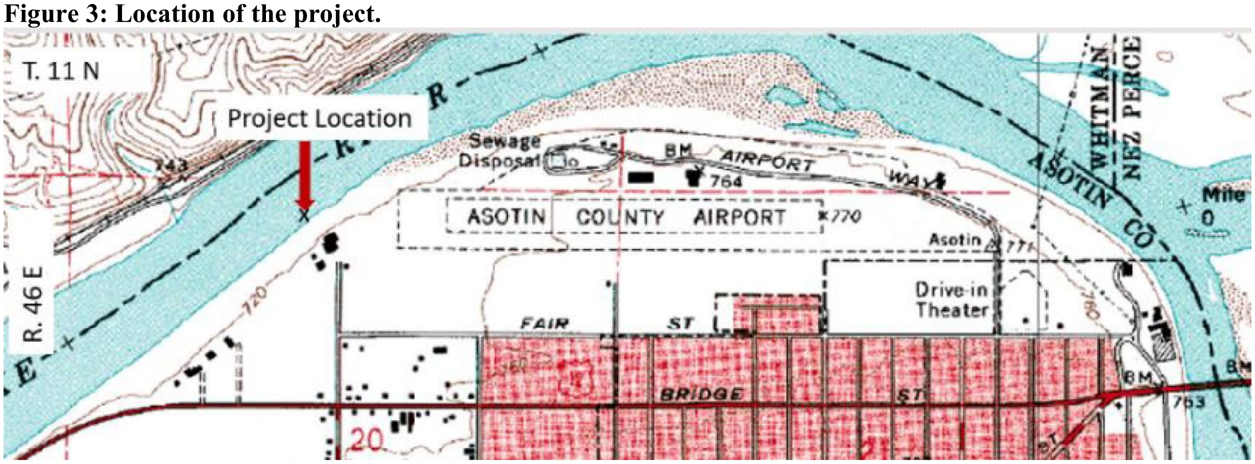
The proposed dock will help facilitate the growing cruise boat industry and will be in place for the foreseeable future. The proposed action will increase the amount of over-water structure, which will increase the habitat for piscivorous fish that prey upon ESA-listed Snake River salmonids. Warmer water temperature in the future will be more favorable to the native and non-native piscivorous fish that are negatively affecting ESA-listed species. These effects will therefore likely occur while climate change-related effects are becoming more evident within the range of the Snake River salmon and steelhead.

2.3. Action Area

"Action area" means all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The project site is located within the city limits of Clarkston, Asotin County, Washington, on the south side of the Snake River near Red Wolf Bridge. It is in Section 20[2], Township 11 North, Range 46 East of the Willamette Meridian, as shown in Figure 3 (USGS map). It is approximately at River Mile (RM) 137.9.

Figure 3: Location of the project.



The project is located within the Water Resources Inventory Area (WRIA) 35 (Middle Snake) and Hydrologic Unit Code 17060107 (Lower Snake-Tucannon River)[3]. The shoreline at this location was developed for commerce on the Snake River and is adjacent to the navigation channel. Figure 3 (upper left, red arrow pointing to "X") shows the project location entirely within the Snake River. The project begins in the river channel, approximately 38 feet south of the southern boundary of the navigation channel.

The action area extends radially up to 300 feet out into the river channel and downstream of the project site in underwater environments. The 300 feet is the area that will be affected by the installation process, specifically the movements and noise of the jet boat assisting in installation.

The action area is used by all freshwater life history stages of threatened Snake River fall Chinook salmon and Snake River Basin steelhead. It also is used by migratory life stages of spring/summer Chinook salmon and sockeye salmon. The Snake River within the action area is designated critical habitat for Snake River fall Chinook salmon, spring/summer Chinook salmon, sockeye salmon, and Snake River Basin steelhead.

[2] The JARPA incorrectly listed the location as being in Section 17, rather than Section 20.

[3] The JARPA incorrectly identified the HUC as 17060103.

2.4. Environmental Baseline

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

Dams and irrigation systems, many miles upriver of the action area, have had major negative impacts by diverting large quantities of water, stranding fish, and acting as barriers to passage. Further habitat degradation has occurred through livestock grazing and urbanization, which produces returning effluents containing chemicals and fine sediments that collect, to some extent, in the depositional zone of the Snake River in the upper sections of Lower Granite reservoir.

The Snake River HUC containing the action area is identified in the Washington State Department of Ecology 303(d) list as Category 5 (impaired) for pH, temperature, and dissolved oxygen for the action area, which is within WRIA 35 – Middle Snake (https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearchResults.aspx).

In addition to those alterations of river conditions in the action area (from upstream and nearby sources), the influence of climate change has resulted in unusual precipitation patterns (including low snow pack), increased forest fires (and resultant suspended sediment increases) and water temperature warming[4]. The BA assessed conditions in the action area in terms of habitat parameters and their functions, as summarized below (Table 6). Many of the parameters listed below are not properly functioning.

[4] Ambient (air) temperatures in the region have warmed about 1.5° F (.8°C) since the 1970s. They are expected to warm another 1 to 4 degrees F (.6 to 2.2°C) by the 2030s (RMJOC 2018).

Table 6: List of habitat parameters for ESA-listed salmonids

Pathways Indicators	Environmental Bassline		
	Properly Functioning	At Risk	Not Functioning Properly
Temperature			X
Suspended sediment			X
Chemical contamination			X
Physical Barriers		X	
Substrate			X
Large woody debris	NA		
Pool quality			X
Off-channel habitat			X
Habitat refugia			X
Stream bank stability			X
Flood plain connectivity			X
Road density and location			X
Disturbance history riparian reserves			X

The habitat within the action area has been degraded by a variety of human impacts. Due to hydropower infrastructure and the shipping industry, much of the habitat has been altered from a free flowing river to a series of reservoirs. The Snake River in the action area has increased water temperature, decreased dissolved oxygen, is listed as impaired, and most habitat parameters required for healthy salmonid populations are not functioning properly.

The substrate below the proposed dock is sandy silt and the water is 8-14 feet deep. The action area is within the headwaters of Lower Granite Reservoir and therefore the upstream impacts mentioned above are effecting the immediate action area. These parameters make the action area unlikely rearing or spawning habitat for salmonids. However, some unknown proportion of migrating juvenile salmonids that pass this site would be close enough to the existing dock to encounter increased exposure to predator fish, and some of those juveniles would be killed because of the hiding cover the proposed dock affords predators.

2.5. Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. 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).

2.5.1 Effects on the Species

Fall Chinook are most reliant on the action area for rearing and migration. It is possible that a few fall Chinook salmon may utilize the river near the action area as spawning habitat, but the majority of adults moving through the reach are destined for upriver spawning sites. Similarly, the juvenile fish in the action area will have emerged from redds in upstream reaches of the Snake, Clearwater, Salmon, Grande Ronde, or Imnaha Rivers. Juvenile fall Chinook salmon typically emerge from redds in March – May. Many of the juvenile fall Chinook salmon out-migrating from the Clearwater and Snake rivers spend time in shoreline areas (less than 9.8 feet [3 meters] in depth) in the Lower Granite reservoir and less time in downriver reservoirs, where they prefer sandy-substrate areas (Curet 1993, Bennett et al. 1997). However, by mid-late May in warm years and by early July in cool years, water temperatures increase in nearshore areas and most juvenile salmonids may move away from shallowest shorelines and begin dispersing offshore (Curet 1993; Fresh 2000; Connor et al. 2015). In large rivers and reservoirs during summer, rearing juveniles may be difficult to observe because they are spread out over large areas in deeper water habitats (Tabor et al. 2006). This dispersion to deeper water potentially puts juvenile salmonids in close proximity to the deeper water (14 feet) associated with the new dock in the action area. The water depth under the proposed dock should be between 8-14 feet deep, with a silty sand substrate.

Juvenile spring/summer Chinook salmon, sockeye salmon, and steelhead use the action area for migrating and limited rearing and resting during out-migration. Adults of all species are not likely to be present during the work window.

We expect effects to rearing juveniles related to the construction and installation of the dock to be very small. This is because the only disturbance below the OHWM will be the installation of the dock and the underwater welding required for the installation. The disturbance by divers in the water and the noise and site disturbance of underwater welding has the potential to displace any fish within the immediate area. This disturbance is expected to move fish only a short distance and to similar habitat. Further, the in-water disturbance will be short-lived and last for a few hours a day for less than a week.

The river substrate in this location is sandy silt. There will be underwater welding involving existing pilings during installation; however, the depth under the dock is sufficient that the welding activities will not likely disturb river substrate and will not cause suspension of sediment. There is a very small possibility that a small amount of sediment will be stirred up from the bottom during installation. A jet boat will be used to move and hold the dock in position during installation. This disturbance should be very minor, because the water depth where the jet boat will be positioned is 10 or more feet deep (depending on reservoir pool level), which should be deep enough that the water disturbance from the jet boat should not disturb the sediment. The new dock is being connected to an existing dolphin (a cluster of pilings) so there will not be any disturbance to the riverbank, and there are no new piles required for the installation.

Delivery of toxic chemicals to the river is also unlikely because of the brief period and type of installation, with the dock constructed offsite and moved into position and installed using a jet boat. Also, the COE or applicant will apply the following conservation measures when using machinery to install the dock:

- Equipment staging will be limited to the asphalted area of the 14th Street Dock and will not disturb vegetated surfaces.

- Jet boat support will launch from a commercial launch site, and a Spill Prevention Control and Countermeasure Plan will be prepared, approved, and implemented by the contractor. The plan will be site-specific and cover the project scope of work.

- A Construction Stormwater Pollution Prevention Plan will be implemented if required by local permits.

- Any equipment used for this project shall be free of external petroleum-based products while the work is performed in the water.

The anticipated adverse impact from the proposed action will be the creation of additional over-water structure at this site, leading to an increase in predation mortality for subyearling and yearling fall and spring/summer Chinook salmon, juvenile sockeye salmon, and juvenile steelhead. The NMFS recovery plans for all four species identify mortality from predator fish as limiting factors for recovery of the species (NMFS 2015, NMFS 2017a, NMFS 2017b). Connor et al. (2015) estimated that smallmouth bass found in shoreline areas of the free-flowing Snake River consumed more than 600,000 subyearling fall Chinook salmon in 2014. These same researchers found that smallmouth bass diets were mainly composed of salmonids from March through May, which coincides with the timing of juvenile salmonid downriver migration. After the Juvenile migration is completed, these researchers found that smallmouth bass diets were composed mainly of crayfish. In the Columbia River basin, studies have found predation from smallmouth bass and other piscivorous fish to be most intense upon subyearling Chinook salmon (Chapman 2007, Connor et al. 2015).

Smallmouth bass and other native and non-native piscivorous fish have a strong affinity for in-water structures such as docks (Carrasquero 2001), where they can hide in the shadows to prey upon juvenile salmonids. In Lake Washington, Washington, 68% of all adult smallmouth bass were seen within two meters of a dock (Fresh et al. 2003). As light levels decrease (e.g., underneath docks), predation on juvenile salmonids by piscivorous fishes may increase due to a diminished ability for the juvenile salmonids to detect predators (Rondorf et al. 2010). The proposed dock will be designed with a functional 60% light penetration, which will help decrease the shading and in turn reduce predation. However, we expect that the proposed dock would enhance habitat for native and non-native piscivorous fish, particularly northern pikeminnow and smallmouth bass, and therefore increase predation upon ESA listed juvenile salmonids.

Quantifying the increase in predation from the proposed dock is not possible due to the range of responses that individual predator and prey fish will have to the changed habitat. The footprint of the proposed added dock section is small (576 square feet) within this wide reach of the Snake River. Under the environmental baseline, some unknown proportion of migrating juvenile salmonids that pass this site would be close enough to the existing dock to encounter increased exposure to predator fish, and some of those juveniles would be killed because of the hiding cover the existing dock affords predators. The new dock section may simply move the location of that existing exposure area a little farther offshore and not result in any appreciable increase in predation on migrating juvenile fish; however, the increased area of over-water structure may foster a few more predator fish at this site and may thus somewhat increase the exposure risk and predation of migrating juvenile salmon and steelhead.

For juvenile fall Chinook salmon in particular, in the spring through mid-summer early rearing fish (alevin/fry lifestage) will be in shallower water than where the new dock is located. That lifestage favors water less than six feet deep (Tiffan and Connor 2012), whereas the depths at the new dock are 8-14 feet. As such, the new dock will not give predators additional advantages in catching the fall Chinook salmon fry; however, the addition of the dock could concentrate a few more bass and pikeminnow in the area and those predators may at times hunt in the shallower waters where the fry occur. Late summer/fall/winter rearing juvenile "reservoir type" fall Chinook salmon will tend to be farther offshore, at depths comparable to those at the new dock site. However, the vast majority of the reservoir type fall Chinook salmon, however, will be farther downstream in the reservoirs when they reach that life stage.

The potential increase in predation of juvenile fish caused by the new section of dock is expected to be relatively small compared to the predation already associated with the site. The predation increase would be extremely small relative to the total predation mortality from piscivorous fish across all salmonid habitat in the Snake River. Due to the difficulty of actually enumerating the increase in salmon and steelhead juveniles preyed upon yearly because of the new section of dock, we will use the size of the dock as a surrogate for quantifying those adverse effects. We anticipate that the proposed dock would be in place for the foreseeable future, so the increase in predation associated with the dock would also occur for the foreseeable future. There will also be an increase in overwater structure when the boats are present. The primary use season for the cruise boat industry does overlap the migration of ESA-listed salmonid out migration. However, the cruise ships will only be moored temporarily, so this effect will be intermittent and short-lived. In future decades, climate change will likely cause increased water temperatures, which could increase predator fish consumption rates and growth rates (NMFS 2015). The creation of enhanced predator habitat could therefore have greater adverse effects upon ESA-listed salmonids in future years.

The adverse effect from the proposed action on Snake River ESA-listed salmonids will be from the increased predation by native and non-native piscivorous fish species that prefer and are advantaged by over-water structures, such as docks. This increase in predation will likely be small annually but the adverse effect will be cumulative over the life of the dock.

2.5.2 Effects on Critical Habitat

The action area includes designated critical habitat for Snake River spring/summer Chinook salmon, fall Chinook salmon, sockeye salmon, and steelhead. The proposed action has the potential to affect the following PBFs: Water quality, and safe passage. Any modification of these PBFs may affect freshwater migration or rearing in the action area. Proper function of these PBFs is necessary to support successful adult and juvenile migration, adult holding, spawning, rearing, and the growth and development of juvenile fish.

The following discussion on PBFs applies to freshwater rearing and migration sites for fall and spring/summer Chinook salmon, sockeye salmon, and steelhead within the action area.

2.5.2.1 Water Quality

Although machinery will be used to install the 14th street dock, the risk of chemical contamination is very small. As specified in the project description by COE, the fuel storage and equipment fueling will be required to be within areas that cannot reach the river or will be within a containment area. The measures likely eliminate or at least greatly reduce the likelihood of water contamination. Equipment will be cleaned and inspected prior to arrival onsite, minimizing the potential of leaks or drips. Spill containment and cleanup materials will also be on hand to address any spills as quickly as possible. A jet boat will be used to move and hold the dock while it is being attached, and this activity will be brief (several hours within a one-week period) and not likely to appreciably affect the water quality PBF. Together, these measures and project features will result in only a very small likelihood of chemical contamination, and ensure that chemical contamination that does occur will be so small in scale that it will not meaningfully reduce the conservation value of the PBF.

2.5.2.2 Safe passage

The proposed new dock will increase the amount of over-water structure at the larger, already existing dock by 576 square feet. As discussed in the Effects on the Species section, above, there is likely to be a small increase in predation on migrating and rearing juveniles at the dock site because the dock will enhance habitat for native and non-native piscivorous fish. This effect could be amplified somewhat over the life of the dock, as climate change may favor further proliferation and feeding rates of non-native predators including smallmouth bass and northern pikeminnow. The function of the safe passage PBF at the site will likely be somewhat reduced; however, the effects on the function of the PBF for the river reach as a whole will be very small.

2.6. Cumulative Effects

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

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

The entire action is within the Port of Clarkston area, which is used by barge and recreation traffic. Over the past few years, there has been an increase in the cruise line industry in the Columbia and Snake Rivers. With the growing population of the Pacific Northwest, it can be assumed that the growth of the cruise line industry and activity within this particular Port area will continue steadily in the future. .

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's 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.

The ESA-listed Snake River salmon and steelhead species primarily use the action area as a small portion of their migration corridor in this reach of the Snake River. Both adults and juveniles of the four species pass through this area. There may be some limited spawning by fall Chinook salmon in the mainstem Snake River within a few miles upstream of the action area; and there is likely some rearing use of the action area, particularly by subyearling and yearling fall Chinook salmon and 1-3 year-old pre-smolt steelhead. The migration corridor of the Columbia and Snake Rivers is highly altered by hydropower infrastructure. These changes have favored many native and non-native piscivorous fish species that prefer reservoir type habitats rather than free flowing river habitats. These native and non-native piscivorous fish species prey upon rearing and migrating juvenile ESA-listed salmonids and are likely a limiting factor in the recovery of ESA-listed Snake River salmonids.

The habitat within the action area has been degraded by a variety of human impacts. Due to hydropower infrastructure and the shipping industry, much of the habitat has been altered from a free flowing river to a series of reservoirs. The impaired habitat functions in the Snake River also include decreased dissolved oxygen and increased water temperature, which will be exacerbated by climate change over the period of effects of the action (lifespan of the new section of dock).

For cumulative effects, the entire action is within the Port, which is heavily dominated by barge traffic and dredging of the shipping channels. Over the past few years, there has been an increase in the cruise line industry in the Columbia and Snake Rivers. With the growing population of the northwest, it can be assumed that the growth of the cruise line industry will continue in the future. This growth will continue to require the use of the port and dock which will have continuing effect on ESA-listed salmonids.

As noted above in the discussion of the effects of the proposed action, the new section of dock will likely result in a small increase in adverse effects on Snake River ESA-listed salmon and steelhead. Those adverse effects will be from the increased predation of juvenile salmon and steelhead by native and non-native piscivorous fish. The predator fish prefer, and are advantaged by over-water structures such as docks. The increase in predation associated with the proposed action will likely be small annually, but the adverse effects will continue for the many-year life of the dock. The function of the designated critical habitat safe passage PBF will be similarly affected: There will be a small, localized decrease in that PBF function, due to the small addition to the over-water structure and the associated increase in predator fish and instances of successful predation on juvenile salmon and steelhead. Both of these affects will be very small and will not appreciable decrease the ability of the species to recover.

2.8. Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' Opinion that the proposed action is not likely to jeopardize the continued existence of Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Snake River sockeye salmon, or Snake River Basin steelhead or destroy or adversely modify their designated critical habitat.

2.9. Incidental Take Statement

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

2.9.1 Amount or Extent of Take

In the Opinion, NMFS determined that incidental take is reasonably certain to occur as follows: The proposed dock will modify habitat under and immediately adjacent to the existing dock site on the Snake River shoreline. Juvenile fish are likely to encounter predator fish attracted by this modified habitat provided by the proposed dock. These encounters will result in killing individual fall Chinook salmon, spring/summer Chinook salmon, sockeye salmon, and steelhead juveniles each year.

Estimating the specific number of fish killed by this habitat-modifying activity is difficult if not impossible, despite the use of the best available scientific and commercial data, because of the large range of responses that individual predator and prey fish will have to the changed habitat. While this uncertainty makes it impossible to quantify take in terms of numbers of fish killed, the extent of habitat change to which present and future generations of fish will be exposed is readily discernible, is proportionate to the amount of harm, and presents a reliable measure of the extent of take that can be monitored and tracked. Therefore, we will use a habitat surrogate for take associated with the proposed action. Specifically, the surrogate for incidental take associated with the modified habitat is a maximum of 576 square feet of added over-water dock structure in the action area. Although this surrogate is coextensive with the proposed action, it nevertheless functions as an effective reinitiation trigger for the reasons outlined above.

2.9.2 Effect of the Take

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

2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The COE shall:

- Monitor the proposed action to ensure that the incidental take surrogate is not exceeded.

2.9.4 Terms and Conditions

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

1. The following terms and conditions implement RPM 1:

    a. Confirm that the installed floating dock structure does not exceed 576 square feet. The COE shall contact the NMFS Snake Basin Office immediately if the completed structure exceeds this square footage.

    b. NOTICE: If a steelhead or salmon becomes sick, injured, or killed as a result of project-related activities, and if the fish would not benefit from rescue, the finder should leave the fish alone, make note of any circumstances likely causing the death or injury, location and number of fish involved, and take photographs, if possible. If the fish in question appears capable of recovering if rescued, photograph the fish (if possible), transport the fish to a suitable location, and record the information described above. Adult fish should generally not be disturbed unless circumstances arise where an adult fish is obviously injured or killed by proposed activities, or some unnatural cause. The finder must contact NMFS Law Enforcement at (206) 526-6133 as soon as possible. The finder may be asked to carry out instructions provided by Law Enforcement to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

2.10. Conservation Recommendations

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

The following recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by COE:

1. Through its permitting, funding, and public outreach, the COE should encourage and require grating on dock floats in order to increase the transmission of light through the structures and thus create less desirable and advantageous habitat for predator fish.

2.11. Reinitiation of Consultation

This concludes formal consultation for the 14th Street Dock Auxiliary Float.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the federal agency or by the NMFS 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.

The amount of take will be considered exceeded if the square footage of the floating dock is greater than 576 square feet.

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

Section 305(b) of the MSA directs federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 CFR600.10).

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. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)].

This analysis is based, in part, on the EFH assessment provided by the COE and descriptions of EFH for Pacific Coast salmon (PFMC 2014) contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce.

3.1. Essential Fish Habitat Affected by the Project

- The Habitats of Particular Concern (HAPC) for salmon are: complex channel and floodplain habitat, spawning habitat, thermal refugia, estuaries, and submerged aquatic vegetation (see descriptions of salmon HAPCs in Appendix A to the Pacific Coast Salmon FMP, https://www.pcouncil.org/documents/2019/08/salmon-efh-appendix-a.pdf/.

3.2. Adverse Effects on Essential Fish Habitat

Adverse effects to EFH in the action area are identical to adverse effects to critical habitat described in the Opinion. The proposed action will decrease safe passage conditions for salmon EFH beneath and immediately adjacent to the dock structure.

3.3. Essential Fish Habitat Conservation Recommendations

NMFS determined that the following conservation recommendation is necessary to avoid, minimize, mitigate, or otherwise offset the impact of the proposed action on EFH.

1. Through its permitting, funding, and public outreach, the COE should encourage and require grating on dock floats in order to increase the transmission of light through the structures and thus create less desirable and advantageous habitat for predator fish.

Fully implementing this EFH conservation recommendation would protect, by avoiding or minimizing the adverse effects described in section 3.2, above, for Pacific Coast salmon.

3.4. Supplemental Consultation

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

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

4.1. Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this Opinion are the COEs. Other interested users could include the Port of Clarkston. Individual copies of this Opinion were provided to the COE. The document will be available within 2 weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adheres to conventional standards for style.

4.2. Integrity

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

4.3. Objectivity

Information Product Category: Natural Resource Plan.

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

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

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

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

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