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

June 7, 2021 **Refer to NMFS No:** WCRO-2021-00445

Ian Howat
District Local Assistance Engineer
California Department of Transportation, District 2
1657 Riverside Drive, MS #5
Redding, California 96001

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Lorenz Road over Middle Weaver Creek Bridge Replacement Project (BRLO-5905 (111))

Dear Mr. Howat:

Thank you for your letter of February 23, 2021, requesting consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Lorenz Road over Middle Weaver Creek Bridge Replacement Project, California Department of Transportation (Caltrans[1]) Local Assistance reference BRLO-5905 (111). 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 (16 U.S.C. 1855(b)) for this action. This letter transmits NMFS' final biological opinion and EFH response for the proposed Lorenz Road over Middle Weaver Creek Bridge Replacement Project.

The enclosed biological opinion describes NMFS' analysis of effects on threatened Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) and its designated critical habitat in accordance with section 7 of the ESA. Based on the best scientific and commercial information available, NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of the SONCC coho salmon. NMFS expects the proposed action would result in incidental take of SONCC coho salmon. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion.

[1] Pursuant to 23 USC 327, and through a series of Memorandum of Understandings beginning June 7, 2007, the Federal Highway Administration (FHWA) assigned and Caltrans assumed responsibility for compliance with Section 7 of the federal Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for federally-funded transportation projects in California. Therefore, Caltrans is considered the federal action agency for consultations with NMFS for federally funded projects involving FHWA. Caltrans proposes to administer federal funds for the implementation of the proposed action, and is therefore considered the federal action agency for this consultation.

The enclosed EFH consultation was prepared pursuant to section 305(b) of the MSA. The proposed action includes areas identified as EFH for coho salmon and Chinook salmon, Pacific Salmon species managed under the Pacific Coast Salmon Fishery Management Plan. (FMP). Based on our analysis, NMFS concludes that the project would adversely affect EFH for coho salmon and Chinook salmon temporarily. The proposed action contains conservation measures to minimize effects to EFH. With these measures, the proposed action contains adequate measures to avoid, minimize, mitigate, or offset the adverse effects to EFH. Therefore, NMFS has no additional conservation recommendations.

Please contact Mike Kelly, Northern California Office, Arcata, at (707) 825-1622 or via email at Mike.Kelly@noaa.gov if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Chris Fazzari, Caltrans Local Assistance, District 2, Redding, CA
Dr. Richard Lis, California Department of Fish and Wildlife, Eureka, CA
E-file: ARN# 151422WCR2021AR00046

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

Lorenz Road over Middle Weaver Creek Bridge Replacement Project
Trinity County, California

NMFS Consultation Number: WCRO-2021-00445

Action Agency: California Department of Transportation

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely to Jeopardize the Species?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
Southern Oregon/North California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*)	Threatened	Yes	No	No

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon FMP	Yes	No

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

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: June 7, 2021

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1. INTRODUCTION

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

1.1. Background

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

1.2. Consultation History

On November 12, 2019, NMFS biologist Mike Kelly reviewed a draft Biological Assessment (BA). (Site visits during NMFS' technical assistance phase were not possible due to COVID-19 travel restrictions.)

On August 21, 2020, project representatives from Trinity County, the California Department of Transportation (Caltrans), Quincy Engineering, and Stantec met with NMFS biologist Mike Kelly for a technical assistance discussion about the stream diversion design.

On September 24, 2020, Caltrans provided a revised BA to NMFS biologist Mike Kelly for review.

On September 29, 2020, NMFS biologist Mike Kelly provided comments on a revised draft BA.

On February 23, 2021, Caltrans submitted a revised BA and requested initiation of formal section 7 consultation for adverse effects to SONCC coho salmon. NMFS accepted the BA and notified Caltrans that we had initiated formal consultation.

On March 2, 2021, Caltrans notified NMFS biologist Mike Kelly that they had approved the final bridge design as Alternative 2. Therefore, while the BA includes two design alternatives, this opinion addresses Alternative 2 only.

1.3. Proposed Federal Action

Under the ESA, "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02).

Under MSA, Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

The proposed action is described in detail in Caltrans' BA (Caltrans 2021). Project elements that may affect salmonids, and accompanying measures to minimize impacts, are summarized below, while the remaining project description is incorporated by reference to Caltrans' BA. In the following descriptions, "Caltrans" refers to Caltrans, Trinity County (the applicant), and their construction contractor(s).

Caltrans and Trinity County propose to replace the Lorenz Road Bridge over Middle Weaver Creek Bridge in the town of Weaverville, California. The bridge is being replaced because it is structurally deficient, is too narrow for safe passage of vehicles and pedestrians, and has various other features that do not meet current design standards.

The new bridge will be 74 feet long with its centerline slightly downstream of the current bridge's centerline. However, the new bridge will essentially occupy the same alignment as the current bridge. Lorenz Road will be closed during construction and a detour will be provided; therefore, no temporary stream crossing is required. The bridge will be supported at the abutments on cast-in-drilled-hole (CIDH) piles and the bridge will fully span the creek without support structures in the channel. However, temporary falsework supports will be constructed on pads within the channel.

Caltrans proposes to conduct activities within the channel during one construction season between June 1 and October 31 no sooner than 2022.

1.3.1 Construction Staging, Stream Access, and Vegetation Removal

The contractor's staging area will be located on the closed section of Lorenz Road to the south of the bridge location; therefore, no vegetation removal or grading will be necessary to prepare the staging area.

Bridge replacement will require approximately 0.1 acre of riparian vegetation removal. Of this, 0.02 acre will be permanent removal to accommodate the new bridge's larger footprint. The existing trees in the action area are non-native species; however, removal will be minimized to the extent practicable, and any removed trees will be replanted with appropriate native species. Vehicles and heavy equipment will not work on the streambed; however, workers will require access to the streambed to construct the stream diversion and falsework pads.

Streamflow is expected to be minimal during construction, though in wetter years there may be connected flow through the action area during the construction window. A temporary stream diversion may be required to provide access to the bed and banks of the channel in order to

construct the falsework pads and to protect the stream during excavation that will widen the stream to match the existing upstream and downstream channel width. (The current bridge abutments constrict the channel.)

The stream diversion will be approximately 125 feet long. It will likely be constructed using a temporary dam upstream that will direct flow via pipes to discharge downstream. The final design will be proposed by the contractor; however, the current plan is that gravel bags and plastic sheeting would be used for the dam, and water will be conveyed by gravity flow rather than pumps. The outlet of any diversion piping will be installed with protections to prevent scour of the streambed or banks.

If dewatering of cofferdam work areas by pumping is needed for the removal of nuisance water (ground water seeping into work areas), the water will be pumped to a temporary sediment retention basin outside of the channel through a mechanized water filtration system or into Baker tanks or similar storage system and taken offsite to an authorized disposal site. Direct pumping of water from the creek will not occur.

Prior to construction, the stream or any remaining isolated pools in the action area will be surveyed for aquatic organisms. A qualified biologist will be present during dewatering to relocate fish and other aquatic organisms. The contractor will prepare stream diversion and fish relocation plans, and Caltrans will provide these plans to NMFS for review of consistency with the anticipated effects analyzed in this opinion.

1.3.2 Removing Old Bridge

The new bridge will occupy the alignment of the old bridge, so the old bridge will be removed first. Demolition of the existing bridge will be performed in accordance with the Caltrans Standard Specification Section 60-2.02 (Caltrans 2018) modified to meet any additional environmental permit requirements. This work will require the submittal of a bridge removal work plan, which is required to include methods for preventing material and debris from falling into the channel. All concrete and other debris resulting from the demolition of the existing bridge will be removed from the project site and disposed of by the contractor.

Percussive hoe-ramming will be used to demolish concrete abutments to manageable pieces to be removed from the site. No hoe-ramming is anticipated to occur for removal of the bridge deck itself and it may be possible to remove the deck in one section. The final method of deck removal will be determined by the contractor and included in the bridge removal work plan.

1.3.3 New Bridge Construction

The old bridge will be replaced by a longer bridge that will no longer constrict the channel. However, Rock Slope Protection (RSP) will be placed to protect the abutments from scour. There will be an estimated maximum of 30 lineal feet of RSP installed on each bank, which will extend five to 10 feet beyond the ends of the abutments. The RSP will be placed above the Ordinary High-Water Mark (OHWM) of the channel and will be keyed in flush with the existing

ground. Additionally, the existing streambanks will be reconstructed to be flush with the upstream and downstream banks, which will improve channel hydraulics.

Falsework will be required in the creek channel for the new bridge construction. Falsework would include a temporary support system of timber posts and steel beams to support concrete forms until the concrete is sufficiently cured. These supports would not need to be driven into the substrate. Level work pads will be created using washed gravel consisting of rounded, river-run gravels of a size suitable for spawning salmon. Any angular or crushed rock that may be required to create work pad surfaces would be separated from the "fish rock" base with a geotextile barrier and be completely removed upon completion of bridge construction. Up to one cubic yard of "fish rock" would be left in the channel and spread following construction to enhance aquatic habitat. Additionally, all concrete materials used during the construction process would be contained and handled according to Caltrans Standard Specifications and a site-specific spill prevention plan.

The new bridge foundation will be supported on 24-inch or 30-inch CIDH piles. This method uses a bentonite-based drilling slurry to prevent caving and the intrusion of groundwater into the drilled hole. The slurry is displaced by the concrete through a rigid delivery tube. All materials used during the slurry displacement process would be contained, handled, and disposed of off-site, according to Caltrans Standard Specifications Section 49 (Caltrans 2018).

The north abutment will have wingwalls extending up to existing retaining structures not related to the bridge, including a gabion wall (located above the OHWM) at the northeast corner and a culvert wingwall (carrying Ten Cent Gulch under Highway 299) at the southeast corner. Abutment excavation activities would be minimized at the northwest corner to avoid a steep cut slope. Excavation would be minimized by ending the northwest wingwall at the back of the abutment footing and by extending a concrete barrier supported by a grade beam foundation past the end of the wingwall (as required to minimize excavation into the adjacent hill). The shoring used here would likely consist of sheet piles that would be vibrated in and would be located at least 25 feet from the creek channel.

1.3.4 Monitoring

Post-construction monitoring will consist of regular site inspections by County personnel. Stormwater Best Management Practices (BMPs) shall be monitored at an appropriate frequency to ensure they are meeting performance standards set by the State of California. Reasonable steps will be taken to address deficiencies in a timely manner. Monitoring shall continue at the rate of recurrence necessary to assure BMPs are functioning as intended.

1.3.5 Conservation Measures and Best Management Practices

Water pollution control scheduling and methods will be specified in the contractor's Storm Water Pollution Prevention Plan and Environmental Commitments Record for the proposed action. Specific methods are indicated in Caltrans' Construction Site Best Management Practices Manual (Caltrans 2017). Caltrans' BA provides details on specific measures. Most of these

measures are standard practices that have proven efficacy and are familiar to NMFS' staff. Please refer to Caltrans' BA and the above-referenced manuals for details.

1.3.6 Aquatic Species Relocation

Stream diversions may require relocation of juvenile SONCC coho salmon and other aquatic species. Caltrans will prepare an Aquatic Species Relocation Plan for NMFS' review prior to project implementation. Caltrans proposes to herd fish out of the construction area using a beach seine and block nets. Any fish that cannot be herded away from the work area will be captured using seines, dip nets, and electrofishing equipment prior to complete dewatering. All aquatic organisms will be relocated to nearby suitable habitat. Electrofishing for salmonids would comply with Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act (NMFS 2000), and any seining or other capture and removal techniques would adhere to the California Salmonid Stream Habitat Restoration Manual (Flosi et al. 2010).

1.3.7 Other Activities Caused by the Proposed Action

We considered whether or not the proposed action would cause any other activities and determined that it would not. The new crossing will serve the same function as the current crossing without inducing additional traffic or facilitating use by types of vehicles unable to use the current road.

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

The designation(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological 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:

- Evaluate the rangewide status of the species expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species 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, analyze whether the proposed action is likely to 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.
- If necessary, suggest a reasonable and prudent alternative to the proposed action.

2.2. Rangewide Status of the Species

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

2.2.1 Species Description and General Life History

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

2.2.2 Status of Species and Critical Habitat

In this biological opinion, NMFS assesses four population viability parameters to help us understand the status of coho salmon and their ability to survive and recover. These population viability parameters are: abundance, population productivity, spatial structure, and diversity (McElhaney et al. 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information, including the Recovery Plan for the SONCC Coho Salmon Evolutionarily Significant Unit (ESU) (NMFS 2014) to determine the general condition of each population and factors responsible for their current status. We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.20).

Status of SONCC Coho Salmon

Abundance and Productivity: Although long-term data on coho salmon abundance are scarce, the available evidence from short-term research and monitoring efforts indicate that spawner abundance has declined since the last status review for populations in this ESU (Williams et al. 2016). In fact, most of the 30 independent populations in the ESU are at high risk of extinction because they are below or likely below their depensation threshold, which can be thought of as the minimum number of adults needed for survival of a population.

Spatial Structure and Diversity: The distribution of SONCC coho salmon within the ESU is reduced and fragmented, as evidenced by an increasing number of previously occupied streams from which SONCC coho salmon are now absent (NMFS 2001, Good et al. 2005, Williams et al. 2011, Williams et al. 2016). Extant populations can still be found in all major river basins within the ESU (70 FR 37160). However, extirpations, loss of brood years, and sharp declines in abundance (in some cases to zero) of SONCC coho salmon in several streams throughout the ESU indicate that the SONCC coho salmon's spatial structure is more fragmented at the population-level than at the ESU scale. The genetic and life history diversity of populations of SONCC coho salmon is likely very low and is inadequate to contribute to a viable ESU, given the significant reductions in abundance and distribution. The SONCC coho salmon ESU is currently considered likely to become endangered within the foreseeable future in all or a significant portion of its range, and there is heightened risk to the persistence of the ESU as

Viable Salmonid Population (VSP) parameters continue to decline and no improvements have been noted since the previous status review (Williams et al. 2016).

Status of Critical Habitat

The condition of SONCC coho critical habitat, specifically the ability to provide for its conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined that currently depressed population conditions are, in part, the result of the following human induced factors affecting critical habitat: overfishing, artificial propagation, logging, agriculture, mining, urbanization, stream channelization, dams, wetland loss, and water withdrawals (including unscreened diversions for irrigation). Impacts of concern include altered stream bank and channel morphology, elevated water temperature, lost spawning and rearing habitat, habitat fragmentation, impaired gravel and wood recruitment from upstream sources, degraded water quality, lost riparian vegetation, and increased erosion into streams from upland areas (Weitkamp et al. 1995, 64 FR 24049, 70 FR 37160). Diversion and storage of river and stream flow has dramatically altered the natural hydrologic cycle in many of the streams within the ESU. Altered flow regimes can delay or preclude migration, dewater aquatic habitat, and strand fish in disconnected pools, while unscreened diversions can entrain juvenile fish.

2.2.3 Factors Responsible for the Decline of Species and Degradation of Critical Habitat

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

One factor affecting the range wide status and aquatic habitat at large is climate change. Information since these species were listed suggests that the Earth's climate is warming, and that this change could significantly impact ocean and freshwater habitat conditions, which affect survival of coho salmon subject to this consultation. In the coming years, climate change will influence the ability to recover these species in most or all of their watersheds. Coho salmon are particularly vulnerable to climate change due to their need for year-round cool water temperatures (Moyle 2002). Through effects on air temperatures and stream flows, climate change is expected to increase water temperatures to the detriment of these species. Climate change effects on stream temperatures within Northern California are already apparent. For example, in the Klamath River, Bartholow (2005) observed a 0.5°C per decade increase in water temperature since the early 1960's, and model simulations predict a further increase of 1-2°C over the next 50 years (Perry et al. 2011).

In coastal and estuarine ecosystems, the threats from climate change largely come in the form of sea level rise and the loss of coastal wetlands. Sea levels will likely rise exponentially over the next 100 years, with possibly a 50-80 cm rise by the end of the 21st century (IPCC 2019). This rise in sea level will alter the habitat in estuaries and either provide increased opportunity for feeding and growth or in some cases will lead to the loss of estuarine habitat and a decreased potential for estuarine rearing. Marine ecosystems face an entirely unique set of stressors related to global climate change, all of which may have deleterious impacts on growth and survival while at sea. In general, the effects of changing climate on marine ecosystems are not well understood given the high degree of complexity and the overlapping climatic shifts that are already in place (e.g., El Niño, La Niña, Pacific Decadal Oscillation) and will interact with global climate changes in unknown and unpredictable ways. Overall, climate change is believed to represent a growing threat, and will challenge the resilience of coho salmon in Northern California.

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 Lorenz Road over Middle Weaver Creek Bridge Replacement Project action area encompasses all areas to be used for site access, construction activities, and equipment and materials storage and staging. The action area includes sufficient distances upstream and downstream along the creek channel to account for potential construction related impacts to aquatic organisms from alteration of water quality, construction noise, and other disturbances. The 300-foot length of downstream channel included in the action area was based on an estimate of the potential post-project extent of turbidity generated during rewatering of the channel, which would not be likely to happen until the first significant rains of the season.

2.4. Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its habitat in the action area, without the consequences to the listed species or 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 habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

In the action area, the threat to SONCC coho from climate change is likely to include a continued increase in average summer air temperatures; more extreme heat waves; and an increased frequency of drought (Lindley et al. 2007). In future years and decades, many of these changes are likely to further degrade habitat throughout the watershed by, for example, reducing streamflow during the summer and raising summer water temperatures. Many of these impacts will likely occur in the action area via reduced flows and higher water temperatures.

2.4.1 Status of SONCC Coho Salmon and Critical Habitat in the Action Area

SONCC coho salmon in the action area belong to the Upper Trinity River Population, which the NMFS SONCC Coho Salmon Recovery Plan indicates is at moderate risk of extinction and is likely above the depensation threshold (NMFS 2014).

The action area is designated as critical habitat for SONCC coho salmon. Adult coho salmon are typically able to access the action area during winter flows, though in some years inadequate flow conditions may not allow adult coho to access the action area. Juvenile rearing depends on adequate flow and water quality conditions during the summer months. Juvenile coho salmon are known to rear in the action area even when flow is disconnected between pools. The stream habitat in the action area is dominated by riffles with a few scattered shallow pools. The nearest pools are located approximately 50 feet upstream and downstream of the existing bridge. The upstream pool is 30 feet long with a maximum depth of about 0.75 feet during summer base flow, and the downstream pool is 40 feet long with a maximum depth of 1.2 feet. U. S. Forest Service fish biologist Loren Everest reports that he has seen juvenile coho salmon survive the summer in the isolated pools with water quality maintained by subsurface flow entering the isolated pools (Loren Everest, personal communication 2019). Therefore, NMFS assumes presence of juvenile coho salmon in the action area.

The stream in the action area is typical of channelized urban streams with artificially stabilized banks and a deeply incised channel. The structural complexity of the streambed is simplified, which reduces its value to rearing coho salmon. However, the incised channel and narrow riparian corridor apparently create a microclimate that maintains water quality in isolated pools that receive subsurface flow, so the action are may serve as thermal refuge for salmonids that have distributed from other locations. The bed of the stream consists of large cobbles and occasional boulders, so does not provide spawning habitat for coho salmon. Therefore, the action area is likely to serve only as a migration corridor for adults, but may provide some holding habitat as well. However, spawning coho salmon have been documented both upstream and downstream from the existing bridge, which would be the source of any juvenile coho rearing in the action area (Wiseman 2010).

2.5. Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species 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 Stream Diversion and Fish Relocation

As described in section 1.3.1, Caltrans proposes to construct a temporary stream diversion structure in order to protect the creek from construction work occurring on the banks and in the channel. The diversion will dewater approximately 125 feet of stream, including two pools that

may support juvenile salmonids. Installation of the diversion will require relocation of aquatic species if water is present.

NMFS conservatively estimates that up to 10 juvenile SONCC coho salmon could be handled during relocation.

Additionally, the stream diversion would allow downstream migration of juvenile salmonids, but there is a slight chance that upstream adult migration though the action area would be blocked by the stream diversion. This circumstance would only arise if early rains draw adult coho upstream to spawn during the construction period. While we consider the chances of this occurring to be minimal, there is known spawning habitat downstream of the action area (Wiseman 2010), so any blocked salmon would still have access to spawning habitat.

Mortality of Relocated Fish
Data on fish relocation efforts from water diversion activities since 2004 shows most average mortality rates are below three percent for salmonids. Therefore, given the measures that would be implemented to avoid and minimize impacts to fish during relocation efforts, NMFS expects no more than three percent of all relocated fish would be subject to potential injury or mortality.

If we apply the three-percent mortality rate to the number of juvenile coho salmon that we estimate could be captured and relocated, we would expect that no more than one juvenile SONCC coho salmon could be injured or killed during relocation.

2.5.2 Water Quality

Pollutants from construction operations, or from the mobilization of sediment both during and after construction, have the potential to impact water quality within the action area.

Turbidity and Sedimentation
Short term increases in suspended sedimant and turbidity are anticipated during construction and removal of the stream diversion if flowing water is present. Additionally, there is likely to be an increase in suspended sediment and turbidity in the action area during the first flow-producing rainfall of the season as disturbed sediments mobilize and adjust.

Increases in suspended sediment or turbidity can affect water quality, which in turn can affect fish health and behavior. Salmonids typically avoid areas of higher suspended sediment, which means they displace themselves from their preferred habitat in order to seek areas with less suspended sediment. Fish unable to avoid suspended sediment can experience negative effects from exposure.

Research has shown that length of exposure to total suspended solids (TSS) plays a more dominant role than TSS concentration (Anderson et al. 1996). Long term exposure to elevated TSS conditions may cause an endocrine stress response (elevated plasma cortisol, glucose, and hematocrits), suggesting an increased physiological burden that could influence growth, fecundity, and longevity (Redding et al. 1987). Therefore, when considering the effects of TSS

on listed fish, it is important to consider the frequency and the duration of the exposure, not just the TSS concentration (Newcombe and Jensen 1996).

Construction of the stream diversion, and its removal at the end of the construction season could generate turbidity. However, Caltrans proposes to use techniques and materials that are proven to minimize turbidity to insignificant levels and durations. NMFS estimates that any turbidity pulses during the summer construction season would persist for no more than one or two hours and would vary in intensity during those periods.

Elevated sediment entrainment and deposition can reduce benthic macro-invertebrates (food) by reducing primary productivity, thereby hindering feeding opportunity for exposed juvenile coho salmon. However, NMFS believes that the minor turbidity discharges expected due to the proposed action will not rise to a level that downstream macro-invertebrate production will be measurably affected.

NMFS believes that any discharges after the project is completed will be from superficial sources during the first streamflow-producing rains of the season so will likely produce turbidity of short duration and low concentration, and will occur when the most vulnerable life stages are not present. Through project design and implementation of standard wet-weather BMPs, as described in detail in Caltrans' BA and Manual of Construction Site Best Management Practices (Caltrans 2017), levels of suspended sediment and turbidity during rain events are likely to be controlled sufficiently to help minimize exposure of salmonids to injurious durations and concentrations of TSS. Additionally, the adult and larger juvenile salmonids that may be present appear to be little impacted by the high concentrations of suspended sediments that occur during winter storm runoff episodes (Bjornn and Reiser 1991). Therefore, any impacts due to exposure to brief post-project elevated turbidity will be miniscule, and NMFS considers the potential amounts and duration of turbidity to be unlikely to reduce the fitness of listed salmonids in the action area.

Pollutants Associated with Stormwater Runoff and Spills

Contaminants generated by traffic, pavement materials, and airborne particles that settle may be carried by stormwater runoff into receiving waters. Stormwater runoff can introduce contaminants (e.g., copper, zinc, cadmium, lead, nickel, and other vehicle-derived chemicals) into waterways, where aquatic species can be affected. Copper and zinc are of particular concern due to their effect on salmonids at low concentrations. Dissolved copper and zinc in stormwater road runoff are difficult to remove, and have known negative effects on salmonids and other fishes (Sandahl et al. 2007). Additionally, Tian et al. (2021) found that a chemical called 6PPD-quinone, which derives from a preservative chemical used in tires, is associated with mortality of adult coho salmon when in high concentration.

Stormwater will continue to flow from the roadway into the stream. However, the project will not increase the amount of traffic in the action area, and potential delivery of traffic-related contaminants is expected to remain similar to pre-project levels. Existing levels of roadway-type contaminant levels in the action area are unknown, but may be elevated due to the urban setting and proximity of Highway 299 to the action area. However, we do not expect any increase in toxic materials related to the proposed action. Therefore, NMFS does not expect reductions in

fitness of individual listed salmonids residing in the action area due to increased toxic materials in stormwater runoff.

Accidental spills from construction equipment pose a significant risk to water quality, particularly for construction activities in or near watercourses, and at the onset of the rainy season when the first flush could trigger the discharge of spilled materials. However, in-stream activities would be suspended and all construction areas stabilized and cleaned prior to the onset of the rainy season. Furthermore, the proposed minimization measures are expected to prevent chemical contamination during construction. Given the proven minimization measures and BMP's proposed, NMFS expects the likelihood of an accidental spill of contaminants reaching a waterway at a level that would harm fish to be improbable.

2.5.3 Noise, Vibration, and Visual Disturbance

Caltrans will use vibratory pile driving for all sheet piles used for shoring at the abutments. Additionally, salmonids could be exposed to occasional construction noise and visual disturbance from equipment working overhead and workers in the channel. However, all vibratory sheet pile driving will be conducted a minimum of 25 feet from the channel, and fish will have been relocated from the immediate construction area. Vibrations, noise, and visual disturbance may cause behavioral reactions in rearing juveniles. Juvenile salmonids appear to become habituated to minor vibrations, noise, and visual disturbance (Mike Kelly, personal observations 2006, 2009, 2011) and exposure will be minimized by the distance of fish from the disturbance and low frequency of disturbances. Therefore, these behavioral impacts are unlikely to reduce an individual salmonid's survival and fitness.

Additionally, the contractor will use percussive hoe-ramming during demolition of the old abutments. Percussive noise has the potential to harm individual fish due to barotraumas suffered during exposure to excessive sound pressure levels (Caltrans 2020). Unlike impact pile driving, hydroacoustic assessment of hoe-ramming is difficult due the unknown number of impacts and the highly variable sound pressures produced by each impact. However, NMFS believes that the stream diversion and fish relocation will provide adequate distance between the percussive sound energy and any individual SONCC coho salmon such that no injury levels due to single strike sound energy (above 206 dB re: 1 μPa) or accumulated sound energy (187 dB re: 1 μPa) will be exceeded. NMFS also believes that infrequent pulses of sound energy above 150 dB re: 1 μPa could be exceeded where coho salmon may be. However, this level would not be exceeded frequently enough to produce barotrauma from accumulated energy, so would only produce behavioral responses in exposed SONCC coho salmon. Therefore, for the reasons stated in the previous paragraph, behavioral impacts associate with hoe-ramming are unlikely to reduce an individual salmonid's survival and fitness.

2.5.4 Effects to SONCC Coho Critical Habitat

Riparian Vegetation Removal
Bridge replacement will require approximately 0.1 acre of riparian vegetation removal. Of this, .02 acre will be permanent removal to accommodate the new bridge's larger footprint. The

existing trees in the action area are non-native species; however, removal will be minimized to the extent practicable, and any removed trees will be replanted with appropriate native species.

NMFS expects that the temporary loss of this riparian vegetation will have minimal impact on the functional values of existing riparian habitat given the small scale of the impact relative to the remaining vegetation in the action area; therefore, no measurable increase in water temperature or reduction in the amount of terrestrial food input into the stream is anticipated. And because no conifers will be removed, there will be no impacts to the primary source of future large woody debris contributions to downstream channels. Therefore, impacts to riparian vegetation are expected to be inconsequential to the value of habitat in the action area.

Streambanks and Streambed
Impacts to the banks and bed of the stream will be minimized per project design and BMPs and we expect the bed and banks to naturally adjust to near pre-project conditions after the first high flows. Additionally, the artificial constriction of the channel will be removed, which will improve channel hydraulics and open a small area of additional streambed habitat. Therefore, NMFS believes that any impacts to the streambed and streambanks will have only net positive impacts to habitat in the action area.

2.5.5 Combined Effects

The potential exists for simultaneous construction-related impacts to have a synergistic effect that is greater or different than each stressor acting alone. Simultaneous project impacts may include visual impacts from workers and equipment working near or over the watercourses at the same time when fish may be exposed to suspended sediment, for example. Most potential project impacts would not occur simultaneously due to logistics of construction that require one phase of the project to be completed prior to starting another. Because combined effects are either unlikely or of very low intensity, NMFS does not expect any reductions in listed salmonid fitness from any combined effects of individual construction elements.

2.6. Cumulative Effects

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

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

SONCC coho salmon in the action area are likely to be affected by future, ongoing non-federal

activities such as fishing, urban and rural development, water diversions, and road construction. Future effects of development include increased pollution, and increased impervious surface. Increased impervious surface may produce increased runoff during shorter time periods ("flashier hydrographs") which could worsen the incision and simplification of the stream channel in the action area. Water diversions contribute to diminished stream flows and warmer water temperatures. The future effects of road construction and maintenance may include higher rates of erosion, sedimentation, and chemical contamination.

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species 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 (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution.

2.7.1 Summary of Baseline, Status of the Species, and Cumulative Effects

We describe habitat for SONCC coho salmon at the ESU scale as mostly degraded in section 2.2.2. Although there are exceptions, the majority of streams and rivers in the ESU have impaired habitat. Additionally, this critical habitat often lacks the ability to establish fully functioning features due to ongoing and past human activities. While habitat generally remains degraded across the ESU, restorative actions have likely improved the conservation value of habitat throughout their ranges.

SONCC coho salmon in the action area belong to the Upper Trinity River Population, which the SONCC Coho Salmon Recovery Plan (NMFS 2014) indicates is at moderate risk of extinction.

The cumulative effects of those state and private activities that occur in the Upper Trinity River watershed, as discussed in the environmental baseline section, may continue to impair, but not preclude the recovery of habitat in the action area. NMFS expects that ongoing improvements in legacy effects of poor timber harvest practices and agricultural development will result in improved habitat conditions for SONCC coho salmon. Focused recovery actions as identified in the Recovery Plan (NMFS 2014) are expected to further improve habitat in the Upper Trinity River. Additionally, due to the negligible nature of the proposed action's long-term impacts, NMFS does not expect the proposed action to exacerbate the effects of climate change on salmonids in the action area.

2.7.2 Summary of Effects to Individual Salmonids and Critical Habitat

NMFS anticipates miniscule effects to SONCC coho salmon and critical habitat from expected levels of chemical contamination, temporary loss of riparian vegetation, disturbance of streambanks and streambed due to construction access, temporarily blocked adult migration, or increased sediment and turbidity during various activities. However, adverse effects are likely due to capture, handling, and relocation efforts intended to protect fish from potential exposure

to in-water work activity. NMFS predicts that up to 10 juvenile SONCC coho salmon could be handled during relocation in the single construction season. NMFS expects that no more than one juvenile SONCC coho salmon could be injured or killed due to handling and relocation.

NMFS does not expect that the loss of one juvenile SONCC coho salmon would affect future adult returns. This loss of a single juvenile would represent a miniscule percentage of the overall number of individuals in either population. The overall number of individuals in the populations will likely provide a compensatory effect. Other areas of the Upper Trinity River watershed are expected to continue to contribute to the population during the time period when some juveniles in the action area may be harmed or killed as a result of this proposed project. Therefore, NMFS does not expect any appreciable effects on VSP parameters, and thus, the proposed action is not expected to reduce the survival and recovery of the SONCC coho salmon ESU, and the project is unlikely to appreciably diminish the value of designated critical habitat for the conservation of SONCC coho salmon.

2.8. Conclusion

After reviewing and analyzing the current status of SONCC coho and its 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' biological opinion that the proposed action is not likely to jeopardize the continued existence of SONCC coho salmon or destroy or adversely modify SONCC coho salmon designated critical habitat.

2.9. Incidental Take Statement

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

2.9.1. Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

Take of juvenile coho salmon may occur in the form of capture during fish relocation. NMFS expects that no more than 10 juvenile coho salmon would be captured and relocated to adjacent habitat. Of these, no more than three percent of all relocated fish would be subject to potential

injury or mortality, so we conservatively estimate that one juvenile SONCC coho salmon could be killed or injured.

2.9.2. Effect of the Take

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

2.9.3. Reasonable and Prudent Measures

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

NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of SONCC coho salmon:

1. Undertake measures to ensure that harm and mortality to threatened coho salmon resulting from fish relocation activities are low.
2. Ensure construction methods, minimization measures, and monitoring are properly implemented during construction.
3. Prepare and submit a post-construction report regarding the effects of fish relocation and construction activities.

2.9.4. Terms and Conditions

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

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

    a. Qualified biologists with expertise in the areas of anadromous salmonid biology shall conduct fish relocation activities associated with construction. Caltrans will ensure that all biologists working on the project are qualified to conduct fish relocation in a manner which minimizes all potential risks to salmonids. A stream diversion and fish relocation plan that includes the qualifications of biologists conducting the fish relocation shall be submitted to the NMFS Arcata office not later than 30 days prior to stream diversion activities.
    b. Salmonids shall be handled with extreme care and kept in water to the maximum extent possible during rescue activities. All captured fish must be kept in cool, shaded, and aerated water protected from excessive noise, jostling, or overcrowding or potential predators any time they are not in the stream, and fish will not be removed from this water except when released. Captured salmonids

will be relocated as soon as possible to an instream location in which suitable habitat conditions are present to allow for adequate survival for transported fish and fish already present. Fish will be distributed between multiple areas if biologists judge that overcrowding may occur in a single area.

c. If any salmonids are found dead or injured, the biologist will contact NMFS biologist Mike Kelly by phone immediately at (707) 825-1622. The purpose of the contact is to review the activities resulting in the take and to determine if additional protective measures are required. All salmonid mortalities will be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location, fork length, and be frozen as soon as possible. Frozen samples will be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS Northern California Office in Arcata, California without obtaining prior written approval from the South Coast Branch Chief. Any such transfer will be subject to such conditions as NMFS deems appropriate.

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

   a. Caltrans shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the project site during activities described in this opinion.

   b. Caltrans shall contact NMFS within 24 hours of meeting or exceeding take of listed species prior to project completion. Notify Mike Kelly by phone at (707) 825-1622. This contact acts to review the activities resulting in take and to determine if additional protective measures are required.

3. The following term and condition implements reasonable and prudent measure 3:

   a. Caltrans shall provide a written report to NMFS by January 15 of the year following construction of the project. The report shall be sent to NMFS via email to Mike.Kelly@noaa.gov or via mail to Mike Kelly at 1655 Heindon Road, Arcata, CA 95521. The reports shall contain, at a minimum, the following information:

      Construction related activities -- The report will include the dates construction began and was completed; a discussion of any unanticipated effects or unanticipated levels of effects on salmonids, a description of any and all measures taken to minimize those unanticipated effects, and a statement as to whether or not any unanticipated effects had any effect on ESA-listed fish; the number of salmonids killed or injured during Project construction; and photographs taken before, during, and after the activity from photo reference points.

      Fish Relocation – The report will include a description of the location from which fish were removed and the release site(s) including photographs; the date and time of the relocation effort; a description of the equipment and methods used to collect, hold, and transport salmonids; the

number of fish relocated by species; the number of fish injured or killed by species and a brief narrative of the circumstances surrounding salmonid injuries or mortalities; and a description of any problems which may have arisen during the relocation activities and a statement as to whether or not the activities had any unforeseen effects.

2.10 Conservation Recommendations

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

Trinity County should address the fish barrier culvert on Sky Ranch Road at Oregon Gulch. If Trinity County desires assistance with grant opportunities and applications, please contact the NMFS personnel noted below. Additionally, we understand that this road is not on the State Highway System or within the purview of Caltrans Local Assistance. However, if Caltrans can help fund a fish passage project at this site, it might be used as advance mitigation for other projects that affect SONCC coho and its critical habitat in the Trinity River watershed. Please contact Mike Kelly at 707-825-1622 or Seth Naman at 707-825-5180 for more information.

2.11 Reinitiation of Consultation

This concludes formal consultation for the Lorenz Road over Middle Weaver Creek Bridge Replacement Project. As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species 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 that was not considered in the biological opinion, or (4) a new species is listed 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 Caltrans and descriptions of EFH for Pacific Coast salmon (PFMC 2014) contained in the fishery management plans developed by the Pacific Fisheries Management Council (PFMC) and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

Essential Fish Habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802[10]). "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means habitat required to support a sustainable fishery and a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle. The term "adverse effect" means any impacts which reduce the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrates and loss of, or injury to, benthic organisms, prey species, and their habitats, and other ecosystem components. Adverse effects may be site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.910). The EFH consultation mandate applies to all species managed under a Fishery Management Plan (FMP) that may be present in the action area. The Pacific Coast Salmon FMP contains EFH that will be adversely affected by the Project.

There is suitable habitat for juvenile coho salmon and Chinook salmon rearing and adult salmonid migration and holding in the action area. Habitat Areas of Particular Concern (HAPC) are described as complex channel and floodplain habitat, spawning habitat, thermal refugia, estuaries, and submerged aquatic vegetation. The HAPC that exists in the action area is thermal refuge due to the shade created in the deeply incised channel and subsurface flow with adequate water quality through isolated pools during the summer. While this condition may not be present in drier years, juvenile coho salmon are known to survive through the summer in years when remnant pools persist (Loren Everest, USFS, personal communication).

3.2 Adverse Effects on Essential Fish Habitat

The potential effects to salmonid habitat have already been described in the *Effects* section. The adverse effects to EFH and HAPCs in the action area include:

1. Temporary reduction in available habitat due to presence of stream diversion structures.
2. Noise and visual disturbance during construction activities.
3. Temporary reduction in water quality caused by increase in suspended sediments and turbidity during construction, and during the first rain events following construction.
4. Temporary loss of riparian vegetation.

3.3 Essential Fish Habitat Conservation Recommendations

The anticipated adverse effects from the proposed action are temporary and minor and have been effectively minimized. Therefore, NMFS has no EFH recommendations at this time.

3.4 Supplemental Consultation

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

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is Caltrans. Other interested users could include the applicant (Trinity County), CDFW, and the Hoopa Valley and Yurok tribes. Individual copies of this opinion were provided to Caltrans, Trinity County, and CDFW. The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adhere to conventional standards for style.

4.2 Integrity

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

4.3 Objectivity

Information Product Category: Natural Resource Plan

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

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

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

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

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