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

Refer to NMFS No: WCRO-2020-01570 August 11, 2020

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Lt. Col. Richard T. Childers
U.S. Army Corps of Engineers
Walla Walla District
201 N. Third Avenue
Walla Walla, WA 99362-1826

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Lemhi River Access, Middle Reach Project, Lemhi County, Idaho

Dear Lt. Col. Childers:

Thank you for your letter of May 29, 2020, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Lemhi River Access, Middle Reach Project. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action. The attached document includes our analysis on the action's effects to EFH and we have proposed two conservation recommendations to help minimize anticipated effects.

In this 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 (*Oncorhynchus tshawytscha*) and Snake River Basin steelhead (*O. mykiss*). NMFS also determined that the action will not adversely modify designated critical habitat for both species. Rationale for our conclusions is provided in the attached 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 (RPM) 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 U.S. Army Corps of Engineers, and any permittee or contractor who performs any portion of the action, must comply with to carry out the RPM. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

Please contact Chad Fealko, Salmon Field Office, at 208-756-5105 or chad.fealko@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Michael Tehan
Assistant Regional Administrator
Interior Columbia Basin Office

Enclosure

cc: J. Joyner – COE
S. Fisher – USFWS
C. Colter – SBT
J. DiLucia – IDFG
J. Richards - IDFG

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

Lemhi River Access, Middle Reach Project

NMFS Consultation Number: *WCRO-2020-01570*

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 (*O. tshawytscha*)	Threatened	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: *August 11, 2020*

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

ACRONYMS

ACRONYM	DEFINITION
BA	Biological Assessment
BMP	Best Management Practices
BMPs	Best Management Practices
BPA	Bonneville Power Administration
CFR	Code of Federal Regulations
COE	U.S. Army Corps of Engineers
CWA	Clean Water Act
dB	Decibel
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionarily Significant Units
HAPC	Habitat Areas of Particular Concern
ICTRT	Interior Columbia Technical Review Team
IDFG	Idaho Department of Fish and Game
ISAB	Independent Scientific Advisory Board
ISEMP	Integrated Status and Effectiveness Monitoring Program
ITS	Incidental Take Statement
MPG	Major Population Groups
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
OHWM	Ordinary High Water Mark
Opinion	Biological Opinion
PBFs	Physical or Biological Features
PCE	Primary Constituent Element
PFMC	Pacific Fisheries Management Council
RPM	Reasonable and Prudent Measure
SCCP	Spill Containment and Control Plan
SH	State Highway
VSP	Viable Salmonid Population

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 NMFS' Boise office.

1.2 Consultation History

The Idaho Department of Fish and Game (IDFG) worked with the Applicant, Roger Henry, to initiate a habitat improvement project on the subject property. Habitat improvement work is being constructed in summer 2020, with ESA coverage under the Bonneville Power Administration's (BPA) Habitat Improvement Programmatic consultation (NMFS No.: WCRO-2020-00102; BPA Project No.: 2010-072-00). During NMFS' review of that project in spring 2020, the subject action was identified as a separate Federal action in need of individual ESA consultation. The IDFG, working with the U.S. Army Corps of Engineers (COE) and the Applicant, produced a draft biological assessment (BA) on April 21, 2020. NMFS provided suggested revisions to the IDFG by email on May 11, 2020.

NMFS received a revised and final BA on May 29, 2020, concluding the proposed action may affect and is likely to adversely affect Snake River spring/summer Chinook salmon, Snake River Basin steelhead, critical habitat for both species, and EFH for Chinook salmon. NMFS reviewed the consultation initiation package and initiated formal consultation in a June 16, 2020, letter.

NMFS reviewed all information provided in the May 29, 2020, consultation initiation package. We also reviewed and consulted the design information available for the habitat restoration project occurring on the same property (BPA Project No.: 2010-072-00), relevant scientific information available in peer-reviewed literature, and other relevant data.

1.3 Proposed Federal Action

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

The COE proposes to issue a Clean Water Act (CWA) 404 permit to Mr. Henry, authorizing wetland and stream channel fill necessary to convert the restoration action's access road and bridge to a permanent access road and bridge across the Lemhi River. The private road will be approximately 1,125 feet long and occur mostly within the Lemhi River's floodplain, near Tendoy, Idaho.

The landowner/Applicant is working with the IDFG to complete substantial habitat restoration on a large part of their valley bottom property. For several years, the landowner has pursued access to the far side of the river, where approximately one third of their property lacks vehicle access. The IDFG's restoration action will impact most of the river bottom portion of the property and preclude any future building or development, leaving only the uplands on the far side of the river for these purposes. The IDFG and the landowner negotiated a cost-share agreement where the river crossing will initially be used to support habitat restoration construction actions on the far side of the river, but will then remain in place to provide permanent access to the remaining developable areas of the property.

The bridge will provide only reasonable access to the owner's property and some future residential development is reasonably certain to occur. For this reason, a potential consequence of the action is additional future road construction from the floodplain up the bench (approximately 250 feet) and subsequent residential development on the bar above the Lemhi River (e.g., home, driveway, yard, fencing, etc.). No other consequences of the action were identified.

Restoration access required a 1,125-foot road/bridge. Of that alignment, 440 feet occurred on an existing farm road through a pasture. Approximately 629 feet of new disturbance occurred for that project access. Not removing the temporary road will result in 2,900 square feet of jurisdictional wetland removal. As discussed previously, construction actions considered in this Opinion are those necessary for converting the temporary road to a permanent road and river crossing. IDFG, through actions to access the property for the proposed habitat rehabilitation project, established the road alignment and a base sufficient to transport heavy construction equipment and materials. The east abutment includes two 6-foot long concrete wing walls and the entire east abutment will be anchored with seven steel H-piles set a minimum of 10 feet deep. The east abutment will include approximately 30 cubic yards of riprap armoring affecting about 20 feet of bank. The west abutment will be set back from the toe of the bank about 10 feet and will not have wing walls or H-pile. A 20-foot long by 30-inch diameter corrugated metal pipe, with inlet/outlet aprons, will be installed adjacent to the west abutment/bridge's edge to increase floodwater conveyance. The bridge has been designed to pass a 100-year flood.

Effects of initial bridge and road construction occur because of the restoration project. Since that project underwent independent Section 7 consultation, those effects and the construction process are not discussed here and the effects of initial construction become part of the environmental baseline. This Opinion focuses the effects analyses on the additional construction elements necessary to convert the road from temporary to permanent (i.e., additional fill, surfacing, drainage features, etc.), future anticipated route construction up the east bench (about 300 feet), and any future development on the bench completed by the landowner.

For establishing a permanent road, IDFG worked collaboratively with the landowner to implement actions and measures to reduce effects to ESA-listed fish and their habitats. The contractor for the habitat restoration contract will be hired by the landowner to complete the permanent access road, and IDFG will oversee construction to ensure measures included in the final BA are followed. The bridge, installed for temporary access for restoration, will not be removed, becoming a permanent feature on the property.

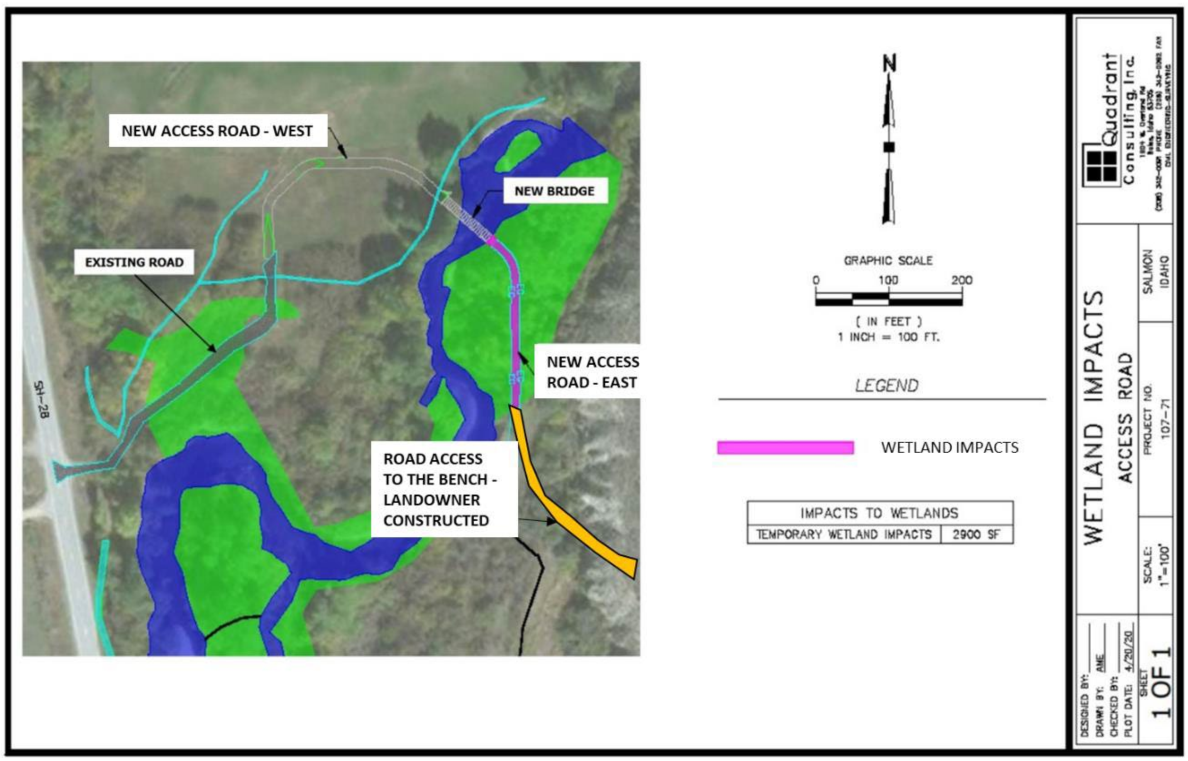

Figure 1. Proposed permanent road alignment previously established by IDFG. Areas in green indicate delineated wetlands; purple area represents permanent wetland impacts.

1.3.1 Proposed Construction and Best Management Practices

1. Install temporary erosion controls and best management practices (BMPs).
    a. IDFG, acting in a technical support role for the landowner, will stake and flag the road alignment. This access road will be constructed prior to establishment of the permanent road and crossing by the landowner.

       IDFG will also direct the contractor to construct the road alignment and bridge, using staff experienced in successfully minimizing erosion and sediment delivery through standard BMPs. Silt fencing will be installed as a sediment barrier along the outer limits of the permanent road. Re-vegetation actions will be implemented to rehabilitate the new road's shoulders as quickly as possible.

    b. The contractor will complete a spill containment and control plan (SCCP) providing notification procedures, specific clean up and disposal instructions for products available on the site, proposed methods for disposal of spilled material, and employee training for spill containment. The SCCP will be designed such that any spill that does occur has a very low risk of contaminating surface or groundwater resources.

    c. During construction, all erosion controls will be inspected daily during rainy periods and weekly during the dry season to ensure they are working correctly. If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

    d. Staging/refueling will occur at an existing ranch access road near State Highway 28 (SH 28) and more than 150 feet from flowing or standing surface water. If necessary, water for ancillary activities such as dust abatement, soil compaction, and equipment cleaning will be withdrawn from a private perennial irrigation pond located along the southern side of SH 28.

    e. Pre-designated temporary stockpile areas were previously identified under the habitat restoration consultation, and these are located a minimum of 150 feet from the Lemhi River and any other surface water. Much of this topsoil will be placed along the edge of the permanent road to encourage growth of riparian vegetation.

2. *Road Construction*. The alignment of the 1,125 foot permanent access road will follow IDFG's previously constructed habitat access (Figure 1). This road includes 675 feet on the west side of the river and 200 feet of road construction along the river bottom on the east side. In addition, the landowner proposes to construct 250 feet of road that climbs to the top of an upland bench. A previously established access road from SH 28 will be extended through a pasture area to the Lemhi River (440 feet) to minimize effects to riparian and wetland areas. IDFG will not remove and rehabilitate the route, rather, the landowner will add approximately 6 inches of a ¾-inch crushed road mix to develop the road as permanent. The finished road surface will be similar to the existing grade, and will have a crown to reduce runoff from precipitation. Additional road topping of 1.5-

inch crushed gravel will be added to further stabilize and reduce erosion potential. The BMPs described previously will apply to both east and west road segments.

The 250-foot long road segment that climbs the bench will ascend from downstream to upstream and can be constructed with standard excavation techniques. Blasting or other methods do not appear necessary[1].

3. *Floodplain Connectivity*. IDFG will install a 50-foot long by 36-inch diameter squash pipe along an existing high flow channel to improve floodwater conveyance through the east side floodplain. Gravels will be placed within the culvert to simulate a natural stream bottom. The bottom of the culvert will be installed below the stream grade to encourage additional gravel recruitment. There are three road segments that, based on topography, will occur above the existing grade. To maintain the habitat project's improved floodplain connectivity, each segment will receive a 20-foot long by 24-inch diameter round culvert set to be activated at the five-year flood recurrence interval. The IDFG will select culvert locations that provide the best opportunity for floodplain inundation/connectivity by using floodplain modelling being completed by IDFG for the habitat restoration project. Modeling efforts now include the proposed final road. Some field fitting of culvert locations will be necessary.

4. *Revegetation*. To stabilize road shoulder areas, disturbed areas will be prepped by placing a minimum of 8 inches of previously salvaged topsoil and then they will be seeded and planted with willows.

1.3.2 Work Window and Construction Schedule

Permanent road construction is expected to occur during late summer of 2020. Road construction up the east bench and future private development could occur at any future time.

1.3.3 Post-Project Maintenance and Monitoring

The landowner is responsible for all pertinent maintenance activities associated with the access road and bridge.

Research, monitoring, and evaluation studies (e.g., Integrated Status and Effectiveness Monitoring Program (ISEMP) studies, IDFG general parr and adult Chinook salmon monitoring) in the Lemhi basin provides data on species composition, abundance, density, and survival of ESA-listed species. IDFG is currently coordinating effectiveness monitoring studies for specific river reaches where habitat actions are being implemented. IDFG and collaborators are currently implementing studies to evaluate pre- and post-treatment conditions and response across the basin and the habitat rehabilitation project described in the final BA is included. As these studies are implemented, IDFG will inspect the crossing and road culverts to determine if fish passage and floodplain connectivity are impaired.

[1] NMFS assumes the same road specifications mentioned above will apply to this segment. The BA indicated NMFS would be consulted if the blasting or other methods are necessary. For this reason, NMFS did not consider blasting as part of the proposed action and any future use of this construction method will require further evaluation.

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 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 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 of critical habitat for Snake River Basin steelhead and Snake River spring/summer Chinook salmon uses the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced these terms 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 (RPA) 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 essential PBFs that help to form that conservation value. 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 designations 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
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.

2.2.1 Status of the Species

This section describes the present condition of the Snake River spring/summer Chinook salmon, evolutionarily significant unit (ESU) 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 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 spawn follow a "stream-type" life history characterized by rearing for a full year in the spawning habitat 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, 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-old "jacks," heavily predominated by males (Good et al. 2005).

Spatial Structure and Diversity. The Snake River ESU includes all naturally spawning populations of spring/summer Chinook 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 1 (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). 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).

Table 2. Summary of viable salmonid population parameter risks and overall current status for 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[1]	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***

[1] Lemhi population is the only independent population affected by the proposed action.

2.2.1.2 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 Reiser 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.

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 ratings with "?" are based on limited or provisional data series.

MPG	Population	VSP Risk Parameter		Overall Viability Rating
		Abundance/ Productivity	Spatial Structure/ Diversity	
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 Lemhi River Populations

The action will affect the Lemhi River independent populations of Chinook salmon and steelhead. Both populations are important populations for the eventual recovery of the MPG and their respective ESU/DPS. The Lemhi River Chinook salmon population must achieve at least maintained status (moderate risk of extinction) for the ESU to recover, but the recovery goal for the population is viable (low risk of extinction). Likewise, the Lemhi River steelhead population must achieve maintained status for the DPS to recover, but the recovery goal for the population is viable. The action area's designated critical habitat is necessary for the continued persistence and recovery of the Lemhi River Chinook salmon and steelhead populations.

2.2.3 Status of Critical Habitat

In evaluating the condition of designated critical habitat, NMFS examines the condition and trends of 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 PBFs 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, 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		
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 spring/summer Chinook salmon and steelhead species. Critical habitat includes the stream channel and water column with the lateral extent defined by the ordinary high-water mark (OHWM), or the bankfull elevation where the OHWM is not defined. In addition, critical habitat for Chinook salmon 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 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 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 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 2017). 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 2012; NMFS 2017). 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 2017).

Many stream reaches designated as critical habitat for these species are listed on the CWA 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.

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

One factor affecting the rangewide status of Snake River salmon and steelhead, and aquatic habitat at large is climate change. Several studies have revealed that climate change has the potential to affect ecosystems in nearly all tributaries throughout the Snake River (Battin et al. 2007; ISAB 2007). While the intensity of effects will vary by region (ISAB 2007), climate change is generally expected to alter aquatic habitat (water yield, peak flows, and stream temperature). As climate change alters the structure and distribution of rainfall, snowpack, and glaciations, each factor will in turn alter riverine hydrographs. Given the increasing certainty that climate change is occurring and is accelerating (Battin et al. 2007), NMFS anticipates salmonid habitats will be affected. Climate and hydrology models project significant reductions in both total snow pack and low-elevation snow pack in the Pacific Northwest over the next 50 years (Mote and Salathé 2009) changes that will shrink the extent of the snowmelt-dominated habitat available to salmon. Such changes may restrict our ability to conserve diverse salmon life histories.

In the Pacific Northwest, most models project warmer air temperatures, increases in winter precipitation, and decreases in summer precipitation. Average temperatures in the Pacific Northwest are predicted to increase by 0.1 to 0.6°C (0.2°F to 1.0°F) per decade (Mote and

Salathé 2009). Warmer air temperatures will lead to more precipitation falling as rain rather than snow. As the snow pack diminishes, seasonal hydrology will shift to more frequent and severe early large storms, changing stream flow timing, which may limit salmon survival (Mantua et al. 2009). The largest driver of climate-induced decline in salmon populations is projected to be the impact of increased winter peak flows, which scour the streambed and destroy salmon eggs (Battin et al. 2007).

Higher water temperatures and lower spawning flows, together with increased magnitude of winter peak flows are all likely to increase salmon mortality. The Independent Scientific Advisory Board (ISAB) (2007) found that higher ambient air temperatures will likely cause water temperatures to rise. Salmon and steelhead require cold water for spawning and incubation. As climate change progresses and stream temperatures warm, thermal refugia will be essential to persistence of many salmonid populations. Thermal refugia are important for providing salmon and steelhead with patches of suitable habitat while allowing them to undertake migrations through or to make foraging forays into areas with greater than optimal temperatures. To avoid waters above summer maximum temperatures, juvenile rearing may be increasingly found only in the confluence of colder tributaries or other areas of cold-water refugia (Mantua et al. 2009).

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. 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 or refuge habitat (Battin et al. 2007; ISAB 2007).

2.3 Action Area

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

The action area for the proposed crossing involves a total of 2.6 acres of disturbance. This includes the access road on both sides of the river and the bridge. Turbidity effects are expected to extend approximately 2,500 feet downstream of the bridge in the Lemhi River. Also included in the action area is the bench on the far side of the river where future residential development may occur.

The action area is used by threatened Snake River Basin steelhead and Snake River spring/summer Chinook salmon as migratory and rearing habitat, with some potential for spawning by both species. The Lemhi River is designated critical habitat for both species and the area within 300 feet of the OHWM is critical habitat for Chinook salmon. Finally, the action area is also EFH for Chinook salmon (PFMC 1999), and is in an area where environmental effects of the proposed project may adversely affect EFH for this species.

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).

The focal area of the action area lies on land owned by the Applicant. Historically, this reach of the Lemhi River was affected by railroad construction across the floodplain. The old railroad grade was subsequently converted to what is now SH 28. Extensive human development has occurred on the parcel, including agricultural production (e.g., water diversion, crop production and grazing), residential development (two houses on the floodplain margin), and bank stabilization associated with protecting those features. Collectively, these land uses, and similar upstream practices, have resulted in channel incision and conversion from multi-thread to a primarily single thread channel. Over time, this has accelerated water velocities, increased bank erosion and sediment production, and reduced floodplain access. Upstream water diversion practices substantially reduce peak flows, further contributing to channel simplification and reduced habitat quality. Seasonal low flow periods are further reduced by diversion practices, leading to increased water temperatures and reduced habitat quantity and quality for juvenile and adult fish. Consequently, the ability of all life stages of Chinook salmon and steelhead to successfully rear, migrate, and spawn at historical frequencies are not currently met in the action area. The action area's Lemhi River reach is also 303(d) listed under the CWA for *Escherichia coli* contamination (IDEQ 2017).

The entire Lemhi River, including the reach in the action area, lacks sufficient juvenile summer and winter rearing habitat for spring/summer Chinook salmon (OSC 2019). Given the historical impacts in the action area, it is assumed deficient in suitable habitat for juvenile fish. Across the Lemhi subbasin, there is sufficient quantity of available spawning habitat for the targeted population size at recovery objectives (OSC 2019). However, OSC (2019) did not assess the quality of available habitat and pervasive high sediment levels, high summer water temperatures and low winter water temperatures across the available spawning habitat may reduce embryo survival from optimal levels. The action area currently supports spawning Chinook salmon in isolated years, likely due to higher quality upstream habitat availability and low adult abundance. Steelhead rear and overwinter in the action area and adults migrate through the action area, but likely spawn in upstream reaches of the Lemhi River or in connected tributaries up and downstream.

The large-scale habitat restoration project currently being implemented in the action area has undergone ESA consultation. By regulation, the effects and anticipated benefits of that action are part of the environmental baseline. Short-term effects of that action included the initial ground disturbance, installation of the bridge required to access the east side, channel dewatering/rewatering, fish salvage, and temporary turbidity pulses associated with dewatering/rewatering and potential stormwater runoff. Disturbance includes new channel construction, initial route construction, and relocation of a ditch and point of diversion. In addition to fish handling occurring with salvage activities, juvenile salmonids and pre-spawn staging adult Chinook salmon are likely to have been disturbed and displaced by equipment noise/operation close to the channel.

The restoration project will restore floodplain access under the current hydrologic conditions, resulting in much higher frequency of inundation and a long-term improvement and maintenance of post-construction channel morphology. Riparian vegetation will also improve substantially, particularly on the west side of the channel where livestock and agricultural impacts were greatest. Restoration will construct multiple side channels, some perennial. Existing side channels will be activated more frequently and extensive improvements in the quantity and quality of fish cover (e.g., pools, large wood, roughened channel margins, riparian vegetation, and increased diversity of habitat types). Habitat improvements are expected to provide increased capacity for juvenile and winter rearing Chinook salmon and steelhead, adult migrants, and potentially improve spawning conditions. Restoration will activate nearly all potential floodplain areas on the Applicant's property. Wetland habitat is expected to increase by 1.07 acres and approximately 44,313 square feet of new channel will be constructed. About 0.5 miles of mainstem habitat will be improved through increased floodplain accessibility, more natural morphology/planform, and increased habitat complexity. Almost 20 acres of riparian area will benefit from the improved floodplain access. As floodplain function improves, riparian vegetation is also expected to respond positively.

The action area is approximately 2.5 miles downstream of the Hayden Creek confluence with the Lemhi River. Hayden Creek is the largest and most important tributary for anadromous fish, supporting about one third of the annual Chinook salmon redd count for the Lemhi River subbasin. Floodplains will be accessed more frequently by floodwaters post restoration, providing more high water cover and refugia for longer periods of time and during more runoff years than before the action. With the addition of substantially larger quantities and quality of habitat, all life histories of salmon and steelhead are expected to experience higher growth and survival. The action directly addresses limiting factors (OSC 2019) and fulfills restoration objectives identified in recovery plans (NMFS 2017).

The reach occurs downstream of the core spawning area for the mainstem Lemhi River. Given this location, almost all Lemhi River juvenile Chinook salmon and many juvenile Lemhi River steelhead will migrate through this reach. The described improvements in habitat capacity generated by the restoration work are expected to benefit almost the entire Lemhi River Chinook salmon population and a large portion of the Lemhi River steelhead population for decades. The design targets restoration of physical processes, helping maintain and evolve necessary habitat and function for long periods of time. The property's reach includes about 0.5 miles of mainstem habitat, and the Lemhi River is about 65 miles long from Leadore, Idaho to the Salmon River. As such, the property provides roughly 0.8 percent of the mainstem habitat – suggesting the restoration action has potential to positively affect the populations.

Overall, the environmental baseline in the action area is improving and expected to continue to improve into the future given the size and aggressive nature of the ongoing restoration action.

Water temperature and low flows, principally influenced by upstream actions, will continue to limit the carrying capacity of the action area's habitat. Restoration on the property is expected restore natural riparian and floodplain processes that are critical to self-sustaining habitat complexity necessary to maximize habitat capacity and the PBFs of critical habitat necessary for survival and recovery of the affected species.

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).

It is difficult to separate effects of this action from the effects of the ongoing restoration action. According to the BA and discussions with IDFG (Jeff Diluccia, Regional Fisheries Biologist), the landowner's commitment of about 20 acres to perform the restoration work is claimed as on-site mitigation for the permanent effects of the road. Restoration work is a separate Federal action and has previously undergone ESA section 7 consultation and effects of that action, including initial access road and bridge installation are part of the environmental baseline. This analysis focuses specifically on the effects of permanently retaining the access road and bridge as well as the effects of anticipated future road construction on the north side of the new bridge to a potential building site on a bluff above the river

The action does not require any inchannel work of any kind. In fact, keeping the road as a permanent feature eliminates the need to remove the bridge and bridge abutments that were necessary to install for the temporary access. Direct effects to fish are unlikely for this reason. Habitat impacts such as reduced wetland habitat, reduced floodplain access, loss of riparian vegetation, and sediment input from the permanent road are the most likely type of consequences of the action. These effects may affect fish rearing, migrating, or spawning in the action area for the foreseeable future. Since consequences are primarily related to habitat impacts, we present the critical habitat effects discussion first. Because both species use the action area in similar ways and the same life history expressions occur there, the critical habitat section addresses both species. This reduces redundancy and is more efficient for the reader. How the species may respond to the habitat impacts is discussed next, and also addresses both species for the reasons described.

2.5.1 Effects to Critical Habitat

All Lemhi River channels in the action area are designated critical habitat for Chinook salmon and steelhead. The Chinook designation also includes the entire riparian area, extending 300 feet from the Lemhi River's OHWM. Critical habitat within the action area has an associated combination of PBFs essential for supporting freshwater spawning, rearing, and migration for Chinook salmon and steelhead. Steelhead spawning is not known to occur in the action area due to survey limitations, but it is possible that it could occur, particularly following successful reactivation and construction of side channel habitat being completed in 2020.

The critical habitat PBFs likely to be affected by the proposed action and other related action include: (1) Spawning gravel; (2) water quality (i.e., turbidity, and chemical contamination); (3) riparian vegetation; (4) cover/shelter; (5) water velocity; and (6) space. Modification of these PBFs may affect potential rearing or migration in the action area. Proper function of these PBFs is necessary to support successful migration, rearing, and the growth and development of juvenile Chinook and steelhead in the action area.

2.5.1.1 Spawning Gravel

Spawning gravel has very little potential to be impacted by the action. No instream work will occur, preventing direct disturbance. Spawning gravel could potentially be affected if sediment is eroded from the new road surface and deposited in the Lemhi River where it could subsequently be deposited on substrate. Spawning gravel could also be affected if the new bridge or road prism constricted peak Lemhi River flows, causing substrate scour in the river.

Each of these potential effect pathways is addressed by the proposed action, either through proposed BMPs or the manner the structures were designed (Section 1.3.1). For sediment delivery mitigation, key provisions include use of sediment fence around all disturbed areas, the proposed gravel surfacing, a crowned road surface, low slope roads, revegetation of road shoulders, and appropriate drainage features. Future development on top of the east bench will be several hundred feet from the Lemhi River and have little opportunity to produce sediment affecting the Lemhi River. However, a July 31, 2020, email from the COE confirmed the Applicant/IDFG will apply the same sediment containment measures and BMPs during future upland construction. Additionally, future development is anticipated to require a CWA section 402 permit (i.e., stormwater runoff permit). Those permits were consulted on nationally[2], and include analogous BMPs and sediment containment provisions, increasing our confidence such measures will be implemented. Ensuring disturbed sites on the bench are adequately revegetated will likely further minimize potential future sediment production.

The bridge's free span is 75 feet, approximately 1.7 times wider than the average 45-foot bankfull width for the mid-Lemhi reach and capable of passing a 100-year discharge. Retaining, rather than removing, a crossing of this size should allow for natural channel simulation through the crossing for the life of the structure. Channel simulation does not constrict the channel across a range of flows, provides for regular bank inundation, and allows the natural sediment/debris transport and scour through the structure. Due to the adequacy of the design, the long-term presence of the structure should have little to no influence on spawning gravel in the short- or long-term future.

2.5.1.2 Water Quality (turbidity and chemical contamination).

Short-term action area sedimentation will be caused by the permanent road. Sediment delivery is expected to be small and occur for brief periods associated with future rain and/or snowmelt

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[2] NMFS No. FPR-2016-9182

events. Small quantities of sediment are expected to be delivered due to successful implementation of proposed BMPs such as use of sediment retention filters, seeding the new road shoulder, installation of drainage relief culverts along the route, crowning of the road surface, and use of gravel surfacing. Long-term sediment contributions will be further minimized as the road shoulders successfully revegetate and stabilize with proposed plantings and natural recolonization. Additionally, the access route is generally flat, with limited potential to produce runoff.

Given the short section of permanent road, it's mostly flat grade, its lack of inundation during peak flows, and the effectiveness of the road's design and rehabilitation measures, turbidity in the Lemhi River caused by road erosion is expected to be small. Because turbidity will be directly tied to runoff or snowmelt events, which are correlated to higher peak flows and higher turbidity levels, action-related increases in turbidity in the action area should also be small and may not be detectable.

Chemical contamination potential is minimized by requiring all equipment fueling and/or staging to occur more than 150 feet from standing or flowing water. Drip pans and other BMPs for maintaining leak free equipment further reduce contamination risk from construction equipment used to finish road construction. The action also stipulates the construction contractor(s) develop and implement a SCCP. These measures, combined with flat topography across most of the construction site and lack of work within or immediately adjacent to surface waters make chemical contamination unlikely to occur.

2.5.1.3 Riparian Vegetation and Wetlands

Keeping the road will permanently remove about 3,000 square feet (0.07 acres) of Lemhi River riparian area. This includes about 20 feet of bank at each bridge abutment that will be retained instead of removed and about 0.25 acres of wetland. These will be permanent adverse effect to the action area's designated critical habitat. Loss of riparian vegetation and wetland habitat could influence multiple PBFs of the action area's critical habitat. Specifically, reduced quantity of riparian vegetation and wetland areas can negatively influence water temperature, terrestrial food inputs, water quality, and bank stability. IDFG, working with the landowner, situated the new road to avoid and minimize the losses, choosing to locate the route on existing access routes and low grass pasture areas with relatively higher elevations, where possible (see Figure 1). Remaining impacts are unavoidable and the scale of lost riparian vegetation and wetland habitat could reduce the quantity of the action area's habitat.

The anticipated effects of these losses are small, both at the action area scale and at the reach scale. Seeding disturbed areas along the access road and planting willow cuttings will supplement natural progression and jump-start riparian recovery in those areas. Installation of at least three flood relief culverts in the new road prism at strategic locations will reduce the road's potential impact on floodplain connectivity and riparian function downstream of the road. This is supported by hydraulic modeling included in the consultation initiation package that shows post-project increases in floodplain inundation both upstream and downstream of the new road.

The 0.07-acre impact is just 2.7 percent of the action area extent and a much smaller proportion of the available riparian area in the reach. Because of the small size of the impact and the impact occurring mostly on the fringe of current riparian habitat, impacts on riparian function and PBFs of critical habitat will be minor. The minor impacts are not likely to reduce the conservation value of the action area.

2.5.1.4 Cover and Shelter

The proposed access route will have minor impacts on cover and shelter. The bridge is an 89-foot span rail car with a minimum free channel span of 75 feet. This is more than 1.5 times the estimated bankfull width, a distance expected to allow for normal channel processes and limit bank erosion potential. Installation of rock riprap along about 20 feet of each bank will reduce localized cover from a native bank condition. Riprap is known to cause adverse effects to stream morphology, fish habitat, and subsequently, to fish populations due to reduced habitat quality (Schmetterling et al. 2001; Garland et al. 2002; USFWS 2000). Washington Department of Fish and Wildlife (WDFW et al. 2002) found juvenile life stages of salmonids are especially affected by bank stabilization projects. In low flows, juveniles depend on cover provided by undercut banks and overhanging vegetation to provide locations for resting, feeding, and protection from predation. During periods of high streamflow, juveniles often seek refuge in low velocity microhabitats, including undercut banks and off-channel habitat. These habitat benefits will be permanently removed at the two-riprap locations. This is a small area of bank within the action area and the minor loss of cover and shelter is unlikely to affect action area conservation value.

2.5.1.5 Water Velocity

The crossing will be more than 1.5 times bankfull width and can safely pass a 100-year flood recurrence event. These design considerations, backed up by provided hydraulic modeling, suggest water velocity will not be negatively influenced by retaining the crossing. For flood relief, designers included at least three culverts along the new access route. Modeling suggests flood levels in the action area will have very little impact due to the structure. For these reasons this PBF is not expected to be negatively affected by the action.

2.5.1.6 Space

Within the Lemhi River, space will not be influenced by the new route. The bridge spans more than 1.5 times the channel width allowing the natural channel form to persist into the short- and long-term future. Although riprap will be placed along both banks (about 20 feet per side), space will not be affected as the rock will not encroach beyond the existing channel bed or banks. Floodplain space is important refugia for small fish during peak flows. This is especially important in the Lemhi River, which has poor floodplain access, even during relatively high discharge events (OSC 2019). The access route will permanently remove about 0.25 acres of wetland area within the Lemhi River floodplain. That area will no longer be available to fish during flow events of sufficient magnitude to inundate the floodplain. NMFS is not able to pinpoint at what flow flood frequency events floodplain space will be reduced. During floods, the road prism could potentially dam up floodwater, an impact that could increase the amount of space upstream of the road and decrease the amount of floodplain inundation downstream of the road. Flood modeling of the separate, larger restoration project, but inclusive of the proposed access route and flood relief culverts, suggests the entire action area will experience significant increases in floodplain accessibility. The addition of flood relief culverts in the access route connect floodplain areas upstream and downstream of the new road, effectively maintains the benefits provided by the larger restoration project.

Although some minor reduction to wetland area will occur due to the road's continued presence on the floodplain, the overall trend of the action area's floodplain will continue to improve, although a benefit promulgated by the separate, larger restoration action. The minor adverse effects caused by the permanent presence of the riparian road will not reduce the value of the action area's critical habitat.

2.5.1.7 Summary of Habitat Effects

The action will have only minor impacts on sediment and turbidity. Effects are sufficiently minimized by the anticipated effectiveness of the proposed design criteria, small size and location of the route and upland development caused by the route and the low slope and proposed rehabilitation measures. The bridge will allow for stream simulation and channel substrate, width to depth, and water velocity will not be affected by the structure. Retaining the road will eliminate 0.07 acres of riparian vegetation and about 0.25 acres of wetland. These areas support high flow refugia for juvenile fish and promote natural channel resiliency and habitat protection. The loss will be permanent and represents about 1.6 percent of the 20 acre riparian property. Space, cover, and floodplain refugia will be permanently degraded by the action.

<u>2.5.2 Effects to Species</u>

Effects to species from retaining the permanent access road are entirely habitat-related impacts. No instream work is necessary to convert the temporary route being completed for restoration work to a permanent route for private use. There is no need for channel dewatering or fish salvage tied to this action and none is discussed in this Opinion. All life stages of Snake River spring/summer Chinook salmon and Snake River Basin steelhead occur in the action area. These fish are likely to be affected by habitat changes brought about by the permanent route and its influence on riparian vegetation, space, and cover. Each of these habitat-related impacts were discussed in the prior habitat effects section, which is included here by reference.

2.5.2.1 Chemical Contamination

Potential effects related to possible chemical contamination were previously discussed in the habitat section and we determined there is little potential for chemical contamination to occur. Contamination risk is low due to work occurring outside the channel, location of staging/refueling areas more than 150 feet from water, provisions for clean equipment and good equipment maintenance, and short duration of construction. No long-term contamination risk exists from road use or future development on the east bench. For these reasons, species are unlikely to be exposed to chemical contaminants.

2.5.2.2. Cover, Wetland, and Riparian Loss

As mentioned above, reductions in cover can reduce juvenile fish refugia (Schmetterling et al. 2001; Garland et al. 2002; USFWS 2000; WDFW et al. 2002), negatively influencing growth rates. As growth rate and size at smolt decreases, individual fish can experience reduced fitness or survival.

The action will reduce cover where native banks are retained as rock riprap (about 40 linear feet). This is a very small quantity of bank and affects near-shore habitat. Juvenile fish do use near shore habitat and the minor loss could affect rearing success of a small number of fish annually. The degree of impact cannot be determined as it is not known how many fish could use the bank now versus as riprap and the actual effect on those fish's growth/survival cannot reasonably be determined. Due to scale, adverse effects to fish caused by the riprap bank are expected to be small.

About 0.07 acres of riparian area and 0.25 acres of wetland will be removed by the action. Cover provided by affected wetland and riparian areas is primarily available during flows above the 5-year recurrence interval and then only a portion of it is useable cover (Figure 2). The useable portion is almost exclusively on the east side of the Lemhi River crossing. This small area of lost cover, experienced only at flows above the 5-year return flow, will affect a small number of juvenile salmon and steelhead that are unable to benefit from the lost floodplain refugia. Annually, an unknown number of fish of both species could experience small growth reductions from this minor and brief loss of cover/refugia. Additionally, as parr density increases, juvenile survival can decrease (Achord et al. 2007). Lost habitat could force more fish to use less habitat, albeit for brief periods of time during peak flows. Affected fish may have reduced parr to smolt survival or reduced smolt to adult survival. The small size of the lost habitat and its infrequent use make this effect minor. While these effects to species will adversely affect future generations of fish, the amount of lost habitat is very small in context of the action area's available habitat and the effect would be realized infrequently – about once every five years and only at peak flows. It is unlikely this minor impact will reduce the abundance and or productivity of fish using the action area.

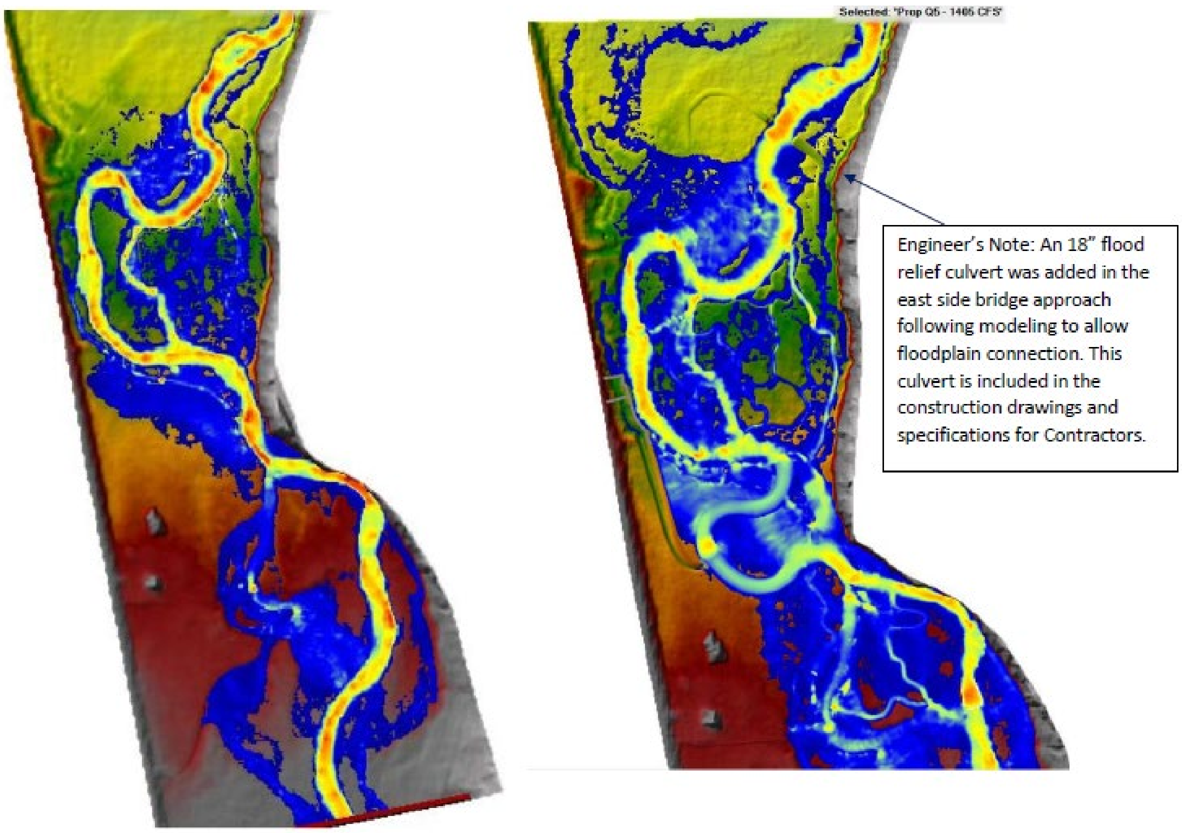

Figure 2. Existing (left) versus post restoration and access route conditions (right) at 5-year flood recurrence (1,405 cubic feet per second). Access route can be seen in the right image, just left of the engineer's note arrow.

2.5.2.3 Substrate/Sediment Effects

The retained road is short, mostly flat grade, it will not be inundated during peak flows, it will have effective drainage (gravel surface, drainage relief pipes, surface crown, etc.), and its shoulders will be revegetated. For these reasons, and as discussed in the effects to habitat section above, turbidity and sediment impacts caused by the new road and future development on the east bench are expected to be small, potentially undetectable. Any turbidity/sediment introduced to the Lemhi River will likely occur during rain or snow runoff events, which are mostly tied to higher peak flows and naturally higher turbidity levels.

Turbidity plumes can potentially displace exposed fish from preferred habitat or potentially cause fish to exhibit sublethal effects such as gill flaring, coughing, avoidance, and increase in blood sugar levels (Bisson and Bilby 1982; Sigler et al. 1984; Berg and Northcote 1985; Servizi and Martens 1992). Although turbidity may cause stress, Gregory and Northcote (1993) have shown that moderate levels of turbidity, (35 to 150 nephelometric turbidity units [NTU] accelerate foraging rates among juvenile Chinook salmon, likely because of reduced vulnerability to predators (camouflaging effect). Lloyd (1987) suggested that salmonids reacted negatively, by moving away, when turbidity reaches 50 NTU. Based on our prior experience with similar actions, and on the specific site conditions and nature of the action, the proposed action's sediment/turbidity increases are not expected to generate any of these effects. Any fish exposed to the expected minor levels of sediment produced by the new road should experience minor behavioral effects that do not rise to the level of harm.

Impacts to substrate were also previously addressed in the effects to habitat. Due to the bridge design allowing for natural channel simulation and due to the very small and infrequent sediment contributions, very minor effects to substrate are expected. Channel mobility and sorting will not be negatively affected by the new bridge and the floodplain road. Potential addition of minor quantities of sediment during rain and snowmelt events is not expected to adversely affect fish in the action area. These conclusions are dependent on successful implementation of all proposed design criteria and also assume those criteria will be applied to future construction elements on the east bench.

2.5.2.4 Summary of Effects to Species

Possible effects to species from retaining the permanent access road are entirely related to habitat impacts. The new route is not expected to cause harmful effects from potential chemical contamination, sediment, or substrate impacts caused by the new route. The action will permanently replace about 40 feet of Lemhi River bank with riprap and eliminate about 0.07 acres of riparian area and 0.25 acres of wetland. For the small number of juvenile salmon and steelhead rearing in the affected area during future peak flow events, the lost habitat complexity, loss of floodplain refugia, and potential for density dependency effects from the reduced habitat are reasonably expected to reduce growth. Reduced growth may potentially reduce survival from parr-to-smolt or smolt-to-adult life stages of affected fish. Floodplain impacts will manifest about once every five years, and last briefly during the modified Lemhi River's peak hydrograph. The quantity of habitat lost is small and it is used only infrequently given the poor floodplain access that exists. While these effects to species will adversely affect future generations of fish, the amount of lost habitat is very small in context of the action area's available habitat (approximately 20 acres of riparian) and the effect would be realized infrequently.

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 action area is entirely privately owned. Because the landowner has committed his entire riparian property to the previously discussed restoration action, there are no additional private actions expected on the valley bottom portion of the action area. Uplands accessed by the proposed access route are likely to be developed. Potential effects of future development are consequences of the proposed action, not cumulative effects, and were previously addressed. There are no other known future state or private activities within the action area.

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 action will have only minor impacts on sediment and turbidity due to the anticipated effectiveness of the proposed design criteria, small size and location of the route low slope and proposed rehabilitation measures. Future upland development will occur on a flat elevated bluff, with limited potential to deliver sediment to the Lemhi River or otherwise affect fish or habitat on the floodplain. Upland development is likely to apply similar construction BMPs and site reclamation as was proposed for the Federal action. Success of those measures should limit sediment delivery to infrequent and minor occurrences. The retained bridge will allow for stream simulation and channel substrate, width to depth, and water velocity will not be affected by the structure. The road will eliminate 0.07 acres of riparian vegetation and about 0.25 acres of wetland. About 40 feet of Lemhi River will be converted from native bank to rock riprap. These areas support high flow refugia for juvenile fish and promote natural channel resiliency and habitat protection. The loss will be permanent and represents about 1.6 percent of the 20-acre riparian property. Small amounts of space, cover, and floodplain refugia PBFs of critical habitat will be permanently degraded by the action.

Possible effects to species from retaining the permanent access road are entirely related to the described habitat impacts. The new route is not expected to cause harmful effects from potential chemical contamination, sediment, or substrate impacts caused by the new route. The action will permanently replace about 40 feet of Lemhi River bank with riprap and eliminate about 0.07 acres of riparian area and 0.25 acres of wetland. For the small number of juvenile salmon and steelhead rearing in the affected area during future peak flow events, the lost habitat complexity, loss of floodplain refugia, and potential for density dependency effects from the reduced habitat are reasonably expected to reduce growth. Reduced growth may potentially reduce survival from parr-to-smolt or smolt-to-adult life stages of affected fish. Floodplain impacts will manifest about once every five years, and last briefly during the modified Lemhi River's peak hydrograph. The quantity of habitat lost is small and it is used only infrequently given the poor floodplain access that exists. While these effects to species will adversely affect future generations of fish, the amount of lost habitat is very small in context of the action area's available habitat (approximately 20 acres of riparian) and the effect will be realized infrequently.

The Applicant's restoration efforts, described in the baseline, are expected to increase habitat quality and quantity across more than 20 acres of riparian area and overlapping with the action area for this project. Improvements include habitat quality and quantity improvements in about 0.5 miles of mainstem Lemhi River and several thousand feet of new and existing side channels. Restoration work will restore natural fluvial and riparian processes, facilitating floodplain access at higher frequencies and affecting more habitat. That work is expected to substantially improve the action area's value as juvenile fish rearing and refugia habitat and adult migratory and spawning habitat for the foreseeable future. The proposed action will cause a slight reduction in the overall benefits provided by that action, but overwhelmingly, action area habitat conditions are expected to continue their upward trend despite the proposed action's impact. As habitat conditions continue to improve, future fish using the action area are expected to benefit through increased growth and survival, helping to meet recovery goals (NMFS 2017).

The Lemhi populations of Chinook and steelhead are both essential for the species recovery. Although the action will degrade habitat conditions and cause a potential reduction in growth and survival of some fish, the small size of the area impacted by the action and its infrequent use as cover, space, and refugia, suggest the impact will be minor at the action area scale. Working up the hierarchy, a minor impact at the action area scale is also likely to be minor at the population and ESU/DPS scales. The minor nature of the adverse effects caused by the permanent access route and future bench development are unlikely to influence the affected populations' probability of survival or recovery.

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 or Snake River Basin steelhead, and it will not destroy or adversely modify their designated critical habitats.

2.9 Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). On an interim basis, NMFS interprets "harass" to mean, "Create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "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 result from habitat-related modifications that ultimately result in behavioral modifications resulting in harm to future generations of juvenile salmon and steelhead. The harm is likely to occur as long as the access route remains on the landscape. NMFS is unable to determine the number of individuals from either species that will be harmed. Juvenile fish abundance and fish density vary substantially annually (Achord et al. 2007). Flood inundations are also not possible to pre-determine in order to identify when effects may occur. For these reasons, it is not possible for NMFS to determine how the lost habitat may affect an individual fish in a given day, season, and ultimately how the lost habitat affects exposed fish throughout their life.

The action is reasonably certain to cause harm from habitat-related modification resulting from the permanent removal of 0.07 acres of riparian vegetation and 0.25 acres of wetland habitat. This amount of habitat impact can be monitored as disturbances occur and is directly related to the take that is likely to occur from the action. Although these surrogates could be considered coextensive with the proposed action, monitoring and reporting requirements will provide opportunities to check throughout the course of the proposed action whether the surrogates are exceeded. For this reason, the surrogates function as effective reinitiation triggers.

The extent of take will be exceeded if more than 0.07 acres of riparian vegetation are permanently removed by converting the temporary route to a permanent route or if more than 0.25 acres of wetland habitat is eliminated by the road.

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 and the Applicant shall:

1. Minimize the amount of erosion generated by the new route.

2. Minimize the amount of riparian vegetation and wetland impact caused by the new route.

3. Monitor the new route during and after construction to confirm the terms and conditions in this ITS are effective in avoiding and minimizing incidental take from the proposed activities and ensure the amount and extent of incidental take are not exceeded.

2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the COE, the Applicant, and any representative of the Applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The COE and the Applicant have 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. The COE shall require the Applicant to install drainage features (e.g., water bars, rolling dips, etc.) along the steepest section of the new route to reduce sediment delivery to the Lemhi River.

   b. The COE shall require the Applicant to monitor the new access route annually for no less than 5 years. If sediment delivery routes are identified the COE shall require additional erosion mitigations as necessary to minimize additional delivery.

2. The following terms and conditions implement RPM 2:

   a. The COE shall require the Applicant or their representative mark the limits of excavation and disturbance prior to initiating any clearing or excavation activities.

   b. The COE shall require the Applicant or their representative to ensure route construction avoids unnecessary wetland and riparian disturbance by not disturbing any areas outside the marked construction limits.

3. The following terms and conditions implement RPM 3:

   a. The COE shall submit an implementation and monitoring report to NMFS within six weeks of project completion. The report shall document the successful implementation of all described components of the action, including proposed conservation measures, and the results of all monitoring required by the final BA and this ITS. The report shall include the following:

      i. Confirmation from the Applicant, including photographs, that all proposed design criteria and required terms and conditions were successfully implemented.

      ii. A ledger of the amount of wetland and riparian habitat within the pre-marked disturbance area and the post construction disturbance that demonstrates permanent effects remain below the authorized incidental take limits.

iii. At no time prior to disturbance or after route construction is complete shall: (1) More than 0.07 acres of riparian vegetation be permanently disturbed; and/or (2) more than 0.25 acres of wetland be permanently disturbed.

iv. Submit post-project report to:

Hardcopy - Bill Lind, Southern Snake Branch Chief
National Marine Fisheries Service
Attention: WCRO-2020-01570
800 Park Boulevard
Plaza IV, Suite 220
Boise, Idaho 83712-7743

Email - nmfswcr.srbo@noaa.gov

v. For term and condition 1.c, the COE shall annually email (for five years) NMFS (see above for address) by January 1 documenting erosion monitoring occurred, any issues identified, and any remediation taken to correct those issues.

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).

NMFS identified two conservation recommendations for this action.

1. The COE should request the Applicant apply the same sediment containment measures and BMPs as proposed for the valley bottom road while constructing the

road up the east bench and during any future construction that occurs on the bench.[3]

2. The Applicant should submit a copy of Section 402 notice of intent to NMFS prior to initiating upland construction activities. This will allow NMFS to confirm anticipated BMPs and sediment containment provisions are in fact applied to future upland construction areas.

2.11 Reinitiation of Consultation

This concludes formal consultation for the Lemhi River Access, Middle Reach Project.

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.

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. 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 CFR 600.10). 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

[3] A July 31, 2020 email from James Joyner, COE Sr. Regulatory Project Manager, indicated this measure was acceptable to the Applicant. This suggests the measure will be implemented.

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 proposed action and action area for this consultation are described in Section 1.3 of this document. Juvenile (rearing and migratory) and adult (migratory and spawning) spring/summer Chinook salmon EFH is present in the action area. The action will have minor effects on the Lemhi River from episodic turbidity impacts (including sedimentation) and approximately 40 feet of bank will be converted to rock riprap. In addition, up to 0.07 acres of riparian vegetation and 0.25 acres of wetland will be permanently replaced by the new access route. Approximately 20 acres of EFH occur in the action area. This area is identical to the spring/summer Chinook salmon critical habitat affected and discussed in Sections 2.5.1 of the preceding Opinion.

The affected EFH possesses areas containing the features and habitat function consistent with habitat areas of particular concern (HAPC). Identifying HAPCs helps focus conservation efforts on particular habitats that are of high ecological importance. The HAPCs NMFS identified in the action area include complex channels and floodplain habitats, and spawning habitat.

The action area includes the mainstem and Lemhi River and side channels, wetlands, and a mix of functioning and impaired riparian vegetation. Floodplain access and channel complexity have been significantly impaired by historic human influences within and upstream of the action area. Those impacts have prevented the complete expression of habitat forming processes important to create and maintain diverse fisheries habitat. The Lemhi River contains suitable gravel and hydraulic conditions to support spawning Chinook salmon. Currently, spawning habitat is used infrequently; likely, due to higher quality habitat located further upstream and low annual adult returns. All other life stages of Chinook salmon occupy and utilize the action area now. Ongoing restoration work on the subject property is substantially improving natural processes and habitat quantity and quality.

3.2 Adverse Effects on Essential Fish Habitat

1. Proposed activities have potential to generate minor sediment inputs during rain and snowmelt events. Quantities of sediment delivered to the Lemhi River are expected to be minor and may not be detectable due to upstream sediment inputs and higher turbidity during these same events. See section 2.5.1.2 of the above Opinion for additional information.

2. Potential spawning habitat exists in the action area. The minor quantities of sediment deposition resulting from road surface erosion could affect spawning substrate quality. However, the small quantity of sediment produced by the new road is unlikely to affect spawning habitat quality. The new bridge's design will simulate natural channel hydraulics and can pass a 100-year flow. These design features should ensure substrate sorting and deposition patterns are not modified by the action.

3. Removing up to 0.07 acres of riparian vegetation and 0.25 acres of wetland habitat will reduce high water refugia and is a direct reduction in the quantity of complex channel and

floodplain habitat HAPC. Fortunately, the Applicant has also proposed a separate substantial restoration project on the property as mitigation for these impacts that are part of the baseline. The restoration project will provide more than four times as much new wetland areas as the access route will remove. Riparian benefits are more than 250 percent of the access roads impact. In addition, the restoration project will increase floodplain access and riparian vigor across the entire 20-acre river bottom parcel. Given the substantially improved nature of the baseline, action area EFH is expected to continue over time, even with the projected permanent impacts caused by the proposed access route.

3.3 Essential Fish Habitat Conservation Recommendations

1. To minimize effects of project-generated turbidity and sediment deposition on EFH (bullets 1 and 2 above) the COE should implement the following Conservation Recommendations:

    a. The Applicant should apply the same sediment containment measures and BMPs as proposed for the valley bottom road while constructing the road up the east bench and during any future construction that occurs on the bench.

    b. The Applicant should install drainage features (e.g., water bars, rolling dips, etc.) along the steepest section of the new route to reduce sediment delivery to the Lemhi River.

2. To minimize permanent riparian and wetland impacts, the COE should require the applicant to pre-mark all proposed disturbance areas and ensure those boundaries are not violated during construction.

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described in Section 3.2, above, approximately 0.32 acres of designated EFH for Pacific Coast salmon.

3.4 Statutory Response Requirement

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

many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5 Supplemental Consultation

The 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 COE. Other interested users include the Applicant, the IDFG, and any contractors engaged in performing the proposed action. 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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