UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No.: WCRO-2021-00126

https://doi.org/10.25923/vyfn-y068

July 29, 2021

Lt. Col. Richard T. Childers
U.S. Army Corps of Engineers
Walla Walla District
201 North Third Avenue
Walla Walla, Washington 99362

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Clear Creek Washout Repair Project, Lower Clear Creek Sub-watershed, HUC 170603040103, Idaho County, Idaho

Dear Lt. Col. Childers:

Thank you for the letter dated January 21, 2021, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Clear Creek Washout Repair 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.

In this biological opinion (opinion), NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River Basin steelhead. NMFS also determined the action will not destroy or adversely modify designated critical habitat for this species. The 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 (COE), and any permittee 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.

This document also includes the results of our analysis of the action's effects on EFH pursuant to section 305(b) of the MSA, and includes four Conservation Recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These Conservation Recommendations are similar but not identical to the ESA Terms and Conditions. Section 305(b)(4)(B) of the MSA requires federal agencies provide a detailed written response to NMFS within 30 days after receiving these recommendations. If the response is inconsistent with the EFH Conservation Recommendations, the COE must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many Conservation Recommendations are provided as part of each EFH consultation, and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of Conservation Recommendations accepted.

Please contact Mr. Brad DeFrees, Northern Snake River Branch, 208-993-1240, or brad.defrees@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Michael P. Tehan
Assistant Regional Administrator
Interior Columbia Basin Office
NOAA Fisheries, West Coast Region

Enclosure

cc:

W. Schrader – COE
C. Johnson-Hughes – USFWS
M. Lopez – NPT

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

Clear Creek Washout Repair Project, Idaho County, Idaho

NMFS Consultation Number: WCRO-2021-00126

Action Agencies: U.S. Army Corps of Engineers

Affected Species and 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 Basin steelhead (*Oncorhynchus mykiss*)	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 P. Tehan
Assistant Regional Administrator

Date: *July 29, 2021*

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ACRONYM	DEFINITION
BA	Biological Assessment
BMP	Best Management Practices
COE	U.S. Army Corps of Engineers
CWA	Clean Water Act
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
HAPC	Habitat Area of Particular Concern
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
ITS	Incidental Take Statement
MPG	Major Population Group
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NMFS	National Marine Fisheries Service
NTU	Nephelometric Turbidity Units
NWFSC	Northwest Fisheries Science Center
opinion	Biological Opinion
PBF	Physical and Biological Features
PCE	Primary Constituent Element
PFMC	Pacific Fishery Management Council
RPM	Reasonable and Prudent Measures
SWS	Stillwater Sciences
Tribe	Nez Perce Tribe
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

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 U.S.C. 1531 et seq.), and implementing regulations at 50 CFR 402, as amended.

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

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). A complete record of this consultation is on file at the NMFS office in Boise, Idaho.

1.2. Consultation History

Pre-consultation with NMFS began on May 28, 2020 when a consultation request package was received from the U.S. Army Corps of Engineers (COE). The package included a draft biological assessment (BA) with not likely to adversely affect determinations for listed species and their designated critical habitat. After review, NMFS concluded that additional information regarding the action was required prior to initiating consultation. A follow-up phone call between NMFS and the COE occurred on August 24, 2020 to discuss the required information. Partial additional information was provided via email from the COE on November 12, 2020, including information regarding existing vegetation cover at the project site, species presence within the action area, and turbidity monitoring requirements during construction.

Upon further review, NMFS requested additional information on December 31, 2020 regarding: species, critical habitat, and EFH determinations; additional Best Management Practices (BMPs) pertaining to the action; project timing and duration; and additional clarifications regarding turbidity monitoring in the action area. The COE responded to this request on January 21, 2021 with information that included an updated likely to adversely affect determination for listed species and associated critical habitat. A subsequent phone call occurred on the same day between NMFS and the COE to discuss the potential for a winter work window. At this point, NMFS reached finalization of the consultation package and considered January 21, 2021 to be the date of initiation of formal consultation.

In late February 2021, the permittee informed the COE that the action would not be completed during the winter work window. Also during this time, NMFS had requested additional information regarding water depth parameters at the project site. It was decided that water depth measurements would be taken at the project site after spring runoff in late May or early June. Closure regarding water depth parameters for the project occurred in late June 2021, after a site visit by the permittee on June 15, 2021. This being the case, the COE and NMFS agreed to an extension for the issuance of the opinion, with a statutory timeframe of July 31, 2021.

Because this action has the potential to affect tribal trust resources, NMFS coordinated with the Nez Perce Tribe (Tribe) on February 22, 2021 in a virtual meeting to discuss the project. Various concerns were discussed and incorporated into the opinion, including revegetation, avoiding in-water work during high flow events, and ensuring notification of project timing with various parties before construction begins. NMFS provided copies of the draft proposed action, terms, and conditions for this opinion to the Tribe on July 2, 2021. The Tribe responded on July 16, 2021 with comments specifying the contractor and/or the COE should provide notification to personnel at the Kooskia National Fish Hatchery prior to the start of in-water work. Additional comments addressed the spacing and monitoring of willow plantings within installed riprap at the project site. The Tribe's comments have been incorporated into this opinion.

1.3. Proposed Federal Action

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

The COE has proposed to permit a bank stabilization project within the lower section of Clear Creek, a tributary to the Middle Fork Clearwater River (HUC 17060304) near Kooskia, Idaho. Significant flooding in the area washed out a portion of the bank of Clear Creek adjacent to Clear Creek Road. The COE proposes to issue a Clean Water Act (CWA) (33 CFR 1344) Section 404 permit to reconstruct approximately 185 linear feet of bank in Clear Creek that was washed away. The project will utilize riprap and erosion control fabric to prevent further erosion and subsequent damage to the road.

The proposed action includes the installation of 390 square yards of erosion control fabric and 385 cubic yards of riprap along 185 linear feet of streambank adjacent to Clear Creek Road. The riprap will be place no more than 13 feet from the base of the streambank into the wetted channel. The existing stream channel is very near the road and the streambank edge is constrained by the road. The riprap will be placed on top of the installed erosion control fabric. Rock size will vary between 18-inch and 24-inch diameters. Willow cuttings will be incorporated into the riprap at least every six feet along the length of the project site. The willow cuttings will be placed below the ordinary high water mark. The bank being reconstructed was washed out during significant floods in spring 2019 and additional high water events in spring 2020 (Figure 1).

Figure 1. Looking upstream at the location of proposed bank restoration during a high water event, Clear Creek Road is located at the top of the bank line.

All work is proposed during low flow conditions, in which most of the project will be accomplished in the dry. In-water work will only occur during installation of the erosion control fabric and riprap below the water line. Water levels in the project area where erosion control fabric and riprap will be installed are expected to range from less than one foot deep to no more than four feet deep during reconstruction. The greatest water depths observed during spring runoff in mid-June 2021 ranged from three to four feet. Therefore, it is likely that water levels at the project site will be lower during construction in low-flow conditions. No in-water work will occur in water depths of more than four feet. Additionally, in-water excavation work will occur to key in the toe of the riprap only. Riprap toe construction consists of trenching a line along the project site for placement of 18 to 24 inch diameter rocks. Only the bucket/arm of the excavator equipment will be in contact with the water. The in-water work is expected to be completed within one or two consecutive days. Project staging may occur one day prior to the in-water work. The stream channel will not be obstructed during construction and work will only occur during daylight hours.

The in-water work window for the project is July 15 through September 30, when flows are historically lowest. The action (i.e. full project construction) will be completed during this work window. The COE and/or permittee will coordinate with the Kooskia National Fish Hatchery and the Tribe to notify them of the exact dates in which the in-water portion of the proposed action will occur.

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

1.3.1. Conservation Measures

The proposed action includes a variety of BMP's to minimize impact on ESA-listed fish and their habitat. Those BMPs are summarized in Table 1.

Table 1. Best management practices included in the proposed action to minimize impacts on ESA-listed fish and their designated critical habitat.

Category	Specific Measures
In-stream work	• All in-stream work will be completed between July 15, 2021 and September 30, 2021. • All work will be completed within the designated project footprint and during established daytime working hours. • All work will be completed from the existing roadway, shoulders, and upland area.
Sediment and Stormwater Control	• All areas of ground disturbance will be rehabilitated. This includes spreading of stockpiled materials, seeding, and/or planting with native seed mixes or plants when appropriate. • Removal of riparian vegetation will be minimized to the extent practical. • Bioengineering principles (i.e. planting willow) will be incorporated within the riprap edge along the full length of the project site. In particular, willow plantings will be incorporated into the riprap at least every six feet along the project site below the ordinary high water mark. • Temporary erosion and sediment controls, such as silt fences, fiber wattles, or other erosion control mechanisms will be placed adjacent to or below disturbance areas to prevent and minimize sediment transport into any waterway. Erosion control materials will be certified weed free in order to prevent the spread of noxious weeds. Sediment control devices will be maintained throughout construction activities, as determined by the site foreman/engineer. When the risk of erosion has passed, the devices will be removed, and sediment will be disposed of in an upland location outside of the floodplain or transported off site. • No construction activities will occur during wet weather conditions. If precipitation is predicted to occur within 24 hours, appropriate measures will be taken to cover up stockpiles and check that BMPs are in good condition. • Idaho State Water Quality Standards will be met during construction operations. Riprap material will be stockpiled in a location away from Clear Creek.
Equipment Spill and Leak Prevention	• Construction equipment and vehicles will be fueled offsite and adequately buffered from riparian zones and aquatic areas, preferably at least 150 feet from the stream. If offsite fueling is impractical, fueling will occur in designated fueling areas and be performed in accordance with Idaho Transportation Department BMPs, such as fueling in an isolated hard zone (i.e. paved parking area) and inspecting machinery and equipment daily for fluid leaks before leaving the vehicle staging area. • To prevent the transportation of invasive species (both terrestrial and aquatic), all equipment will be pressure washed to remove plant parts, soil, and other materials that may carry invasive and noxious weed seeds prior to arriving at the project site. • Adequate spill response equipment (i.e. spill kits and cleanup materials) will be maintained and present onsite at all times to avoid chemical contamination in the event of a spill. All spills will be cleaned up immediately.

Category	Specific Measures
	• When not in use, construction equipment will be stored away from concentrated flows of stormwater, drainage courses, and inlets. o Equipment will be parked over plastic sheeting, or an equivalent, wherever possible. Plastic will not be considered a substitute for drip pans or absorbent pads. Hydraulic equipment will be protected from runoff by placing them on plywood and covering them with plastic or a comparable material prior to the onset of rain. o Contractor will follow proper storage, handling, use, and disposal of petroleum products and other hazardous materials.
Monitoring	• If a visible turbidity plume is observed more than 300 feet downstream from, the lower end of the construction site, all work will stop and steps will proceed per Idaho Department of Environmental Quality (IDEQ) requirements per the Final 401 Water Quality Certification issued for 2020 U.S. Army Corps of Engineers 404 Nationwide Permits. • A qualified fisheries biologist will be required to be onsite during work to identify fish presence and determine if any fish are directly impacted by the project.

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

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

2.1 Analytical Approach

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

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

The designation of critical habitat for Snake River Basin steelhead 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 in the action area.
- 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 that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species. The Federal Register notices and notice dates for the species and critical habitat listings considered in this opinion are included in Table 2.

Table 2. 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
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 Basin steelhead distinct population segment (DPS). NMFS expresses the status of a salmonid DPS in terms of likelihood of persistence over 100 years (or risk of extinction over 100 years). NMFS uses McElhany 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, a DPS should have multiple viable populations so that a single catastrophic event is less likely to cause the DPS to become extinct and so that the DPS may function as a meta-population that can sustain population-level extinction and recolonization processes (ICTRT 2007). The risk level of the DPS is built up from the aggregate risk levels of the individual populations and major population groups (MPGs) that make up the 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 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 DPS informs NMFS' determination of whether additional risk will appreciably reduce the likelihood that the DPS will survive or recover in the wild.

The following sections summarize the status and available information on the species and designated critical habitat considered in this opinion based on the detailed information provided by the *ESA Recovery Plan for Snake River Spring/Summer Chinook Salmon & Snake River Basin Steelhead* (NMFS 2017), *Status Review Update for Pacific Salmon and Steelhead Listed under the Endangered Species Act: Pacific Northwest* (NWFSC 2015), and *2016 5-year Review: Summary and Evaluation of Snake River Sockeye Salmon, Snake River Spring-summer Chinook, Snake River Fall-run Chinook, Snake River Basin Steelhead* (NMFS 2016). Additional information (e.g., abundance estimates) has become available since the latest status review (NMFS 2016) and its technical support document (NWFSC 2015). This latest information represents the best scientific and commercial data available and is summarized in the following sections.

Snake River Basin Steelhead

The Snake River basin steelhead listed as a threatened Evolutionary Significant Unit (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, loss of habitat above the Hells Canyon Dam complex on the mainstem Snake River, and widespread habitat degradation and reduced stream flows throughout the Snake River basin (Good et al. 2005). Additional factors threatening the recovery of the species include climate change and predation (i.e., avian and pinniped predators). 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 five-year status review for Pacific salmon and steelhead, NMFS concluded that the species should remain listed as threatened (81 FR 33468).

Life history. Adult Snake River Basin steelhead enter the Columbia River from late June to October to begin their migration inland. After holding over the winter in larger rivers in the Snake River basin, steelhead disperse into smaller tributaries to spawn from March through May. Earlier dispersal occurs at lower elevations and later dispersal occurs at higher elevations. Juveniles emerge from the gravels in 4 to 8 weeks, and move into shallow, low-velocity areas in side channels and along channel margins to escape high velocities and predators (Everest and Chapman 1972). Juvenile steelhead then progressively move toward deeper water as they grow in size (Bjornn and Rieser 1991). Juveniles typically reside in fresh water for 13 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 12 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 (85 FR 81822). The artificial propagation programs include the Dworshak National Fish Hatchery, Salmon River B-run, South Fork Clearwater B-run, East Fork Salmon River Natural, Tucannon River, and the Little Sheep Creek/Imnaha River 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, Dworshak Dam blocked the historic North Fork population from accessing spawning and rearing habitat. 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 steelhead DPS 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 one year in the ocean; B-run steelhead are larger with most individuals returning after two 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.

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

Major Population Group	**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 River	Moderate?	Low	Maintained?
	Upper Middle Fork Salmon River	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 River	Moderate?	Moderate	Maintained?
Hells Canyon	Hells Canyon Tributaries			*Extirpated*

*Current abundance/productivity estimates for the Lower Mainstem Clearwater River 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. The shaded row indicates the population that may be affected by the proposed action.

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 2021). Since 2015, the numbers have declined steadily with only 9,634 natural-origin adult returns counted for the 2020-run year (ODFW and WDFW 2021).

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, Lower Mainstem Clearwater River) were meeting minimum abundance/productivity thresholds based on information included in the 2015 status review; however, since that time, abundance has substantially decreased. Only the 5-year (2014-2018) geometric mean of natural-origin spawners of 1,786 for the Upper Grande Ronde population appears to remain above the minimum abundance threshold established by the ICTRT (Williams 2020). 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.

The proposed action will occur in the Clear Creek watershed, which is one of six major spawning areas for the Lower Mainstem Clearwater River steelhead population. Recent abundance/productivity estimates for the Lower Mainstem Clearwater River population exceed minimum thresholds for low risk status, but the population is assigned moderate risk for abundance/productivity due to the high uncertainty associated with the estimate (NWFSC 2015). Also, during 2016-2020, abundance of this population is presumed to have declined substantially, as it has for the DPS as a whole (see Table 3, above).

2.2.2. 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 (PBFs), and the species life stage each PBF supports.

Site	Essential Physical and Biological Features	Species Life Stage
Snake River basin steelhead[a]		
Freshwater spawning	Water quality, water quantity, and substrate	Spawning, incubation, and larval development
Freshwater rearing	Water quantity and 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

[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, logjams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

Table 5 describes the geographical extent within the Snake River of critical habitat for the Snake River Basin steelhead DPS. Critical habitat includes the stream channel and water column with the lateral extent defined by the ordinary high-water line, or the bankfull elevation where the ordinary high-water line is not defined.

Table 5. Geographical extent of designated critical habitat within the Snake River for Snake River Basin steelhead.

Distinct Population Segment (DPS)	Designation	Geographical Extent of Critical Habitat
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 stream flows, 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, stream flows are substantially reduced by water diversions (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 Clean Water Act 303(d) list for impaired water quality, such as elevated water temperature (IDEQ 2020). 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 eight run-of-river dams on the mainstem lower Snake and lower Columbia Rivers, have altered biological and physical attributes of the mainstem migration corridor. Hydro-system development modified natural flow regimes, resulting in warmer late summer and fall water temperature. Changes in fish communities led to increased rates of piscivorous predation on juvenile salmon and steelhead. Reservoirs and project tailraces have created opportunities for avian predators to successfully forage for smolts, and the dams themselves have created migration delays for both adult and juvenile salmonids. Physical features of dams, such as turbines, have delayed migration for both adults and juveniles. Turbines and juvenile bypass systems have also killed some out-migrating fish. However, some of these conditions have improved. The Bureau of Reclamation and COE have implemented measures in previous Columbia River System hydropower consultations to improve conditions in the juvenile and adult migration corridor including 24-hour volitional spill, surface passage routes, upgrades to juvenile bypass systems, and predator management measures. These measures are ongoing and their benefits with respect to improved functioning of the migration corridor PBFs will continue into the future.

2.2.3. 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. The U.S. Global Change Research Program (USGCRP) reports average warming in the Pacific Northwest of about 1.3ºF from 1895 to 2011, and projects an increase in average annual temperature of 3.3ºF to 9.7ºF by 2070 to 2099 (compared to the period 1970 to 1999), depending largely on total global emissions of heat-trapping gases (predictions based on a variety of emission scenarios including B1, RCP4.5, A1B, A2, A1FI, and RCP8.5 scenarios). The increases are projected to be largest in summer (Melillo et al. 2014, USGCRP 2018). The 5 warmest years in the 1880 to 2019 record have all occurred since 2015, while 9 of the 10 warmest years have occurred since 2005 (Lindsey and Dahlman 2020).

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). These changes will shrink the extent of the snowmelt-dominated habitat available to salmon and 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 consists of the project work site (185 linear feet of eroded bank, including the stream channel and road section directly adjacent to the eroded bank), as well as Clear Creek from 100 feet upstream of the uppermost bank stabilization point, extending downstream 1,000 feet from the lowermost bank stabilization point (the likely extent of potential downstream sediment effects). The action area also includes all equipment and material staging areas associated with the project.

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 action area is used by both adult and juvenile Snake River Basin steelhead. The creek within the action area is designated critical habitat for Snake River Basin steelhead. The condition of the listed species and designated critical habitats in the action area are described further below.

There has been extensive land disturbance that has affected the action area, with human uses such as logging, agriculture, grazing, and development. These activities, both within the action area and upstream from it, have caused the following impacts to stream habitat in the action area:

- High summer water temperatures occur annually in Clear Creek, primarily due to lack of riparian shade and extremely low summer base flow (SWS 2015; SWS 2016). Effects from climate change are expected to increase stream temperatures and reduce the time period during summer/early fall when the action area provides suitable rearing habitat for steelhead.

- The action area has very little mature riparian vegetation to provide shade or contribute wood to the stream. No significant large wood is present in the stream channel (SWS 2015; SWS 2016), and the banks are lined with riprap, especially within the lower developed areas of Clear Creek.

- Lower Clear Creek is generally impaired by erosion and sedimentation, most likely from runoff from logging and other land use practices and facilities (particularly roads) upstream from and within the action area. The action area portion of lower Clear Creek perennially experiences high-energy stream flows (with stream energy increased by human-caused channel confinement); and percentages of surface fine sediment in this non-depositional section of the creek are relatively low. The action area provides suitable, albeit presently simplified and low functioning, spawning and rearing habitat for steelhead (SWS 2015; SWS 2016; NMFS 2017).

- The floodplain in the action area is constrained by roads, buildings, and bank armoring.

These impacts to stream habitat in the action area contribute to habitat limiting factors for the Lower Mainstem Clearwater River steelhead population, which include: high summer water temperatures, low summer flows, increased flood magnitude and frequency (i.e., increased "flashiness"), excess sediment accumulation in low-gradient stream reaches, reduced floodplain connectivity, degraded riparian conditions, reduced habitat complexity, and migration barriers (NMFS 2017). Despite degraded habitat conditions, Stillwater Sciences (2015; 2016) has observed juvenile steelhead in the action area. Further, IDEQ final 2018/2020 §305(b) Integrated Report indicates that Clear Creek is fully supporting of applicable water quality standards.

2.5. Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

2.5.1. Effects to Species

The proposed action will take place between July 15, 2021 and September 30, 2021. Adult steelhead are only likely to be present and migrating upstream through this reach mid-March through May. Juvenile steelhead are likely to be present throughout the entire year.

Steelhead in the action area could experience the following effects from the proposed action:

- exposure to short-term turbidity plumes at and downstream of the project site;
- exposure to riprap placement and bank hardening;
- exposure to construction noise;
- exposure to chemical contamination;
- exposure to increased sediment deposition;
- changes in the features of the habitat along the streambank and associated effects on the fish.

The likelihood of exposure and the magnitude of response to these effects of the action are discussed below. We considered whether or not the effects of the proposed action are expected to be amplified by climate change and determined they would not.

2.5.1.1. Turbidity

The effects of increased suspended sediment on salmonids vary based on exposure time and concentration. These effects were reviewed by Newcombe and Jensen (1996) and range from avoidance response, to minor physiological stress from increased rate of coughing, to death. Salmonids are relatively tolerant of low to moderate levels of suspended sediment (Gregory and

Northcote 1993). Salmon and steelhead tend to avoid suspended sediment above certain concentrations (Servizi and Martens 1992; McLeay et al. 1987). Avoidance behavior can mitigate adverse effects when fish are capable of moving to an area with lower concentrations of suspended sediment. Researchers have reported thresholds for salmonid avoidance behavior at turbidities ranging from 30 to 70 nephelometric turbidity units (NTU) (Lloyd 1987; Servizi and Martens 1992; Berg and Northcote 1985).

The proposed action incorporates multiple conservation measures aimed at preventing sediment from entering Clear Creek during construction, and thus minimizing potential increases in turbidity. Despite implementation of BMPs, turbidity plumes extending downstream from the construction site are expected to occur during portions of toe slope excavation that go below the water's edge, and during placement of the erosion control fabric and riprap. Based on similar bank stabilization and riprap installation projects in Clear Creek, as well as project specific BMPs proposed by the COE, NMFS does not expect elevated turbidity plumes to persist beyond two hours or travel more than 300 feet downstream from the project site (W. Schrader, personal communication, 2021; JUB 2020; Connor 2014; Foltz et al. 2008). Steelhead will likely respond to such short-term turbidity plumes by trying to avoid the plume and temporarily being displaced from preferred habitat. Steelhead that do not avoid the sediment plumes may experience sub-lethal impact as described above. Exposure to this intensity of turbidity (up to 50 NTU above background) for this amount of time would not likely cause lethal impacts for steelhead, based on an index of severity of effects of suspended sediment developed by Newcombe and Jensen (1996) and assuming a ratio of 2.4 milligrams per liter suspended sediment to 1-NTU (Schroeder 2014).

To estimate the number of juvenile steelhead that could be exposed to adverse effects from a turbidity plume, we made the following assumptions:

- Turbidity will affect juvenile steelhead within the project site (185 linear feet) and up to 300 feet downstream from the lower reach of the project site (485 feet total).

- A turbidity plume extending 485 feet downstream from the upper most point of the project site and spanning a singular 30-foot channel (JUB 2020) will cover an area of 1,352 square meters (14,550 square feet).

- Based on an estimate of six juvenile steelhead per 100 square meters (SWS 2015, SWS 2016, Hall-Griswold and Petrosky 1996), approximately 82 juvenile steelhead may be present in the turbidity plume and thus be exposed to sub-lethal impacts from turbidity.

2.5.1.2. Riprap Placement

In-water placement of riprap has the potential to injure or kill juvenile fish should they be present near the streambank at the project site or immediately downstream from the site. Additionally, placement of the erosion control fabric prior to riprap placement has the potential to entrap fish located near the streambank. However, habitat complexity along the streambank in the project area is currently poor with no undercut banks, offering little to no refugia for juvenile fish. This is characteristic of chronically eroding streambanks. With the proposed proper erosion control fabric placement methods, such as keeping the fabric in contact with the streambank and creek bottom at all times during installation (W. Schrader, personal communication, 2021; JUB 2020), it is unlikely that fish will be entrapped underneath the fabric. In addition, salmonid response to project staging activities, noise, and movement generated on the streambank prior to construction, is likely to cause these fish to seek refuge in nearby habitat away from the shallow stream margins where rock placement will occur. Because riprap will only be placed at the base and on the side of the existing eroded bank, fish will be able to relocate to nearby suitable habitat. For those reasons, it is very unlikely a fish would be entrapped or crushed.

Approximately 385 cubic yards of riprap will be used to stabilize 185 linear feet of streambank adjacent to Clear Creek Road. Riprap will be place no more than 13 feet from the base of the streambank into the wetted channel. Rock size will vary between 18-inch and 24-inch diameters. Only a small portion of this material will enter the active stream channel due to low flow conditions during the work window, riprap placement above the ordinary high water mark, and other BMPs. Some material could be briefly mobilized during placement but will not travel far from the project site due to low water volume and velocity. Fish within the pathway of mobilized riprap are expected to relocate out of the affected area into nearby suitable habitats during construction. However, if a pause in work occurs during riprap placement activities, fish may repopulate the affected area within several hours. Additionally, changes in stream velocity after initial placement could result in shifts and resettling of the riprap. Thus, fish could be repeatedly exposed to mobilized riprap. Although it is very unlikely for a fish to be injured or killed during riprap placement activities, the small potential for this outcome remains. It will not be feasible to monitor the number of fish injured or killed as a result of riprap placement and potential shifting of rocks after placement.

2.5.1.3 Noise and Disturbance

Construction noise or visual stimulus may disturb nearby juvenile steelhead, causing them to move away from the area. If fish move, they are expected to move only short distances to an area where they feel more secure, and only for a few hours in any given day (Grant and Noakes 1987; Ries 1995; Olson 1996; SNF 2009). Because the stream habitat near the bank reconstruction site is a relatively shallow riffle, we expect that if fish are displaced they will move temporarily into nearby areas. They are unlikely to experience harm or harassment caused by those temporary changes in location. Noise from construction equipment in this setting and as proposed will not rise to the decibel level known to physically harm fish (FHWA 2008; Wysocki et al. 2007).

2.5.1.4 Chemical Contamination

Use of construction equipment and heavy machinery adjacent to stream channels poses the risk of an accidental spill of fuel, lubricants, hydraulic fluid, antifreeze, or similar contaminants into the riparian zone, or directly into the water. If these contaminants enter the water, the substances could adversely affect habitat, injure or kill aquatic food organisms, or directly impact ESA-listed species (e.g., Neff 1985; Staples et al. 2001). The proposed action includes multiple conservation measures aimed at minimizing the risk of fuel, oil, or similar contaminant leakage into the stream. For example, equipment will be cleaned of external oil and checked for leaks prior to arrival at the project site. Equipment will be inspected daily for leaks or accumulations of grease. Any identified problems will be corrected immediately. Equipment will be positioned on the bank and not in the water. All fuel, oil, and other hazardous materials will be stored away from the stream channel. Equipment refueling will also occur away from the stream channel. Based on the past success of these types of conservation measures in other projects, negative impacts to ESA-listed fish and fish habitat from fuel spills or leaks are unlikely.

2.5.1.5 Sediment Deposition

Turbidity plumes from construction work will deposit a small amount of sediment in Clear Creek downstream from the construction site. Effects to individual fish could include reduction of available cover for juveniles or changes to primary and secondary productivity, affecting food supply for the fish. As described above in the Section 2.4.1.1, only a small amount of sediment is expected to be mobilized, thus there will only be a small amount of sediment available for deposition. Because of the expected effectiveness of the proposed sediment control BMPs, NMFS does not expect that enough sediment deposition will take place to alter salmonid use of the habitat (including feeding and predator avoidance). Additionally, it is unlikely that primary or secondary production will be appreciably affected in this reach. Further, any fine sediments deposited on the channel bottom will be flushed downstream during the next season's high flows, and substrate conditions will continue to support fish utilization of the action area.

2.5.1.6 Bank Hardening and Habitat Changes

The placement of riprap is known to cause adverse effects to stream morphology, fish habitat, and fish populations (Schmetterling et al. 2001; Garland et al. 2002). In low flows, juvenile salmonids 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, juvenile salmonids often seek refuge in low velocity microhabitats, including undercut banks and off-channel habitat. Riprap may preclude the future development of new off-channel rearing habitats by fixing the channel in its current location.

The streambank is presently confined by the road edge and is steep, with mostly bare soil, small rock, and sparse vegetation from the shoulder of the road to the water. When the proposed action is completed, the streambank will be a more gradual slope with larger rock and willows planted in it on the lower part of the slope, below the ordinary high water mark. The installation if riprap is expected to extend the streambank further into the stream channel than present conditions. Therefore, the channel may become narrower at the project site, with water traveling through at a faster velocity. This change in current may produce larger or more simplified substrate in this section of the creek. Additionally, willow plantings will likely provide more shade and cover than currently present along the streambank. With these physical changes, the site may have less favorable holding and feeding habitat for juvenile fish in the center of the creek, but more favorable habitat along the margins. Due to willow growth along the margin of the creek, the site may provide a small increase in forage species and feeding for juvenile fish. Large rock on the stream bottom of this non-depositional zone may continue to provide cover to juvenile fish.

2.5.2. Effects to Critical Habitat

Implementation of the proposed project is likely to affect freshwater spawning, rearing, and migration habitat for Snake River Basin steelhead. The PBFs that could be adversely affected by the proposed action are water quality, spawning substrate, and natural cover.

2.5.2.1. Water Quality

The proposed action could negatively affect water quality through chemical contamination or short-term increases in turbidity. As described above in Section 2.5.1.4, we expect the proposed BMPs will reduce the risk of leaks or spills from machinery from entering Clear Creek. We expect adverse effects from increases in turbidity (below 50 NTU) during riprap installation and erosion control fabric placement to last several hours and extend no more than 300 feet downstream from the project site. These increases in turbidity will cover a small area, will be of low magnitude (sub-lethal to fish occupying the habitat), and will be short term. Project effects on the water quality PBF will be small and temporary for turbidity, and unlikely for chemical contamination. Neither effect is expected to change the function of the water quality PBF.

2.5.2.2. Substrate

Turbidity plumes from construction work will deposit a small amount of sediment in Clear Creek. Because of the limited area and duration of excavation at the toe of the slope in the wetted edge of the stream, and because of the expected effectiveness of the proposed sediment control BMPs, NMFS does not expect that enough sediment deposition will take place to alter salmonid use of the habitat. Substrate will likely return to pre-project conditions as fine sediments are flushed downstream during the first high flows after project completion; and the project will not reduce the conservation value of the substrate PBF within the action area.

2.5.2.3. Natural Cover

The proposed action could negatively affect natural cover through installation of riprap along the streambank. As described above in Section 2.5.1.1, the placement of riprap will reduce natural cover at the site by narrowing the creek and increasing its velocity through the project reach. This change in current may produce larger or more simplified substrate in this section of the creek. Willow plantings will likely provide more shade and cover than currently present along the streambank. These changes are expected to be minor and are not likely to change the function of the natural cover PBF. Installing willow cuttings in the riprap below the ordinary high water mark could provide a slight increase in natural vegetative cover.

2.5.2.4. Forage

The proposed action may result in larger or more simplified substrate in this section of the creek. Additionally, willow plantings will likely provide more macroinvertebrate activity than currently present along the streambank. With these physical changes, the site may have less favorable feeding habitat for juvenile fish in the center of the creek, but more favorable habitat along the margins. Due to willow growth along the margin of the creek, the site may provide a small increase in forage species and feeding for juvenile fish. For these reasons, the proposed action is unlikely to result in appreciable effect on, or reduction in function of the forage PBF.

2.6. Cumulative Effects

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

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

The entire action area is adjacent to private property and the public roadway. Streambanks upstream and downstream from the action area have previously been impacted by the same high flows that caused the current erosion issues. Because of the existing infrastructure in the action area, NMFS anticipates that current private and state land use associated effects will continue into the future at their current rate.

Substantial stream-adjacent land development/use already exists in the action area and will persist into the future. Given this, the limiting factors that exist for steelhead in this reach (particularly channel confinement and very limited habitat complexity) will likely persist and may even become more limiting in the future. As previously noted, effects from climate change are expected to increase stream temperatures and reduce the time period during summer/early fall when the action area provides suitable rearing habitat for steelhead.

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.

Species. Many individual steelhead populations are not meeting recovery plan abundance and productivity targets, and the species remains threatened with extinction. Current abundance/productivity estimates for the Lower Mainstem Clearwater River population—where the proposed action will take place—exceed minimum thresholds for low risk status, but the population is assigned moderate risk for abundance/productivity due to the high uncertainty associated with the estimate (NWFSC 2015). Also, abundance of the Snake River Basin steelhead DPS as a whole (and likely for this population as well) has declined substantially during 2016 through 2020. Furthermore, climate factors will likely make it more challenging to increase abundance and recover the species (NMFS 2017).

Regarding the effects of the proposed action, steelhead in the action area could potentially experience adverse effects associated with riprap placement, noise, and chemicals from construction equipment, turbidity, sediment deposition, bank hardening, and natural cover. The effects of noise and chemicals are expected to be negligible because of the proposed conservation measures and the ability of fish to move out of the action area during construction. The currently existing degraded baseline conditions of habitat in the action area will not be altered more than minimally. The following adverse effects are expected:

- Sub-lethal impacts from short-term (no longer than two hours) exposure to increased turbidity levels up 300 feet downstream.

- Death and injury as riprap is placed in the wetted channel or if rocks shift after being placed.

Due to avoidance behavior and proper riprap placement, the likelihood of injury or death to salmonids from mobilized or shifting riprap is very small. If injury or death occurs, it is likely to only impact a few juvenile salmonids. We estimate that up to 82 juvenile steelhead may experience sub-lethal effects as a result of short-term exposure to elevated turbidity in a small portion of the stream (i.e., for about 300 feet downstream of the construction). The anticipated level of potential mortality coupled with the number of fish that may experience sub-lethal effects, would not likely reduce the abundance and productivity of the population. Because we do not anticipate a change in the viability of the Lower Mainstem Clearwater River steelhead population, the proposed action will not likely affect the viability of the MPG or DPS. When considering the status of the species, and adding in the environmental baseline, and cumulative effects, implementation of the proposed action will not appreciably reduce the likelihood of survival and recovery of Snake River Basin steelhead.

Critical habitat. Specific stream reaches are designated within the Lower Snake, Salmon, and Clearwater River basins as critical habitat for Snake River Basin steelhead. 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. Critical habitat for Snake River Basin steelhead is present in the action area, and exhibits many of the Lower Mainstem Clearwater River population's habitat limiting factors: high summer water temperature, low amounts of large wood, simplified stream channel, and a constrained floodplain. The installation of riprap at the project site may create less favorable holding and feeding habitat in the center of the creek, but more favorable habitat along the margins. The proposed action will cause small, short-term adverse effects to the substrate, natural cover, and water quality PBFs. However, due to the small and short-lived nature of these effects, the conservation value of critical habitat in the action area would not likely be appreciably reduced. Since the conservation value of critical habitat in the action area would not likely be appreciably reduced, the conservation value of critical habitat at the designation scale would also not likely be appreciably reduced. When considering the status of the species, environmental baseline, effects of the action, and cumulative effects, NMFS concludes that implementation of this proposed action will not appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

2.8. Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, 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 Basin steelhead, or destroy or adversely modify its designated critical habitat.

2.9. Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). 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 occur as follows:

- **Short-term water quality impacts from turbidity**. Although NMFS was able to estimate the number of fish we expect to be exposed to the turbidity plumes, it is not possible to observe the number of fish actually exposed. That being the case, NMFS will use the extent and duration of the turbidity plumes as a surrogate for take. This is a rational surrogate for take because the bigger the size and the longer the duration of turbidity plumes, the greater the likelihood of take. NMFS will consider the extent of take exceeded if turbidity plumes measured 300 feet downstream from the project site last more than 2 hours at levels over 50 NTU above background.

- **Injury or death from mobilized riprap.** Due to potential variance in streambed profile and non-isolation of the work site, it is not possible to observe the number of fish injured or killed from mobilized riprap during project construction. That being the case, NMFS will use the linear footage of riprap placed along the base of the streambank as a surrogate for take. This is a rational surrogate for take because the greater amount of riprap used, the greater amount of take that would occur. Although this surrogate 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 surrogate is exceeded. For this reason, the surrogate functions as an effective reinitiation trigger. NMFS will consider the extent of take exceeded if riprap is placed for more than 185 linear feet along the base of the streambank within the active channel. NMFS will also consider the extent of take exceeded if riprap is place more than 13 feet into the wetted channel from the base of streambank.

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, destruction, or adverse modification of critical habitat.

2.9.3. Reasonable and Prudent Measures

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

The COE shall:

1. Minimize incidental take from construction.

2. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this ITS were effective in avoiding and minimizing incidental take from permitted activities and that the extent of take was not exceeded.

2.9.4. Terms and Conditions

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

1. To implement RPM 1, minimize take from construction activities, the COE shall ensure the following occur, e.g., through incorporating them in the permitting conditions:

   a) Ensure that equipment will be 100 feet or more from the stream edge when refueling. Ensure that all fuel will be stored at least l00 feet from the stream edge.

   b) Notify Kent Hills at the Kooskia National Fish Hatchery at 208-926-4272 of the exact dates of in-water work prior to beginning construction and again at least 24 hours before in-water work begins.

2 To implement RPM 2 (monitoring and reporting), the COE shall:

   a. Ensure that the construction contractor monitors turbidity plumes created by the action. Any visible turbidity plumes created by the action shall be monitored at 30-minute intervals. The construction contractor will immediately cease work if turbidity plumes exceed state standards (50 NTU instantaneous above background) at 300 feet downstream from the project site and last for more than 2 hours. The construction contractor shall implement and document BMPs to reduce the magnitude and duration of turbidity plumes before continuing work. Notify NMFS immediately (extent of take) if these turbidity conditions occur.

   b. Notify NMFS immediately (extent of take) if is placed for more than 185 linear feet along the base of the streambank within the active channel. Ensure that the construction contractor ceases activities and contact NMFS if riprap is placed for more than 185 linear feet along the base of the streambank within the active channel.

   c. Submit a monitoring report (with information on turbidity plume duration and extent, as well as and riprap placement volume and location) by April 15, following project completion to: nmfswcr.srbo@noaa.gov

2.10. Conservations 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).

Conservation recommendations for this consultation are as follows:

1. To the extent possible, perform work when water levels are low and the area is dry.

2. If possible, the construction contractor should place the riprap in the least amount of stages as possible (i.e., few work breaks between placements) to reduce the possibility of fish returning to areas affected by mobilized riprap after initial relocation.

3. The construction contractor should clean all riprap (i.e. remove sediment fines) prior to placement in the river channel.

2.11. Reinitiation of Consultation

This concludes formal consultation for the Clear Creek Washout Repair Project.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by 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. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 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) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)]

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

3.1. Essential Fish Habitat Affected by the Project

The action area, as described in Section 2.3 of the above opinion, is also EFH for Chinook and coho salmon (PFMC 2014). The PFMC designated the following five habitat types as habitat areas of particular concern (HAPCs) for salmon: complex channel and floodplain habitat, spawning habitat, thermal refugia, estuaries, and submerged aquatic vegetation (PFMC 2014).

It is possible that Chinook and coho salmon may spawn and rear in the action area in the future and during project implementation.

3.2. Adverse Effects on Essential Fish Habitat

Based on the information provided in the BA and the analysis of effects presented in the ESA portion of this document, NMFS concludes that the proposed action will have the following adverse effects on EFH designated for Chinook and coho salmon:

1. Turbidity will produce brief and temporary water quality related impacts when riprap placement activities occur. Turbidity is not expected to exceed 50 NTUs, will likely persist less than 2 hours, and affect less than 300 feet of stream below the project site. Negative effects of sediment deposition may occur within 300 feet below the project site and include small fines deposited in spawning gravel. Deposited sediment will likely remain in the places of deposition until it is dispersed by high flows in the winter or spring.

2. Maintaining the streambank in its current location will continue to maintain reduced natural cover and increased bank hardening in the project site. The existing roadbed constrains the floodplain for Clear Creek, and this project will help perpetuate that condition, as well as narrow the stream channel with the sloping of the bank riverward to restore pre-washout slope. A small amount of increased cover will occur on the stream margin with the planting and establishment of the willows.

3.3. Essential Fish Habitat Conservation Recommendations

NMFS determined that the following EFH Conservation Recommendations are necessary to avoid, minimize, mitigate, or otherwise offset the impact of the proposed action on EFH.

1. Ongoing construction practices should be modified when observed turbidity levels approach or exceed 50 NTUs over background when measured approximately 300 feet downstream of the source. All practicable means should be used to monitor the actual turbidity plume itself rather than areas proximal to the visible plume.

2. Willow plantings should be monitored for their viability through observing the first round of planting, and replanting if necessary. Willow planting spacing should be no more three feet.

3. Any terms applied to the CWA 404 permit should be consistent with the project description, conservation measures, and terms and conditions in the BA and this opinion.

4. The construction contractor's equipment should be cleaned of external oil and grease prior to arrival at the project site. The construction contractor's equipment should be inspected daily for leaks and accumulation of grease, and any identified problems should be corrected prior to equipment contact with water.

5. All stockpiled material should be placed above the ordinary high water mark. All equipment should remain above the ordinary high water mark. All equipment should be refueled a minimum of 100 feet from perennial surface waters in areas.

Fully implementing these EFH Conservation Recommendations would protect, by avoiding or minimizing the adverse effects described in section 3.2, above, 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 the 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 EFH 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 EFH 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 Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1. Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are the COE and any applicant. Other interested users could include permit or license applicants and the U.S. Fish and Wildlife Service. Individual copies of this opinion were provided to the COE. The document will be available within two weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). The format and naming adheres to conventional standards for style.

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 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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