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

October 22, 2018 **Refer to NMFS No:** WCR-2018-10655

Jennifer Barber
Acting Branch Chief, Environmental—E-3 Branch
California Department of Transportation, District 1
P.O. Box 3700
Eureka, California 95502-3700

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Dominie Creek Fish Passage Project in Del Norte County, California (EA 01-0F3100)

Dear Ms. Barber:

Thank you for your letter of August 28, 2018, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Dominie Creek Fish Passage Project, California Department of Transportation (Caltrans[1]) reference EA 01-0F3100. 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. This letter transmits NMFS' final biological opinion and EFH consultation for Caltrans' proposed Dominie Creek Fish Passage Project (Project).

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 Southern Oregon/Northern California (SONCC) coho salmon Evolutionarily Significant Unit (ESU). The action is also not likely to destroy or adversely modify designated critical habitat for the SONCC coho salmon ESU. NMFS expects the proposed action would result in incidental take of SONCC coho salmon. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary reasonable and prudent measures and terms and conditions that are expected to further reduce anticipated incidental take of SONCC coho salmon.

[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. Based on our analysis, NMFS concludes that the project would adversely affect EFH for coho salmon and Chinook salmon; however, we have no EFH Conservation Recommendations at this time.

Please contact Dan Free, Northern California Office, Arcata, at (707) 825-5164 or via email at Dan.Free@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 Area Office

Enclosure

cc: Lisa Embree, Caltrans, District 1, Eureka, CA
Dana York, Caltrans, District 1, Eureka, CA
Susan Leroy, Caltrans, District 1, Eureka, CA
Michael VanHattem, California Department of Fish and Wildlife, Eureka, CA
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Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

Dominie Creek Fish Passage Project,
Del Norte County, California

NMFS Consultation Number: *WCR-2018-10655*

Action Agency: Caltrans

Table 1. 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

Table 2. Essential Fish Habitat and NMFS' Determinations:

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	No

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

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Area Office

Date: *October 22, 2018*

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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

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), and implementing regulations at 50 CFR 402.

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 through NMFS' Public Consultation Tracking System. A complete record of this consultation is on file at the NMFS Northern California Office in Arcata, California.

1.2 Consultation History

NMFS provided pre-consultation technical assistance to Caltrans on the Dominie Creek Fish Passage Project (Project) as needed beginning August 2015, which included participating in site visits, meetings, and reviewing/commenting on the draft Biological Assessment (BA).

On August 28, 2018, Caltrans submitted the final August 2018 BA and requested initiation of formal consultation. NMFS reviewed the request and determined that the information was sufficient to initiate formal consultation for SONCC coho salmon and their designated critical habitat, as well as MSA EFH consultation.

On September 11, 2018, NMFS notified Caltrans via email that their request contained sufficient information, and that formal consultation had therefore been initiated on August 28, 2018.

On September 24, 2018, NMFS contacted Caltrans (Lisa Embree) via email seeking clarification regarding the size of piles and installation technique. Caltrans responded with clarifying information on September 27, 2018.

1.3 Proposed Federal Action

"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). 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).

Caltrans proposes to implement a fish passage improvement project on Dominie Creek by replacing a double concrete box culvert with an 80-foot-long, single-span precast slab bridge on U.S. Highway 101 (US 101) near the town of Smith River in Del Norte County, California. In addition, the stream channel below the bridge will be designed to match the new grade which is 2-feet lower than the existing grade. The new channel will be constructed as a "roughened channel" which provides grade control and a diversity of velocities which promote fish passage of juveniles and adults through higher than ideal grades. In this case, the grade will be at 3.75% which is higher than typical grades of less than 3% which are ideal for juvenile and adult coho salmon passage. The purpose of the project is to remove the existing fish passage barrier by constructing a new bridge and stream channel that would provide full passage for anadromous fish of all life stages, especially juvenile salmonids. The project is not intended to address any transportation needs nor designed to facilitate an increase in traffic.

The bridge would be built roughly on the existing alignment in two stages using half-width construction methodology, which eliminates the need for a temporary traffic crossing. The project is expected to be completed in two work seasons in 2020 and 2021. All construction work, including fish removal and installation of the clear water diversion, below the ordinary high water mark would be restricted to June 15 through October 15. A qualified biologist would monitor all in-stream construction activities, including dewatering activities and culvert demolition, to ensure adherence to all environmental permit conditions and avoidance and minimization measures.

SONCC coho salmon are also listed as threatened under the California Endangered Species Act (CESA). California Fish and Game Code Section 2081 (b) (2) requires that action agencies fully mitigate for take of CESA listed species. The proposed action is being implemented to address CESA mitigation requirements from the California Department of Fish and Wildlife (CDFW) for incidental take of coho salmon under CESA associated with the Dr. Fine Bridge Project (a Federal ESA consultation has not yet been conducted for the Dr. Fine Bridge Project). Mitigation under CESA for the likely mortality of sub-yearling juvenile coho salmon, as a result of implementing the Dr. Fine Bridge Project and the proposed action, is expected. Prior to any activities that could incidentally take SONCC coho salmon, Caltrans will submit documentation to show that sufficient funds have been allocated, acceptable to and approved by CDFW, in the Expenditure Authorizations for the proposed action and Dr. Fine Bridge Project to ensure implementation of all measures to minimize and fully mitigate the incidental take of state listed species resulting from construction of the proposed action and Dr. Fine Bridge Project. This documentation (i.e., written document provided by Caltrans), would identify specific minimization and mitigation components including compliance and effectiveness monitoring that are in accordance Fish and Game Code Section 2081 (b)(4) and Section 2081 (b)(2) to fully mitigate for take and the costs associated with Project components. Therefore, a 2080.1 consistency determination from CDFW is expected.

The proposed action is described in detail in Caltrans' BA for this project (Caltrans 2018). Project elements that may affect salmonids or critical habitat are discussed in detail below, while the remaining project description is incorporated by reference to Caltrans' BA.

1.3.1 Construction Staging and Access

Temporary roads for channel and bank stabilization work would access the channel from US 101. The designated storage area for vehicles, supplies, and construction equipment staging would occur in the parcel away from the stream on either side of US 101.

Water Diversion and Aquatic Species Relocation Plan

In order to protect salmonids from impacts that could occur due to construction access, construction and demolition noise, and the stream channel restoration, Caltrans proposes to relocate fish from areas of potential impact, and to dewater the stream where construction access is required. Installation of the temporary diversion dam and culvert pipe and fish relocation would be conducted on or after June 15. The diversion would be removed and the channel restored to pre-existing conditions prior to October 15.

Fish exclusion and relocation would likely be conducted using seining gear, electrofishing gear, and dip nets. 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).

A temporary stream diversion would be necessary during construction operations to provide a clean, dry work area and equipment access into the creek channel. A combination of plastic liner, gravel bags, a water bladder, or other clean, impermeable materials would be used to construct cofferdams approximately 100 feet downstream and 240 feet upstream of the bridge. Any water that seeps into the project area will be pumped to an upland area, where it will be allowed to infiltrate such that turbid waters do not enter surface waters. The diversion would be constructed in conformance with a Construction Site Dewatering and Diversion Plan, and an Aquatic Species Relocation Plan.

Dewatering drawdown would occur incrementally to allow capture and relocation of any fish not captured during initial efforts, and to avoid fish stranding. All salmonids removed from the work area would be relocated to nearby suitable habitat in Dominie Creek upstream of the diversion. If unexpected life stages are observed (i.e., adults or smolts), or if mortality of listed species exceeds the number predicted, all project activities shall cease and NMFS and CDFW shall be contacted immediately.

A hoe ram will be used to demolish the existing culverts which will likely result in exceedance of the 150 decibel level considered as the threshold for behavioral effects to salmonids upstream of the clear water diversion. Refer to the *Effects of the Action* section below for details of the hydroacoustic analysis.

The stream diversion will be removed after construction is complete. The site would be re-watered by first removing the temporary cofferdams at each end of the temporary culvert, and then removing the culvert.

Provisions for the Aquatic Species Relocation Plan would also include the following measures:

- The mesh on the fish exclusion screens will not exceed 0.25 inch

measured diagonally.

- Screens will be inspected daily or more if needed.
- If the biological monitor detects fish above the screens that appear to be outmigrating the fish would be moved to upstream Dominie Creek by a qualified biologist.
- A Caltrans biologist, contractor supplied biologist, or environmental construction liaison would be present during all phases of in-stream construction to assist with relocation efforts as they arise.

Pile Installation

Caltrans proposes to install 24-inch cast-in-drilled-hole (CIDH) pilings which will not result in any hydroacoustic effects. The nearest pile would be constructed approximately 25-feet from the wetted channel. Temporary casings would be installed with oscillation and would stabilize the drill holes and then removed after concrete pouring. A drilling fluid slurry would be used to stabilize the drilled holes during drilling operations and placement of reinforcement cage and concrete. The expelled slurry would be contained and pumped into containers for off-site disposal. Containment, disposal, and spill prevention measures would be implemented as described in the SWPPP and Caltrans (2018).

Abutment and Superstructure

The abutments would be protected from scour by placement of approximately 440 cubic yards of one-quarter ton rock slope protection (RSP) covering an area of approximately 0.08 acre. RSP would be keyed in below the channel grade to account for potential scour during high discharge events. No piers or columns would be required in the channel. The project would not require falsework or trestles within the channel. The height of the bridge over the stream channel would be approximately 16 feet. The new bridge deck is designed to discharge stormwater into vegetated areas at either end of the bridge, rather than directly into the creek.

Stream Channel Restoration

The stream channel would be reconstructed as a “roughened channel’ for hydraulic transition corrections and fish passage. An approximately 200-foot-long channel simulates a natural stream channel with roughness elements to foster a heterogeneous velocity profile to facilitate juvenile and adult coho salmon passage and eliminate head-cutting of the channel would be constructed to re-establish a 3.75% percent channel grade. All channel materials would be cleaned to ensure it meets “fish rock” specifications

Approximately 200 feet of Dominie Creek streambank, which is currently reinforced with concrete sack revetment, would be removed and the streambank restored with RSP as a foundation under a bioengineered slope consisting of earthen fill and approved native plantings.

Disturbed Soil/Vegetation and New Impervious Surface

The Project’s total disturbed soil area is estimated to be 0.80 acre, represented by areas where construction activities (including staging and storage) would take place, ground would be disturbed, and vegetation would be cleared. The impervious surface area within the project area is currently 0.96 acre, and the projected post-project impervious surface area would be approximately 1.01 acres, for an increase of 0.05 acre.

Construction Phase Best Management Practices

Caltrans would require that project contractor(s) implement temporary construction phase best management practices (BMPs) throughout the project to control stormwater discharges and potential discharges of pollutants to surface waters. The Stormwater and Pollution Prevention Plan (SWPPP) would include a waste management section that provides procedural and structural BMPs for collecting, handling, storing, and disposing of wastes generated by project construction to prevent the accidental release of pollutants. The contractor would also be required to submit a Demolition and Debris Containment and Management Plan to the Caltrans Resident Engineer for approval. The approved plans must meet environmental regulations, permits, consultations, agreements, notices, and details of work as specified in the environmental applications.

Because project construction would be dynamic, the contractor would determine locations for implementing these BMPs. Adequate material quantities would be available to allow the contractor sufficient flexibility to implement the BMPs as needed. Construction site BMPs related to water quality include, but are not limited to, the following:

- Trash removal would occur daily.
- Prior to use, equipment must be checked daily and periodically during the day for leaks. Leaking equipment cannot be used until fixed.
- Before entering the job site, all equipment must be cleaned to remove external oil, grease, dirt, or mud.
- Equipment must be pressure washed prior to arrival on the project site and prior to leaving the project site. Only weed-free equipment is allowed in the action area.
- No equipment maintenance or fueling shall be done within 50 feet from any streambed or flowing stream. If it is not practical to move equipment (e.g., large cranes) for fueling or maintenance, the contractor will implement a plan that includes measures to prevent any pollutants from entering Dominie Creek.
- Temporary construction barrier fencing and/or flagging would be installed between the work area and environmentally sensitive areas to restrict access and prevent unnecessary disturbance.
- All heavy equipment would stay out of the channel unless the channel is dewatered or otherwise dry (see also Construction Site Dewatering and Diversion Plan).
- Placement of concrete or concrete slurry would be conducted in a dry or dewatered area (e.g., channel banks above the OHWM or within a dewatered cofferdam or stream channel) to prevent contact of wet concrete with flowing water (see also Construction Site Dewatering and Diversion Plan).
- Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with the provisions in the SWPPP.
- Use of geo-synthetic fabric (e.g., plastic, filter fabric) barriers to

prevent the discharge of contaminants (e.g., sediment, oil and grease, etc.) when equipment is working adjacent to or over waterways.

- Perimeter control BMPs, such as fiber rolls, silt fencing, straw wattles, and gravel-bag berms, would be installed along the work and staging areas to control sediment in runoff from entering adjacent waters.
- Designated staging and fueling areas with appropriate perimeter control BMPs to prevent spills and non-stormwater discharges.
- Rain Event Action Plans would be prepared prior to any forecasted precipitation to ensure adequate stabilization of equipment, materials, and soils.
- If chemical contamination is detected, all project activities would cease and NMFS and permitting agencies would be contacted immediately. Project activities may resume only after regulatory agencies have reasonable assurances that chemical contamination has ceased.
- All waste (concrete, asphalt, etc.) generated during construction would be disposed of at a permitted disposal site.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the erosion control plan, and soil disturbing work would be limited during the rainy season.

Provisions for Use of Artificial Light at Night

Artificial night lighting may be required for brief periods during operations that necessitate a full road closure (i.e., to move traffic lanes). The use of artificial lighting would be temporary and of short duration, likely no more than two nights and fewer than eight hours each occasion. Deflectors would be used to direct light away from the channels and focused specifically on the portion of the bridge actively under construction. Lighting on the bridges and near watercourses would be limited to critical need (i.e., due to accelerated work schedule to meet permit deadlines or reaching a critical juncture in work at a time when it would be infeasible to stop construction) to minimize the effects of artificial light on sensitive biological resources.

Revegetation, Plant Establishment, and Invasive Weed Control

Construction activity would occur primarily in an area with vertical banks currently barren of vegetation or with poor quality riparian vegetation and non-native species. After all construction materials are removed, the project area would be restored to a natural setting by grading, placing erosion control, and replanting with native species. A revegetation and monitoring plan would be developed that outlines methods that would be implemented to restore all areas temporarily impacted by construction. Replanting would be subject to a plant establishment period as defined by project permits, which would require Caltrans to adequately water plants, replace unsuitable plants, and control pests. Caltrans would also implement a program of invasive weed control in all areas of soil disturbance caused by construction to improve habitat for native species in and adjacent to disturbed soil areas within the project limits.

1.3.2 Interrelated and Interdependent Actions

"Interrelated actions" are those that are part of a larger action and depend on the larger action for their justification. "Interdependent actions" are those that have no independent utility apart from

the action under consideration (50 CFR 402.02). No such actions are associated with the proposed action.

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 provides 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 both a jeopardy analysis and/or an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "to jeopardize the continued existence of" a listed species, which is "to engage in an action that 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 for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features" (81 FR 7214).

The designation(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace 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.

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

- Identify the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an

"exposure-response-risk" approach.

- Describe any cumulative effects in the action area.
- Integrate and synthesize the above factors by: (1) Reviewing the status of the species and critical habitat; and (2) adding the effects of the action, the environmental baseline, and cumulative effects to assess the risk that the proposed action poses to species and critical habitat.
- Reach a conclusion about whether species are jeopardized or critical habitat is adversely modified.
- If necessary, suggest a 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' current "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 current function of the essential PBFs that help to form that conservation value.

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 0+ age fish typically rear in freshwater for about 15 months before migrating to the ocean. 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 each species and their ability to survive and recover. These population viability parameters are: abundance, population productivity, spatial structure, and diversity (McElhany 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 SONCC Coho Salmon (NMFS 2014) to determine the general condition of each population and factors responsible for the current status of the SONCC coho

salmon ESU. 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).

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.

SONCC Coho Salmon 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.

SONCC Coho Salmon Critical Habitat Status: The condition of SONCC coho salmon critical habitat, specifically its ability to provide for 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, 70 FR 52488). 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 Nino 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 coho salmon in most or all of their watersheds. Coho salmon and steelhead 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 coho salmon. 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 2007). 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 action area for the project encompasses the entire construction footprint that would be subject to ground disturbance and vegetation clearing, including the US 101 roadway and shoulders where staging and material storage may occur (i.e., temporary and permanent project limits). The action area includes the 410-foot section of Dominie Creek (240 feet upstream and 100 feet downstream of existing culvert, including the 70-foot culvert length) which will be dewatered during the two-construction seasons and undergo major changes to remove the culvert, install the bridge, and construct the roughened channel. Elevated turbidity levels are not expected to extend beyond Dominie Creek, so the action area will extend downstream only to the confluence with Rowdy Creek. Hydroacoustic noise levels associated with hoe ram demolition activities known to elicit behavioral responses in fish could occur in Dominie Creek within a 262-foot radius of the demolition (Caltrans 2018). These behavioral impacts would therefore extend approximately 22 feet upstream of and 162 feet downstream of the fish exclusion zone on Dominie Creek.

2.4 Environmental Baseline

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 consultation, and the impact of state or private actions which are contemporaneous with the

consultation in process (50 CFR 402.02).

In the action area, the threat to SONCC coho salmon 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. However, due to the large areas of intact forest in the Dominie Creek watershed and restrictive conditions on timber harvest, and the action area's location in the coastal fog belt, the action area maintains low water temperatures throughout the summer. Therefore, the critical habitat in the action area has a very high conservation value for coho salmon into the future.

2.4.1 Status of Listed Species and Critical Habitat in the Action Area

Coho salmon occurring in the action area belong to the Smith River population of SONCC coho salmon. The Smith River population of SONCC coho salmon is considered likely to be below their depensation threshold (NMFS 2014), which can be thought of as the number of spawners needed for survival of the population. Dominie Creek is a tributary of Rowdy Creek, which is a tributary of the Smith River. The current numbers of coho salmon spawning in Rowdy Creek and Dominie Creek is not known. However, coho salmon spawning has been documented in the action area (Garwood and Larson 2012), although recent juvenile surveys have not found coho salmon in the action area (Walkley and Garwood 2017). Surveys conducted in 2012 documented juvenile coho salmon presence (Garwood 2012). Therefore, NMFS expects coho salmon to be only intermittently present in the action area and at very low numbers.

Critical habitat within Dominie Creek from just upstream of the culvert/bridge location and downstream to the confluence with Rowdy Creek has been channelized and simplified. This simplification of the creek has apparently caused channel incision and loss of instream complexity and pool habitat. The existing culvert is a complete barrier to juvenile coho salmon and a partial barrier to adult coho salmon. The Rowdy Creek Fish Hatchery is constructed immediately adjacent to Dominie Creek just above its confluence with Rowdy Creek and a large wall and concrete channel currently eliminates any functioning habitat for coho salmon juveniles or adults. Dominie Creek is a perennial tributary with cold water and functional riparian habitat upstream of the action area. Approximately 1.6 miles of coho salmon critical habitat with high intrinsic potential (Recovery Plan; NMFS 2014) exists upstream of the project location.

2.5 Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

2.5.1 Fish Relocation and Stream Diversion

Up to 410 linear feet of Dominie Creek (240 feet upstream and 100 feet downstream of the culvert including the 70 foot culvert length) would be dewatered by diverting the stream flow

during the work window for two construction seasons. The diversion would be installed on or after June 15 and be removed prior to October 15. This measure avoids the late fall-winter migration period for adult salmon that may pass through the project area to spawn in most years, and the spring-early summer smolt out-migration. The diversion would, however, be constructed and remain in place during the period when juvenile salmonids may utilize the waters for summer rearing. Stream diversion and dewatering will require fish capture and relocation.

Fish Relocation

Removing fish from the temporary construction area in Dominie Creek is expected to significantly reduce the number of fish potentially injured or killed during the summer work season. In the absence of fish relocation, juvenile salmonids would be exposed to dewatering, thermal stress, desiccation, and physical injury from construction equipment. These exposures would likely kill them. However, while fish relocation substantially avoids impacts from construction, fish relocation activities themselves can injure or even kill fish. The amount of unintentional injury or mortality attributable to fish removal varies widely depending on the method used, ambient conditions, and the expertise and experience of the field crew. Fish collecting gear, whether passive or active poses some risk to individuals, including stress, disease transmission, injury, or death (Hayes et al. 1996). In addition, relocated fish may have to compete with other fish for available resources such as food and habitat, and the growth rate of fish can be slowed when population density is high (Ward et al. 2007).
Based on the results of various studies of salmonid seasonal occupancy and densities, as well as consideration of the quality of habitat in the action area (see Environmental Baseline section), NMFS expects that no more than 100 juvenile coho would be captured and distributed to suitable habitat in Dominie Creek over the two year construction period (i.e., 50 per year). The expected number of relocated juvenile coho, relative to available habitat, would not be expected to substantially contribute to overcrowding or increased competition to a level that would decrease their overall survival.

Mortality of Fish Relocated

Data on fish relocation efforts from water diversion activities since 2004 shows most average mortality rates are below three percent for salmonids. 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. Applying the maximum mortality rate (3%) to the total number of juvenile salmonids that may be captured and relocated indicates that no more than three juvenile SONCC coho salmon would be injured or killed.

Stream Diversion

Adult salmonid migration and spawning, and smolt migration, are not likely to be affected because the diversion would be constructed after smolts have completed emigration from small tributaries such as Dominie Creek, and then removed prior to the onset of adult spawning migration. Passage of redistributing juveniles may be limited by the diversion; however, the proposed work windows minimize exposure and avoid peak timing of juvenile redistribution. Additionally, movements by adult and juvenile salmonids in Dominie Creek are currently restricted or prevented by low summer/early fall flows due to the partial culvert barrier. Therefore, NMFS does not expect the stream diversion to affect the fitness of any individuals, or to negatively influence the passage of any life stages of SONCC coho salmon.

2.5.2 Noise and Visual Disturbance

General Construction Noise and Visual Disturbance

Construction, demolition activities, and night lighting could cause behavioral responses and stress in juvenile salmon present during the in-stream work period of June 15 to October 15. However, the stream diversion and fish relocation efforts will exclude fish from the construction zone, so general construction noise and potential visual disturbance would be improbable apart from the work required to install the diversion and relocate the fish, which is analyzed above.

Impact Noise and Hydroacoustic Effects

Caltrans (2018) evaluated potential underwater noise levels generated by planned construction activities, and determined that demolition activities by hoe ram would not exceed acoustic noise thresholds known to cause injury to fish. However, juvenile salmonids could be exposed to underwater noise levels exceeding the behavior thresholds (150 decibels) without reaching the injurious cumulative sound exposure level (cSEL) threshold. Caltrans' analysis predicts that exposure to 150 decibel sound levels would occur over a radius of 262 feet. This radius would include up to 22 feet of Dominie Creek upstream and 162 feet downstream of the proposed fish exclusion area.

Temporary behavioral changes that fish may exhibit in response to pile driving noise include startling, altering behavioral displays, avoidance, displacement, and reduced feeding success. Observations of juvenile steelhead exposed to pile driving noise above the 150 decibels behavioral threshold at the Mad River Bridges US 101 project indicate that the fish quickly habituate to the noise and resume normal surface-feeding behavior within a few minutes of the fist pile strikes (Mike Kelly, NMFS, personal observation). Therefore, NMFS believes that periodic behavioral changes caused by sub-injurious sound exposure during the course of one week or less will not result in a decrease in fitness or survival of individual listed coho salmon.

2.5.3 Water Quality

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

Turbidity and Sedimentation

Short term increases in suspended sediment and turbidity are anticipated during a number of Project-related activities. These activities include installation and removal of the stream diversion, worker access to the streambed, and fish relocation efforts. Additionally, there is likely to be an increase in suspended sediments and turbidity throughout the action area during the first 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).

Activities that could produce the majority of potential suspended sediments will occur while the site is dry or de-watered, and salmonids would have been relocated outside of the work area and not exposed to turbidity. Removal of the stream diversion would be performed gradually to avoid potential stream sediment disturbance and transport. Adjustment of the channel during the first rains of the season will likely produce turbidity of short duration and low concentration, and will occur when the most vulnerable life stages are not present. Additionally, through project design and implementation of standard wet-weather BMPs, as described in detail in Caltrans' BA (Caltrans 2018), levels of suspended sediment and turbidity are expected to be controlled sufficiently to avoid exposing salmonids to injurious durations and concentrations. Therefore, NMFS considers the potential amounts and duration of turbidity generated by the proposed Project 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 metals (e.g., copper, zinc, cadmium, lead and nickel) 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).

However, the Project will not increase the amount of traffic in the action area, and as such the traffic-related contaminants are expected to remain similar to pre-project levels. Additionally, stormwater drainage at the new bridge is designed to discharge into vegetated areas at either end of the bridge, rather than directly into the creek. Therefore, reductions in fitness of individual listed salmonids residing in the action area due to toxic materials in stormwater runoff are not expected.

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 prior to the onset of the rainy season. Furthermore, the proposed minimization measures are expected to prevent chemical contamination during construction. Given the minimization measures and BMPs proposed, NMFS expects the likelihood of an accidental spill of contaminants reaching a waterway to be improbable.

2.5.4 Effects to Critical Habitat

NMFS expects long-term improvement to the quality and quantity of critical habitat due to the proposed action. The SONCC Coho Salmon Recovery Plan (Recovery Plan, NMFS 2014) lists barriers to fish passage as a moderate threat in the Smith River watershed. However, the Dominie Creek culvert at Highway 101 is considered a "high priority" because of the amount of habitat above the barrier (1.6 miles). Because of it's perennially cold water, the Dominie Creek watershed is expected to provide valuable refugia, rearing, and spawning habitat for coho salmon and aid in coho salmon recovery with remediation of the fish passage barrier through this proposed action.

The Recovery Plan identifies "intrinsic potential" for specific reaches of streams. Intrinsic potential describes the potential of a reach of stream to support rearing juvenile salmonids regardless of the current condition of the stream reach. The Recovery Plan lists Dominie Creek as having reaches of high intrinsic potential for coho salmon (NMFS 2014). Given the length of habitat with high intrinsic potential that the project will make more readily accessible to juveniles (1.6 miles), the project is likely to have a positive impact on SONCC coho salmon recovery.

Streambanks and Streambed

Abutments for the new bridge will occupy portions of the natural streambank, resulting in an artificial setting with concrete or RSP instead of native bank materials. However, the bridge abutments and RSP are limited in spatial extent and occur only adjacent to the existing bridge and roadway. The majority of this area is already in an artificial setting and occupied by the current concrete box culvert. Placement of the new bridge will continue much of this artificial setting into the future, although impacts will likely be reduced because a natural streambed will replace the concrete culvert bottom, and the new channel width will provide more natural conveyance of water and debris. Because the proposed changes to the streambanks and channel in the action area represent an overall improvement compared to baseline condition, NMFS does not expect any reduction in the quantity or quality of designated critical habitat due to this project action.

Impervious Surface

As a result of the project, there would be an estimated 0.25-acre increase in impervious surface. New impervious surface has the potential to cause an increase in peak flow and higher runoff volumes that can lead to channel scouring and bank erosion which, in turn, can increase sediment and turbidity in receiving waters. It can also lead to decreased storage capacity and outflow efficiency, thereby negatively affecting floodplain processes that are important for salmonids. However, due to the relatively small amount of new impervious surface in a watershed that is almost entirely within old growth redwood forest, NMFS believes that no changes in peak flow or runoff volume would occur that could produce a meaningfully measurable impact to salmonid habitat.

Riparian Habitat

The riparian area adjacent to the existing culvert and stream channel is of low quality and dominated by Himalayan blackberry. The clear water diversion would be installed by manual labor by way of foot access and would not require riparian vegetation removal. Downstream of

the new bridge, bank stabilization and stream channel restoration work would affect/remove several small willows, but the activity would occur primarily in an area with vertical banks currently barren of vegetation. After the bank stabilization work, habitat complexity and riparian vegetation should be improved.

The bridge work is expected to have minimal impact on the functional values of existing riparian habitat for coho salmon, and would be improved post-construction because of planting and removal of non-native vegetation. Given the small scale of the impact, the minimal temporal loss of riparian function, and the vegetative cover that would remain adjacent to the project site, no measurable increase in water temperature or reduction in the amount of terrestrial food input into the project area watercourses is anticipated. In addition, disturbed areas would be stabilized, and vegetation reestablished. Therefore, impacts to riparian vegetation are not expected to result in a reduction in the quality or quantity of critical habitat.

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 noise and vibration from construction equipment. Fish may also be exposed to noise and/or visual disturbances during minor increases in turbidity when the clear water diversion is removed. Most potential project impacts would not occur simultaneously due to logistics of bridge construction that require one phase of the project to be completed prior to starting another. For instance, removal of the concrete culvert or the clear water diversion would not occur simultaneously to abutment construction, thereby eliminating the potential compounding effects of those activities. 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). 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 like timber harvest. These activities are currently covered under an ESA Habitat Conservation Plan (HCP) which anticipates minor environmental baseline improvements primarily through improvements to the timber road network. This HCP has already undergone

section 7 consultation so these effects have already been considered in the environmental baseline conditions.

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 biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminishes the value of designated or proposed critical habitat for the conservation of the species.

SONCC coho salmon have declined to a large degree from historic numbers. SONCC coho salmon have fragmented population structures, placing them at additional risk. As previously discussed in the effects of the action (Section 2.5), the Project will accomplish a recovery action from the Recovery Plan (NMFS 2014). Once completed, the Project will improve the status of critical habitat in the action area. The new bridge and roughened channel at Dominie Creek will improve fish passage, especially for juvenile coho salmon, and will accommodate improvements to the spatial structure and diversity parameters in the future. Fish habitat conditions will likely also improve within the action area due to the improved design of the new bridge, channel, and banks.

Due to the timing of the Project, adult salmon are not expected to be present, and would only be minimally affected if they were present. The abundance of juvenile coho salmon is expected to be very low, if they are present at all because of the current barrier condition. However, it is possible that coho salmon congregate below the barrier during and temporally overlap with the construction seasons. During fish relocation activities, as many as 100 individual juvenile SONCC coho salmon may be captured and relocated during the two seasons. NMFS expects that three individual juvenile coho salmon could be injured or killed during the fish relocation activities over the two-year construction period.

SONCC coho salmon present would likely make up a very small proportion of the salmonids in the Smith River population area due to the relatively small action area. Also, due to the relatively large number of juveniles produced by each spawning pair, spawning in the Smith River population area in future years would be expected to produce enough juveniles to replace any that are lost at the project site due to relocation. Therefore, it is unlikely that the loss of three juvenile coho salmon by this project would impact future adult returns.

The action area could be subject to higher average summer air temperatures and lower total precipitation levels in the future as a consequence of climate change. Higher air temperatures would likely warm stream temperatures. Reductions in the amount of precipitation would reduce stream flow levels and estuaries may also experience changes in productivity due to changes in freshwater flows, nutrient cycling, and sediment amounts. For this project, construction would be completed by 2020 and the above effects of climate change are unlikely to be detected within that time frame. The short-term effects of project construction would have completely elapsed

prior to these climate change effects. The long-term changes in the channels at the bridge site are confined to small areas and are unlikely to significantly magnify the likely climate change impacts. Restoring full access to upstream rearing areas and high velocity refuge areas by removing this passage barrier is expected to increase the carrying capacity of the Dominie Creek watershed, which, because of its perennial cold water, could serve as a stronghold for juvenile salmonids in the face of climate change effects. Therefore, the project is unlikely to appreciably reduce the likelihood of survival and recovery of SONCC coho salmon.

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, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of SONCC ESU of coho salmon, 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). "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 in the form of capture is expected during fish relocation and diversion activities. Up to 100 juvenile coho salmon are expected to be captured and relocated during the two years of Project implementation. Because mortality resulting from relocation activities, including netting and electrofishing, is estimated to be about three percent; three juvenile coho salmon mortalities are expected.

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:

- Undertake measures to ensure that harm and mortality to threatened coho salmon resulting from fish relocation and dewatering activities is low.
- Ensure construction methods, minimization measures, and monitoring are properly implemented during construction.
- 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 or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). Caltrans or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement reasonable and prudent measure 1:
    a. Caltrans or their contractor shall submit to NMFS a Construction Site Dewatering Plan and an Aquatic Species Relocation Plan for approval a minimum of 30 days prior to implementing the plans.
    b. 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.
    c. Caltrans or their contractor performing fish relocation shall first use a seine to herd fish out of the work site, if practicable, before using electrofishing techniques. Herding fish out of the work site with a seine prior to electrofishing will reduce the number of fish exposed to electrofishing activities and reduce the number of fish captured and subject to risks of mortality. Herding fish by using an electrofisher shall not be attempted.
    d. 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 pools if biologists judge that overcrowding may occur in a single pool.
    e. Caltrans or their contractor shall monitor any screens used to block fish access on a daily basis, or more frequently if necessary, to ensure that no impingement occurs, and to assess whether significant downstream migration is occurring.

If downstream migrating fish aggregate at the screen(s), the qualified biologist will relocate these fish to suitable downstream habitat.

f. If any salmonids are found dead or injured, the biologist will contact NMFS biologist Dan Free by phone immediately at (707) 825-5164 or email at Dan.Free@noaa.gov. 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 Dan Free by phone at 707-825-5164 or email at Dan.Free@noaa.gov. This contact acts to review the activities resulting in take and to determine if additional protective measures are required.
    c. If it is necessary to move additional outmigrating fish while monitoring exclusion screens, Caltrans will contact NMFS immediately to determine whether screens need to be removed to allow continued migration.

3. The following terms and conditions implement 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 Dan.Free@noaa.gov or via mail to Dan Free at 1655 Heindon Road, Arcata, CA 95521. The report shall contain, at a minimum, the following information:
        i. **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 the unanticipated effects had any effect on coho salmon; the number of coho salmon killed or injured during Project construction; and photographs taken before, during, and after the activity from photo reference points.
        ii. **Fish Relocation** – The report will include a description of the location from which fish were removed and the release site 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 critical habitat or regarding the development of information (50 CFR 402.02). NMFS has no conservation recommendations to suggest.

2.11 Reinitiation of Consultation

This concludes formal consultation for the Dominie Creek Fish Passage Project. As 50 CFR 402.16 states, reinitiation of formal consultation is required 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 agency action is subsequently modified in a manner that causes an effect on the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

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

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (section 3) defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by 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.

There is suitable habitat for juvenile salmon rearing, and adult salmon spawning in Dominie Creek. Habitat Areas of Particular Concern (HAPC) are described as complex channel and floodplain habitat, spawning habitat, thermal refugia, estuaries, and submerged aquatic vegetation. HAPCs exist in the action area as: spawning habitat and complex channel and floodplain habitat in Dominie Creek.

3.2 Adverse Effects on Essential Fish Habitat

Both Chinook salmon and coho salmon are expected to occur seasonally within the action area. The adverse effects to coho salmon and coho salmon critical habitat have already been described in the Effects section and would also apply to Chinook salmon. The adverse effects to EFH and HAPCs in the action area include:

1. Temporary reduction in habitat available during dewatering activities in Dominie Creek.
2. Noise and visual disturbance during construction activities.
3. Temporary reduction in water quality caused by increase in suspended sediments and turbidity during first rain events following construction.
4. Temporary loss of riparian and wetland vegetation.

3.3 Essential Fish Habitat Conservation Recommendations

The anticipated adverse effects from the proposed action are temporary and minor. The project is designed to improve habitat conditions and habitat availability. NMFS has determined that all desirable and feasible habitat improvements are incorporated into the proposed action. 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 users of this opinion are Caltrans. Other interested users could include CDFW. A copy of this opinion was provided to Caltrans. This opinion will be posted on the Public Consultation Tracking System. The format and naming adheres to conventional standards for style.

4.2 Integrity

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

4.3 Objectivity

Information Product Category: Natural Resource Plan

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

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

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

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

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