Robinson Creek Bridge Replacement of Lambert Lane

CDFW 1602 Application

Attachment 3: NMFS BO

- National Marine Fisheries Service

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

March 15, 2021 **Refer to NMFS No:** WCRO-2020-02970

Darrell Cardiff
Senior Environmental Planner
California Department of Transportation, District 1
P.O. Box 3700
Eureka, California 95502

Re: Endangered Species Act Section 7(a)(2) Biological Opinion; and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Lambert Lane Bridge Replacement project near the town of Boonville, California

Dear Mr. Cardiff:

Thank you for your letter of October 16, 2020, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Lambert Lane Bridge Replacement project. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016). Also, thank you 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.

The enclosed biological opinion is based on our review of the California Department of Transportation's (Caltrans) and the County of Mendocino's (County) proposed project and describes NMFS' analysis of potential effects on threatened Northern California (NC) steelhead (*Oncorhynchus mykiss*) and designated critical habitat for this species in accordance with section 7 of the ESA. In addition, we include the potential affects to critical habitat for Central California Coast (CCC) coho salmon (*Oncorhynchus kisutch*) but omit inclusion of effects to species of CCC coho salmon because they have not been present in Robinson Creek (Navarro River watershed) for decades. For similar reasons, Coastal California (CC) Chinook salmon and their designated critical habitat is not included in this biological opinion due to the absence of this species in the Navarro River watershed. In the enclosed biological opinion, NMFS concludes the project is not likely to jeopardize the continued existence of NC steelhead; nor is it likely to adversely modify critical habitat for NC steelhead or CCC coho salmon. However, NMFS anticipates that take of NC steelhead may occur. An incidental take statement which applies to this project with non-discretionary terms and conditions is included with the enclosed opinion.

NMFS has reviewed the proposed project for potential effects on EFH and determined that the proposed project would adversely affect EFH for Pacific Coast Salmon, which are managed

under the Pacific Coast Salmon Fishery Management Plan. While the proposed action will result in adverse effects to EFH, the proposed project contains measures to minimize, mitigate, or otherwise offset the adverse effects; thus, no EFH Conservation Recommendations are included in this opinion.

Please contact Thomas Daugherty, North Central Coast Office in Santa Rosa, California at (707) 468-4057, or via email at Tom.Daugherty@noaa.gov if you have any questions concerning this section 7 and EFH consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Christa Unger, Caltrans Eureka CA, Christa.Unger@dot.ca.gov
Copy to E-File: ARN 151422WCR2020SR00224

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

Lambert Lane Bridge Replacement Project

NMFS Consultation Number: WCRO-2020-02970
Action Agency: California Department of Transportation

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely to Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
NC steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	Yes	No
CCC coho salmon (*Oncorhynchus kisutch*)	Endangered	No	No	Yes	No

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

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

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: March 15, 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 U.S.C. 1531 et seq.) and implementing regulations at 50 CFR 402, as amended.

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

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

1.2. Consultation History

Informal section 7 consultation for the Lambert Lane Bridge Replacement project (Project) proposed by the County and was initiated by the California Department of Transportation (Caltrans) on December 3, 2019, but was rescinded on January 31, 2020 (email correspondence, C. Unger, Caltrans, 2020). Information regarding archeological findings caused Caltrans to reevaluate the project alignment and resubmit the consultation request.

A Project focus meeting was held on July 9, 2020 with Caltrans Environmental, Gallaway Enterprises, Quincy Engineering Inc., and Mendocino County Department of Transportation. The purpose of the meeting was to discuss the incorporation of fish relocation into the biological assessment and changes in the Project impacts resulting from the cultural review. The result of this meeting was the position that dewatering the project area and fish relocation would be necessary, which would result in adverse effects to threatened Northern California (NC) steelhead.

On October 16, 2020 NMFS received an initiation package from Caltrans requesting formal consultation for the proposed project which included the BA and cover letter. NMFS reviewed the BA for sufficiency and accepted the initiation package on October 30, 2020 for formal interagency consultation.

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). 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). 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).] We considered, under the ESA, whether or not the proposed action would cause any other activities and determined that it would not cause additional effects beyond those that are from the action as described below.

1.3.1 Bridge Construction

The County and the Caltrans propose to replace the Lambert Lane Bridge, (No. 10C0146) which crosses Robinson Creek near the town of Boonville, California on the western edge of the Anderson Valley. Lambert Lane is the only public road access in and out of a residential and agricultural area. The existing bridge has been designated as 'functionally obsolete and scour critical' by Caltrans, qualifying it for rehabilitation or replacement under the federal Highway Bridge Program.

In winter of 2015, a retaining wall on the upstream side of the west approach washed out and collapsed into the creek causing the County to place revetment to prevent continued scouring and erosion. Under current conditions, the failed retaining wall and associated riprap creates a 3-foot water surface elevation drop, which classifies the current conditions as a barrier to adult and juvenile steelhead based on California Department of Fish and Wildlife (CDFW) fish passage assessment guidelines (CDFG, 2002). During the winter of 2016/2017 scour further undermined the eastern abutment footing. The purpose of the Project is to replace the deficient bridge with a reliable structure to provide a safe crossing that meets current standards. Channel restoration will also take place as part of the Project and will include removing the collapsed retaining wall which will restore fish passage to the upstream reaches of Robinson Creek. In-channel work will also include protecting portions of the embankment slopes from erosion with hybrid RSP revetment, grading the stream channel to remove abrupt hydraulic changes, adding point bars along portions of the creek banks, and planting willows and trees as part of bank protection and restoration (Caltrans 2020). Where feasible, large woody debris (LWD) will be installed at specific locations within the Project to improve conditions for NC steelhead and offset temporary habitat loss. All construction activities within Robinson Creek will take place between June 15 and October 15 when surface flow is very low or subsurface.

The existing structure is 32 feet long and 26 feet wide with closed strutted abutments founded on spread footings on erodible alluvial material. The replacement bridge will have 9-foot lanes and 5-foot shoulders in each direction resulting in a wider structure which meets safety standards. Deep foundation systems, and drilled piles, will be required due to the presence of unconsolidated channel alluvium substrate. Pile type is Cast-In-Drilled-Hole (CIDH) piles. The foundation type for the retaining walls will be the same as for bridge abutments, which will have a structure depth of 4 feet 9 inches. A long span steel plate girder bridge will be constructed within the existing bridge alignment and can be fabricated in shorter lengths to facilitate

transport and then assembled on-site. This bridge replacement type will have a shorter construction time and will minimize impacts to the creek since it does not require falsework in the creek. Additionally, this long span bridge option provides the ability to improve the alignment of the creek to minimize future potential scour by increasing the channel opening and providing a softer and more gradual turn of the creek. Significant changes to the vertical profile are not anticipated as the existing and replacement bridge type provide adequate hydraulic freeboard. It is anticipated that temporary shoring will be required during bridge construction.

The preferred construction method will be to build a replacement bridge on the existing alignment and provide a temporary detour. Lambert Lane is the only public road access to approximately 30 parcels, requiring at least one lane of traffic open during construction. Due to the instability of the existing bridge, a temporary bridge is proposed to be erected offset from the existing bridge to pass traffic around bridge construction operations within the Project site. This temporary bridge will either be a Bailey bridge sourced from the County or a Contractor furnished temporary bridge structure.

1.3.2 Fish Relocation

If water is present in Robinson Creek on June 15th, the installation of a clear water diversion may be necessary. If required, the clear water diversion will be constructed of one appropriately sized culvert and cofferdams constructed of plastic sheeting and sand bags to allow flow to continue through the construction area. However, it is anticipated that only the deep scour under the bridge will hold water when construction begins. If removal of ponded or nuisance water is required it will be pumped and released in the creek bed beyond the downstream cofferdam. Water would pumped only after all fish have been removed.

The County proposes to dewater a maximum of 250 feet of Robinson Creek, which would begin with block nets placed at each end of the area and qualified biologists would capture and relocate any native fish or other native aquatic species present in the reach to be dewatered. Once dewatering is implemented and flow is diverted through the construction area, a biologist would be present and any standing water would checked for the presence of additional fish species. All fish located within the construction area immediately prior to or during dewatering will be captured by seine, dip net, and/or electrofisher and removed by qualified biologists pre-approved by NMFS. The fish will be placed in an aerated cooler or 5-gallon bucket of water from the habitat they were captured in and then be relocated within 30 minutes of capture to suitable habitat located near the action area. Dewatering and fish relocation will occur on June 15 and a dry work area may be maintained until October 15 when cofferdams and diversions will be removed. Project construction for bridge replacement and stream restoration work is anticipated to occur during one construction season. A fish relocation plan would be prepared and submitted to NMFS for approval at least two weeks prior to the start of construction.

1.3.3 Stream Channel Restoration

In addition to the bridge replacement, portions of the stream channel upstream and downstream of the bridge, and localized streambank scour downstream adjacent to the Boonville Hotel, will be stabilized and restored according to the Robinson Creek Channel Design for the Lambert

Lane Bridge Replacement Project prepared by Michael Love & Associates, Inc. (MLA) (2019). The channel restoration is intended to provide geomorphically stable channel geometry while protecting the roadway embankment and vulnerable streambanks. This will include hybrid RSP revetments where required due to risk of scour and lateral channel migration.

The existing bridge crossing is at the inflection of a tight meander bend and the channel alignment has been constrained by the roadway embankment. The proposed replacement bridge has a free span of approximately 91 feet, while the existing bridge span is only 32 feet. The increased span is in-part intended to facilitate an improved alignment with the channel by decreasing the sharpness of the meander bend. The channel grading proposes to seamlessly connect with the upstream and downstream channel profiles and the streambed should be composed of native material that is as mobile as bed material within the adjacent channel reaches. The approach relies on using the adjacent stream channel as a geomorphic reference for design of the crossing and channel bed. The approximate volume of streambed material to be stockpiled and placed back in the channel is 1,200 cubic yards. All this material will be salvaged streambed material from the project stream reach. No imported material will be brought in for this use.

In addition, the restoration will include removing the rubble and reconfiguring the RSP that covers the creek bottom, restoring the channel to a more natural condition and restoring fish passage to the upper reaches of Robinson Creek above the failed retaining wall. Channel restoration designs for the site will satisfy current fish passage standards, as described in California Department of Fish and Game (CDFG) (2009) and NMFS (2001) guidelines. Large woody debris (LWD) will be placed along the inside bend in the upstream right bank in two areas, and at one site downstream on the left bank. Trees removed for the construction will be used for the LWD placement, and will be a minimum of 15 feet long and have a 16-inch diameter at breast height (DBH).

Streambank restoration will use a hybrid revetment design incorporating vegetation into the RSP to improve stream ecology, increasing soil strength and providing flow resistance, providing cover, shade and nutrients to the stream. Root systems established will support the banks by providing resistance to scour and binding the soils and rock placed along the bank. The east bank will include 130 feet of hybrid revetment and the west bank will have 255 feet of bank protection under the bridge extending downstream. Areas directly under the bridge (approximately 50 feet) will have RSP with no planting. Hybrid revetment will include live native willow stakes and cottonwood trees.

Based on the proposed channel grading, 22 trees will be removed and native vegetation would be planted on the graded point bars on the inside of the channel bends. This vegetation will include native riparian tree species, as well as understory plants. In addition to the planting areas close to the channel, the Project will create a terrace behind the RSP adjacent to the road embankment at the southern bridge approach. This terrace will be used to plant upland tree species, such as native oaks. The County proposes to replant up to 355 trees, at a 16:1 ratio, in an effort to restore the creek and mitigate potential impacts to NC steelhead critical habitat. The plantings are proposed to be evaluated for 5 years to ensure an 80% survival rate; if the survival rate is not met, the area will be replanted.

1.3.4 Staging Areas, Rights of Way, and Utilities

The Project staging areas will include portions of the closed roadway at each end of the bridge and the area just southeast of the bridge. If this area is unavailable or not sufficient in size, there is an alternative area off-site at the County Fairgrounds that can also serve as a staging area. Right-of-way including slope easements, temporary construction easements, permanent maintenance easements, and permanent acquisitions will be required. There are existing overhead electrical and telephone utilities that will need to be relocated. Additionally, there is a storm water concrete pipe that outfalls into the creek that will need to be relocated.

1.3.5 Avoidance and Minimization Measures

Following are the major avoidance and minimization measures (AMMs) proposed, with a complete list of AMMs in the biological assessment for this project (Caltrans 2020).

- An erosion control plan that incorporates erosion control Best Management Practices (BMPs) shall be created and implemented prior to the wet season (i.e., November 1 – April 1) in order to avoid sediment from entering into aquatic habitat.

- BMPs shall be implemented that are necessary to minimize the risk of sedimentation, turbidity, and hazardous material spills. Applicable BMPs will include permanent and temporary erosion control measures, including use of straw bales, mulch or wattles, silt fences, filter fabric, and spill remediation material such as absorbent booms.

- All Project generated debris, building materials and rubbish from the stream and from areas where such materials could be washed into the stream following completion of Project activities shall be removed from the site. Debris, soil, silt, sand, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products or any other substances which could be hazardous to aquatic life shall be stored in secondary containment in the staging area.

- All fueling and/or equipment maintenance shall occur 100 feet from all water bodies. Any chemical spill within the active channel of aquatic habitat will be reported to NMFS, United States Fish and Wildlife Service, CDFW, and other appropriate resource agencies within 48 hours.

- Precautions to minimize turbidity/siltation during construction and post-construction periods shall be taken. Precautions shall include but are not limited to: best management erosion control practices to stabilize all exposed/disturbed areas within the project site to the greatest extent possible. Storm water pollution prevention plan measures will utilize applicable BMPs such as use of silt fences, straw bales, and other methods necessary to minimize storm water discharge associated with construction activities.

- A spill prevention plan and storm water pollution prevention plan shall be developed and implemented by the contractor. Spill prevention measures will include stockpiling absorbent

booms, staging hazardous materials at least 50 feet away from aquatic habitat, and maintaining and checking construction equipment to prevent fuel and lubrication leaks.

- No heavy equipment shall operate, or any excavation take place, in the portion of the stream where flowing water is present. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat. If maintenance or refueling of vehicles or equipment must occur on-site, use a designated area and/or a secondary containment, located away from drainage courses to prevent the runoff of storm water and the runoff of spills. Place drip pans or absorbent materials under vehicles and equipment when not in use. Equipment shall be stored in areas that any possible contamination from the equipment would not flow or be washed back into the channel.

- Containment structures to control the placement of wet concrete and to prevent it from entering into the channel outside of those structures shall be constructed. Water that has been in contact with uncured concrete shall be contained in a sealed concrete washout facility or other impervious container and shall not be discharged within Robinson Creek.

- Nuisance ground water encountered during construction shall be pumped into upland areas where it will not reenter Robinson Creek or cause impacts downstream. Alternatively, nuisance or working water can be pumped into a baker tank, settling basin created in an upland area, or into a water truck to be used onsite for dust control.

- At all times when the Permittee is pouring or working with wet concrete there shall be a designated monitor to inspect containment structures and ensure that no concrete or other debris enters into the channel outside of those structures.

- Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations.

- All exposed/disturbed areas and access points within the stream left barren of vegetation as a result of the construction activities shall be restored using locally native grass and/or forb seeds, locally native grass plugs and/or a mix of quick growing sterile non-native grass with locally native grass/forb seeds.

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

This 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 or destroy or adversely modify critical habitat:

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or (2) directly or

indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

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

2.2. Rangewide Status of the Species and Critical Habitat

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

The biological opinion analyses the effects of the federal action on the following Federally-listed species (Distinct Population Segment (DPS) or Evolutionary Significant Unit (ESU)) and designated critical habitat:

Threatened Northern California (NC) steelhead DPS (*Oncorhynchus mykiss*)
Threatened (71 FR 834, January 5, 2006)
Critical habitat (70 FR 52488, September 2, 2005);

Endangered Central California Coast (CCC) coho salmon ESU (*O. kisutch*)
Critical habitat designation (64 FR 24049; May 5, 1999).

Critical habitat is designated for CCC coho salmon in all accessible reaches throughout the ESU, however, CCC coho salmon are not currently known to inhabit the Robinson Creek watershed area of the Navarro River. NMFS determined the proposed action is not likely to affect individual endangered CCC coho salmon. Therefore, there is no further effects analysis in this biological opinion for individual CCC coho salmon as there are no expected effects to this species. CC Chinook salmon are not expected to be in Robinson Creek and have rarely been detected in the Navarro River watershed. Critical habitat is not designated for CC Chinook salmon in Robinson Creek so there is no further discussion in this biological opinion for this species or their critical habitat.

2.2.1. General Life History of Listed Species

2.2.1.1. Steelhead

Steelhead are the anadromous form of *O. mykiss*, spawning in freshwater and migrating to marine environments to grow and mature. Steelhead have a complex life history that requires

successful transition between life stages across a range of freshwater and marine habitats (*i.e.*, egg-to-fry emergence, juvenile rearing, smolt outmigration, ocean survival, and upstream migration and spawning). Steelhead exhibit a high degree of life history plasticity (Shapovalov and Taft 1954; Thrower et al. 2004; Satterthwaite et al. 2009). The occurrence and timing of these transitions are highly variable and generally driven by environmental conditions and resource availability (Satterthwaite et al. 2009; Sogard et al. 2012).

Steelhead are generally divided into two ecotypes based on timing and state of maturity when returning to freshwater: summer-run and winter-run. Summer-run steelhead return to natal streams in spring and early summer while they are still sexually immature and spend several months maturing before spawning in January and February (Nielson and Fountain 2006). Winter-run steelhead enter natal streams as mature adults with well-developed gonads. They typically immigrate between December and April and spawn shortly after reaching spawning grounds (Shapovalov and Taft 1954; Moyle et al. 2008).

Adult steelhead spawn in gravel substrates with low sedimentation and suitable flow velocities. Females lay eggs in redds, where they are quickly fertilized by males and covered. Egg survival depends on oxygenated water circulating through the gravel, facilitating gas exchange and waste removal. Adults usually select spawning sites in pool-riffle transition areas of streams with gravel cobble substrates between 0.6 to 10.2 centimeters (cm) in diameter and flow velocities from 40 - 91cm per second (Bjornn and Reiser 1991). Eggs incubate in redds for approximately 25 to 35 days depending on water temperature (Shapovalov and Taft 1954). Incubation time depends on water temperature, with warmer temperatures leading to lower incubation periods due to increased metabolic rates. Eggs hatch as alevin and remain buried in redds for an additional two to three weeks until yolk-sac absorption is complete (Shapovalov and Taft 1954). Optimal conditions for embryonic development include water temperatures between 6 and 10°C, dissolved oxygen near saturation, and fine sediments less than 5% of substrate by volume (Bjornn and Reiser 1991; USEPA 2001).

Upon emerging from redds, juvenile steelhead occupy edgewater habitats where flow velocity is lower and cover aids in predator avoidance. Rearing juveniles feed on a variety of aquatic and terrestrial invertebrates. As they grow, juveniles move into deeper pool and riffle habitats where they continue to feed on invertebrates and have been observed feeding on younger juveniles (Chapman and Bjornn 1969; Everest and Chapman 1972). Juveniles can spend up to four years rearing in freshwater before migrating to the ocean as smolts, although they typically only spend one to two years in natal streams (Shapovalov and Taft 1954; Busby et al. 1996). Successful rearing depends on stream temperatures, flow velocities, and habitat availability. Preferred water temperature ranges from 12 to 19°C and sustained temperatures above 25°C are generally considered lethal (Smith and Li 1983; Busby et al. 1996). In Central California streams, juvenile steelhead are able to survive peak daily stream temperatures above 25°C for short periods when food is abundant (Smith and Li 1983). Response to stream temperatures can vary depending on the conditions to which individuals are acclimated, however, consistent exposure to high stream temperatures results in slower growth due to elevated metabolic rates and lower survival rates overall (Hokanson et al. 1977; Busby et al. 1996).

Juveniles undergo behavioral, morphological, and physiological changes in preparation for ocean entry, collectively called smoltification. Juveniles begin smoltification in freshwater and the process continues throughout downstream migration with some smolts using estuaries for further acclimation to saltwater prior to ocean entry (Reiser and Bjornn 1979). Juveniles typically will not smolt until reaching a minimum size of 160 mm (Burgner et al. 1992). Smoltification is cued by increasing photoperiod. Stream temperatures influence the rate of smoltification, with warmer temperatures leading to more rapid transition. Downstream migration of smolts typically occurs from April to June when temperature and stream flows increase. Preferred temperature for smoltification and outmigration is between 10 and 17°C with temperatures below 15°C considered optimal (Hokanson et al. 1977; Wurtsbaugh and Davis 1977; Zedonis and Newcomb 1997; Myrick and Cech 2005). In coastal systems with seasonal lagoons, smolts may take advantage of higher growth potential in productive lagoon habitats before ocean entry (Osterback et al. 2018).

Adult steelhead are known to be highly migratory during ocean residency but little is known of their habitat use and movements. They have been observed moving north and south along the continental shelf, presumably to areas of high productivity to feed (Barnhart 1986). Adults will typically spend one to two years in the ocean, feeding and growing in preparation for spawning (Shapovalov and Taft 1954; Busby et al. 1996). Upstream migration typically begins once winter rains commence and stream flows increase. For coastal systems with seasonal freshwater lagoons, winter storms are required to breech the sandbars and allow access to upstream spawning sites. Unlike most congenerics, steelhead are iteroparous, meaning they can return to spawn multiple times. Adult steelhead may spawn up to four times in their lifetime, although spawning runs predominantly consist of first-time spawners (~59%) (Shapovalov and Taft 1954). The maximum life span of steelhead is estimated to be nine years (Moyle 2002).

2.2.1.2 Status of Listed Species

NMFS assesses four population viability[1] parameters to discern the status of the listed ESUs and DPSs and to assess each species ability to survive and recover. These population viability parameters are abundance, population growth rate, spatial structure, and diversity (McElhany et al. 2000). While there is insufficient data to evaluate these population viability parameters quantitatively, NMFS has used existing information to determine the general condition of the populations in the NC steelhead DPS and the factors responsible for the current status of these listed species.

The population viability parameters are used as surrogates for numbers, reproduction, and distribution, as defined in the regulatory definition of jeopardy (50 CFR 402.20). For example, abundance, population growth rate, and distribution are surrogates for numbers, reproduction, and distribution, respectively. The fourth parameter, diversity, is related to all three regulatory

[1] NMFS defines a viable salmonid population as "an independent population of any Pacific salmonid (genus *Oncorhynchus*) that has a negligible risk of extinction due to threats from demographic variation, local environmental variation, and genetic diversity changes over a 100-year time frame" (McElhany et al. 2000).

criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained, resulting in reduced population resilience to environmental variation at local or landscape-level scales.

NC Steelhead

Historically, the NC steelhead DPS was comprised of 41 independent populations (19 functionally and 22 potentially independent) of winter run steelhead and 10 functionally independent populations of summer run steelhead (Bjorkstedt et al. 2005). Based on the limited data available (dam counts of portions of stocks in several rivers), NMFS' initial status review of NC steelhead (Busby et al. 1996) determined that population abundance was very low relative to historical estimates (1930s and 1960s dam counts), and recent trends were downward in most stocks. Overall, population numbers are severely reduced from pre-1960s levels, when approximately 198,000 adult steelhead migrated upstream to spawn in the major rivers supporting this Distinct Population Segment (DPS) (Busby et al. 1996, 65 FR 36074).

NMFS status reviews reached the same conclusion, and noted the poor amount of data available, especially for winter run steelhead (NMFS 1997, Good et al. 2005). The information available suggested that the population growth rate was adverse. It is known that dams on the Mad River and Eel River block large amounts of habitat historically used by NC steelhead (Busby et al. 1996). Hatchery practices in this DPS have exposed the wild population to genetic introgression and the potential for deleterious interactions between native stock and introduced steelhead. Historical hatchery practices at the Mad River hatchery are of particular concern, and included out-planting of non-native Mad River hatchery fish to other streams in the DPS and the production of non-native summer steelhead (65 FR 36074). The conclusion of an earlier status review by (Good et al. 2005) echoes that of previous reviews. Abundance and productivity in this DPS are of most concern, relative to NC steelhead spatial structure (distribution on the landscape) and diversity (level of genetic introgression).

NMFS evaluated the listing status of NC steelhead and proposed maintaining the threatened listing determination (71 FR 834) in 2006. A subsequent status review by Williams et al. (2011) reported a mixture of patterns in population trend information, with more populations showing declines than increases. Although little information was available to assess the status for most population in the NC steelhead DPS, overall Williams et al. (2011) found little evidence to suggest a change in status compared to the last status review by Good et al. (2005).

The most recent status review (Seghesio and Wilson 2016) found that information on steelhead populations in the NC steelhead DPS has improved considerably in the past 5 years, due to implementation of the CMP across a significant portion of the DPS. Nevertheless, significant gaps in information still remain, particularly in the Lower Interior and North Mountain Interior diversity strata, where there is very little information from which to assess status. Overall, the available data for winter-run populations— predominately in the North Coastal, North-Central Coastal, and Central Coastal strata— indicate that all populations are well below viability targets, most being between 5% and 13% of these goals. For the two Mendocino Coast populations with the longest time series, Pudding Creek and Noyo River, the 13-year trends have

been adverse and neutral, respectively (Spence 2016). However, the short-term (6-year) trend has been generally beneficial for all independent populations in the North-Central Coastal and Central Coastal strata, including the Noyo River and Pudding Creek (Spence 2016). Data from Van Arsdale Station likewise suggests that, although the long-term trend has been adverse, run sizes of natural-origin steelhead have stabilized or are increasing (Spence 2016). Thus, we have no strong evidence to indicate conditions for winter-run populations in the DPS have worsened appreciably since the status review by (Seghesio and Wilson 2016).

Most populations for which there are population estimates available remain well below viability targets; however, the short-term increases observed for many populations, despite the occurrence of a prolonged drought in northern California, suggests this DPS is not at immediate risk of extinction (Seghesio and Wilson 2016).

CCC Coho Salmon and NC Steelhead Critical Habitat

In designating critical habitat, NMFS considers, among other things, the following requirements of the species: 1) space for individual and population growth, and for normal behavior; 2) food, water, air, light, minerals, or other nutritional or physiological requirements; 3) cover or shelter; 4) sites for breeding, reproduction, or rearing offspring; and, generally; and 5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of this species (50 CFR 424.12(b)). In addition to these factors, NMFS also focuses on physical and biological features, or PBFs, and/or essential habitat types within the designated area that are essential to conserving the species and that may require special management considerations or protection.

PBFs for NC steelhead and CCC coho salmon critical habitat, and their associated essential features within freshwater include:

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development;
2. Freshwater rearing sites with:
    a. water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility;
    b. water quality and forage supporting juvenile development; and
    c. natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks;
3. freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

Generally for NC steelhead and CCC coho salmon critical habitat the following essential habitat types were identified: 1) juvenile summer and winter rearing areas; 2) juvenile migration corridors; 3) areas for growth and development to adulthood; 4) adult migration corridors; and 5) spawning areas. Within these areas, essential features of critical habitat include adequate: 1)

substrate, 2) water quality, 3) water quantity, 4) water temperature, 5) water velocity, 6) cover/shelter, 7) food, 8) riparian vegetation, 9) space, and 10) safe passage conditions (64 FR 24029).

The condition of NC steelhead and CCC coho salmon critical habitat, specifically its ability to provide for their 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: 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; Busby et al. 1996; 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.

2.2.1.3. Additional Threats to CCC Coho Salmon, NC Steelhead and their Critical Habitat

Global climate change presents an additional potential threat to salmonids and their critical habitats. Impacts from global climate change are already occurring in California. For example, average annual air temperatures, heat extremes, and sea level have all increased in California over the last century (Kadir et al. 2013). Snow melt from the Sierra Nevada Mountains has declined (Kadir et al. 2013). However, total annual precipitation amounts have shown no discernable change (Kadir et al. 2013). Listed salmonids may have already experienced some detrimental impacts from climate change. NMFS believes the impacts on listed salmonids to date are likely fairly minor because natural, and local, climate factors likely still drive most of the climatic conditions steelhead experience, and many of these factors have much less influence on steelhead abundance and distribution than human disturbance across the landscape.

The threat to listed salmonids from global climate change will increase in the future. Modeling of climate change impacts in California suggests that average summer air temperatures are expected to continue to increase (Lindley et al. 2007; Moser et al. 2012). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe et al. 2004, Moser et al. 2012; Kadir et al. 2013). Total precipitation in California may decline; critically dry years may increase (Lindley et al. 2007; Schneider 2007; Moser et al. 2012). Wildfires are expected to increase in frequency and magnitude (Westerling et al. 2011, Moser et al. 2012).

For Northern California, most models project heavier and warmer precipitation. Extreme wet and dry periods are projected, increasing the risk of both flooding and droughts (OEHHA 2018). Estimates show that snowmelt contribution to runoff in the Sacramento/San Joaquin Delta may decrease by about 20 percent per decade over the next century (Cloern et al. 2011). Many of

these changes are likely to further degrade listed salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuaries may also experience changes detrimental to salmonids. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia et al. 2002, Ruggiero et al. 2010). In marine environments, ecosystems and habitats important to juvenile and adult salmonids are likely to experience changes in temperatures, circulation, water chemistry, and food supplies (Brewer and Barry 2008; Feely 2004; Osgood 2008; Turley 2008; Abdul-Aziz et al. 2011; Doney et al. 2012). The projections described above are for the mid to late 21st Century. In shorter time frames, climate conditions not caused by the human addition of carbon dioxide to the atmosphere are more likely to predominate (Cox and Stephenson 2007; Santer et al. 2011).

2.3. Action Area

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

The Action Area for the proposed Project includes 3.6 acres of area on the east and west Robinson Creek where construction will occur and an open staging area located south of the bridge where equipment will be stored and staged. Stream restoration and bank stabilization proposed approximately in a 400 foot stream reach that spans above and below the new bridge is included in the action area. We also include 1,000 feet below the bridge to account for affects that may result to salmonids or habitat from the proposed instream restoration actions.

2.4. Environmental Baseline

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

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

The action area is stream reach within Robinson Creek, which is located near the town of Boonville, California in an area known as Anderson Valley. Robinson Creek is a tributary within the Rancheria Creek sub basin located in the south western area of the Navarro River watershed. Land in this area is used for industrial timber production, non-industrial timber production, grazing, and rural residences. Field and row crop acreage is limited to a few locations. In 2000, vineyard acreage was noted ass increasing, particularly in the upper parts of the drainage (CRWQCB 2000) which is still the case today.

Specific fisheries data is scarce regarding salmonid presence and abundance for this tributary. A stream survey conducted by California Department of Fish and Game (CDFG) in June 1970 found the presence of juvenile steelhead, suboptimal stream temperature of 76°F, and very low stream flow of 0.1 cubic feet per second (CDFG 1970). These poor salmonid habitat conditions continue to persist with various Navarro River watershed studies referencing poor conditions of suboptimal stream temperatures, intermittent or dry channel reaches and poor habitat conditions (Entrix et al. 1998). Stream temperature are reported as unsuitable for coho salmon in Robinson Creek (Entrix et al. 1998). Although poor stream conditions currently exist in Robinson Creek, juvenile and adult steelhead have been observed there in the past few years (P. Madigan, personal communication 2021).

Surface flow in tributary streams the Anderson Valley area is low or absent due to water diversions and groundwater extraction, from residential, commercial, and agricultural uses, which can lower water tables and reduce base flow contributions. Rainfall in this area of the Navarro River watershed averages 44 inches per year (MLA 2019). During the summer low-flow period, tributary streams have reduced the available pool habitat, increased stream temperatures, and may have completely dry the channels (Entrix 1998). Streamflow monitoring performed by the Mendocino County Water Agency and the State Water Resources Control Board, Division of Water Rights indicate that segments of Anderson Creek, which Robinson Creek is a tributary, can go dry for brief periods due to pumping (Entrix 1998 as cited in CRWQCB 2000). Winter flow conditions range from 264 cfs during a 2-year flood event to 1320 cfs for a 100 year event (MLA 2019).

Salmonid fish passage is also poor within the action area stream due to a failed retaining wall which is proposed for restoration as part of the Lambert Lane Bridge replacement project. The upstream side of the west approach washed out and collapsed into the creek causing Mendocino County to place revetment to prevent continued scouring and erosion. Under current conditions, the failed retaining wall and associated riprap creates a 3-foot water surface drop, which is a barrier to adult and juvenile steelhead during low flow conditions (Caltrans 2020).

Changes in geomorphic conditions within Robinson Creek and downstream Anderson Creek have been noted for decades. This area which has been under development and undergone land use changes since it was discovered by european settlers in 1852 (Brown 1981). Channel incision (lowering of the channel bed) and channel bank erosion along Robinson Creek was noted as a significant source of sediment production within the 1998 Navarro River Watershed Restoration Plan (Entrix et al. 1998). Incision has caused scour and undermining of bridge foundations, leading to the replacement of the SR 128 crossing of Anderson Creek immediately upstream of the confluence of Robinson Creek and replacement of the Mountain View Road bridge crossing over Robinson Creek, downstream of Lambert Lane. Also, channel widening associated with incision processes has caused severe bank erosion, threatening adjoining structures and resulting in loss of mature riparian vegetation throughout lower Robinson Creek (Caltrans 2020).

The action area, represents a small fraction (.25 miles) of the 387 miles of potential steelhead habitat for the Navarro River steelhead population. The current conditions for salmonids in the

project area are very poor during the summer months with minimal or intermittent surface flow, failing streambanks and reduced riparian canopy to maintain stream temperature. This reach provides minimal spawning and rearing habitat for steelhead in the winter and spring, with very limited steelhead rearing habitat due to low flow or dry conditions. Summer rearing habitat is not expected to recover in this area in the foreseeable future due to groundwater diversions and other rural water use that has developed since the late 1850s. The Multi-Species Recovery Plan (NMFS 2016) identifies actions to reduce stream diversions through off channel storage and water conservation for grazing, vineyard production and rural residential development.

Given that streamflow and temperatures for salmonids the action area is currently stressed during the hot summer months, we also rely on information from section 2.2.4 with respect to the broader climatic variables influencing the current condition of habitat in the action area. Variables such as air temperature, wind patterns, and precipitation are likely influencing localized environmental conditions, such as water temperature, stream flow, and food availability. These local environmental conditions can affect the biology of listed species and the functioning of critical habitat and its value for conservation. The combination of climate change effects and effects of past and current human activities on local environmental conditions further reduce the current condition of available habitat for steelhead in Robinson Creek.

2.4.2 Previous Section 7 Consultations in the Action Area

With respect to the specific proposed project, there are no known previous Section 7 consultations or Section 10 permits have occurred within the action area. Section 7 interagency consultation was conducted with NOAA Fisheries and the U.S. Army Corps of Engineers for bank stabilization actions in lower Robinson Creek in the last 10 years.

2.5. Effects of the Action

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

Construction activities will require vegetation removal, installation of a temporary bridge structure, demolition of the existing bridge, pile drilling and construction of the new bridge, placement of RSP, and stream restoration. These activities, both during and the post-project completion may affect NC steelhead and their designated critical habitat, as well as critical habitat designated for CCC coho salmon. The following may result from construction activities: unintentional direct injury or mortality during fish collection, relocations, and dewatering activities; temporary loss of benthic habitat; reductions in riparian vegetation and cover, impacts to water quality and temporary impacts to channel bed morphology. In addition, post project in-channel sediment transport could cause temporary behavioral effects to NC steelhead in the action area.

2.5.1 Bridge Construction and Staging

The proposed project will expand the roadway approaches, areas along the creek where the new abutments will be placed, and the slightly widened bridge footprint. Placement of a temporary bridge, construction of the new bridge, and staging area are expected to cause disturbance of the action area in the bridge area of 3.6 acres. Cast-In-Drilled-Hole (CIDH) piles used for the foundation type and retaining walls has the potential impact nearby stream habitat. Impacts from general bridge construction activities are expected to be avoided because the stream channel will be dry due to dewatering and fish relocation proposed from June 15 to October 15. In addition, other AMMs that will be implemented during the project as described above (Section 1.3.5) including a Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasures Plan (SPPC) will be implemented to maintain water quality within Robinson Creek. Given the proposed plans to conduct work in the dry channel, and protect water quality, the activities that are proposed for staging and bridge construction are not expected to result in adverse effects to ESA listed salmonids or critical habitat.

2.5.2 Vegetation Removal

Vegetation removal will be conducted to make room for the temporary bridge, new bridge construction, hybrid bank revetment and channel grading. Removal of riparian trees and vegetation trimming could cause impacts to shade and reduction to potential wood recruitment that may enter the stream channel over time. Riparian vegetation helps maintain stream habitat conditions necessary for salmonid growth, survival, and reproduction. Riparian vegetation disturbance and removal can degrade these ecosystem functions and impair stream habitat. Removal of riparian vegetation increases stream exposure to solar radiation, leading to increases in stream temperature (Poole and Berman 2001).

A total of 19 trees will be removed to accommodate the construction, bank revetment and instream grading and restoration. Nine trees are larger than 12 inches at diameter breast height (dbh) and 11 trees less than 12 inches dbh will be removed. Loss of the larger riparian trees is expected to result in minor changes in shade that may result in some increase solar radiation to the wetted channel. Minor impacts from riparian removal will likely to be mitigated within 2 to 5 years with the proposed revegetation of the project area. Minor increases in solar radiation to the wetted channel are not expected to cause unsuitable stream temperatures in the action area due to dry channel conditions that exist during the summer months.

The removal of larger riparian trees is expected to reduce the potential for LWD recruitment, which may reduce habitat quality in the action area. The County proposes to place larger trees that are removed at the site into the channel to mitigate for the loss of LWD that could be recruited to the channel. Overall reduction in habitat quality is expected to be minor with the placement of LWD in channel to maintain cover and pool development in the future. This minor reduction in habitat quality may cause individual fish to seek alternative areas where suitable areas exists nearby, such that the reduction in tree recruitment is not expected to reduce or limit the survival of individual steelhead utilizing the action area.

AMMs applied during implementation, and site restoration are expected to substantially reduce the impact of riparian vegetation removal that could affect salmonid habitat. Planting of 220 understory trees and 10 upland trees on graded point bars and one terrace area are expected to mitigate for the loss of riparian trees removed as a result of this project. One hundred and twenty five willow and cottonwoods planted on the hybrid bank revetment are also expected to improve the riparian condition within Robinson Creek over time. The project site will also be monitored for five years following construction to ensure the success of revegetation efforts to restore areas impacted from removal of riparian revegetation. Thus, impacts of reduced shade and cover from removal of riparian vegetation are expected to be short term (one to two years) and not result in significant changes in rearing and migratory behavior of individual salmonids in the action area.

2.5.3 Dewatering and Fish Relocation

To facilitate the construction and instream work, a portion of the Robinson Creek may need to be dewatered. As discussed above, depending on the water-year and rainfall patterns the action area may have surface flow on June 15 when instream construction is proposed to begin. Before and during dewatering of the construction site, juvenile salmonids will be captured by a qualitied biologist using one or more of the following methods: dip net, seine, thrown net, block net, minnow trap, and electrofishing. Collected salmonids will be relocated to an appropriate stream reach in the Navarro River watershed to minimize impacts to captured fish, and to fish that are already residing at the release site. Since construction is scheduled to occur will occur during the summer low-flow period, these activities will avoid emigrating smolts that generally migrate in the spring and will be completed prior to adult fish arrival in the late fall. Only juvenile steelhead are expected to be in the action area during the dewatering and relocation actions.

Fish collection and relocation activities pose a risk of injury or mortality to rearing juvenile salmonids. Any fish collecting gear, whether passive (Hubert 1996) or active (Hayes 1983) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely, depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following NMFS electrofishing guidelines (NMFS 2000), injury and mortality of juvenile salmonids during capture and relocation is expected to be minimized. Based on prior experience with current relocation techniques and protocols likely to be used to conduct the fish relocation, unintentional mortality of juvenile NC steelhead expected from capture and handling procedures is not likely to exceed 3 percent.

Relocated fish may also have to compete with other fish causing increased competition for available resources such as food and habitat. Responses to crowding by salmonids include self-thinning, resulting in emigration and reduced salmonid abundance with increased individual body size within the group, and/or increased competition (Keeley 2003). Some of the fish released at the relocation sites may choose not to remain in these areas and move either upstream or downstream to areas that have more vacant habitat and a lower density of fish. As each fish moves, competition remains either localized to a small area or quickly diminishes as fish

disperse. In some instances, relocated fish may endure some short-term stress from crowding at the relocation sites. Such stress is not likely to be sufficient to reduce their individual fitness or performance. Although sites selected for relocation fish will be pre-approved by NMFS, they should have similar water temperatures as the capture sites, and should have adequate habitat to allow for survival of transported fish and fish already present. NMFS cannot accurately estimate the number of fish likely to be affected by competition, but does not expect this short-term stress to reduce the individual performance or survival of juvenile salmonids, or impact the watershed population of these species based on the small stream area that will likely be affected and the relatively small number of salmonids likely to be relocated.

Applying applicable AMMs to fish collection, relocation, and dewatering activities is expected to appreciably reduce the effects of project actions on juvenile salmonids. Specifically, fish collection and relocation activities conducted by NMFS-approved fisheries biologists will ensure proper equipment operation and application of NMFS guidelines thereby minimizing injury and mortality to juvenile salmonids. Restricting the work window to June 15 through October 15 will limit the effects to stream rearing juvenile salmonids. By implementing applying AMMs, NMFS anticipates that injury and mortality of juvenile steelhead will effectively be minimized in the action area.

2.5.4 Bank Revetment and Stream Restoration

The applicant proposes to place large rip-rap (i.e. boulders) over the exposed streambank, while utilizing hybrid revetment techniques of planting willow and cottonwood sprig plantings through the riprap and restoring stream grade to improve fish passage within the action area. In order to place the rip-rap armoring onto the streambank, heavy machinery will dig within the streambank and excavate a toe trench for placing RSP and LWD. The proposed disturbance of the site will likely dislodge previously armored and sequestered inter-gravel fine sediment and allowing it to be mobilized and transported downstream when the action area re-waters the following fall. Grading of the stream channel will disturb the current channel and further expose fine and coarse sediment to transport when high flow events occur in late fall and winter.

Studies of sediment effects from culvert construction determined that the level of sediment accumulation within the streambed returned to control levels between 358 to 1,442 meters downstream of the culvert (LaChance et al. 2008). Compared to the sediment impact of a culvert replacement, which often involve disturbing a significant volume of road fill, the excavation of the area of mixed grain size substrate at the toe of the stabilized slope (400 feet of toe trench and stream grading) proposed by this project will likely result in a moderate turbidity response during the first fall rain events. Thus, sediment effects from the proposed bank stabilization are channel grading are expected to extend downstream a distance downstream approximately 1,000 feet (308 meters) close to the lower range presented by LaChance et al. (2008). Sediment effects moving downstream could affect steelhead or habitat conditions within Robinson Creek.

Turbidity pulses during the first fall rains may slightly degrade the value of critical habitat in the action area, but are expected to temporary and short lived. Based on the size of the area disturbed and stream and bank substrate conditions, NMFS expects turbidity during the first fall

rains to last for only a few hours, given the proposed measures by the applicant to minimize sediment delivery from the site. AMMs are expected to reduce the duration, and quantity of fine sediment deposited downstream from the revetment areas, and is unlikely to have a substantial impact on spawning, rearing, or migration habitat in the action area. Fine sediment generated from the channel grading is discussed below.

By design, streambank stabilization projects prevent lateral channel migration, effectively forcing streams into a simplified linear configuration that, without the ability to move laterally, instead erode and deepen vertically (Leopold et al. 1968; Dunn and Leopold 1978). The resulting "incised" channel fails to create and maintain aquatic and riparian habitat through lateral migration, and can instead impair groundwater/stream flow connectivity and repress floodplain and riparian habitat function. The resulting simplified stream reach typically produces limited macroinvertebrate prey and poor functional habitat for rearing juvenile salmonids (Florsheim et al. 2008). Because bank stabilization utilizing rip-rap is typically designed to withstand high streamflow caused by large storm events, the rip-rap structure, and by extension the impacts to instream habitat, are in effect everlasting, harming future fish habitat, altered geomorphic and hydraulic processes can propagate spatially both upstream and downstream of hardened bank structures, dependent upon site- and structure-specific characteristics (Henderson 1986 and Arnaud-Fassetta et al. 2005, as cited in Florsheim et al. 2008), meaning that "bank stabilization often begets more bank stabilization." Finally, rip-rap as a stabilization material immediately and permanently replaces a natural earthen streambank, which can provide complex fish habitat (e.g., undercut banks, submerged rootwads, etc.) (Fischenich and Copeland 2001), with a relatively simple, homogenous streambank structure less suitable for juvenile salmon and steelhead (Fischenich 2003).

The revetment proposed in the stream reach around the Robinson Creek Bridge is by design likely to result in simplified habitat conditions for salmonids as described above. Approximately 400 feet of streambank will be treated with large RSP up to 1 ton in size. A hybrid method with willow planted within the RSP will minimize shear stress and flow velocities along the revetment areas with the most shear stress (Caltrans 2020). Channel size and form has been modeled by Mike Love and Associates (MLA 2019) to construct a revetment that reduces shear stress within the project reach and mimics the existing channel bank full width, gradient, and inset flood terraces. A two dimensional model was utilized to set the top of the RSP revetment to accommodate the 100 year flow of 1320 cfs through the project reach. The proposed condition velocities modeled indicate a reduction under the bridge and the flow area remains relatively constant throughout the project reach. One area above the bridge is expected to have post project flow velocities sufficient to transport streambed sediments that have previously aggraded upstream of the bridge site. MLA (2019) estimates 220 cubic yards of sediment transport through the project reach and downstream in Robinson Creek. This sediment is expected to move during winter flow events and redistribute as part of downstream gravel bar formations. Movement of approximately 220 cubic yards of material has the potential to sort into spawning habitat that adult steelhead can use for spawning or potentially aggrade in a manner that could exacerbate bank erosion downstream. Based on stream modeling work for this reach by MLA (2019), Caltrans (2020) suggests that the 220 yards is a relatively small amount of material given the size of the existing Robinson Creek channel, but could affect an existing bank site located behind the Boonville Hotel just downstream of the project site. Caltrans and the County have

proposed to extend the bank revetment and protection to the existing bank failure to further minimize erosion and effects downstream.

The installation of LWD structures within the project reach below the ordinary high water level in order to improve habitat complexity and thwart future channel incision, is expected to minimize some effects of habitat simplification along the RSP treated bank. Nevertheless, stabilizing a 400 feet of the streambank (includes both banks) with RSP will reduce overall habitat quality into the future. Spawning habitat, and migration habitat for adult steelhead and juveniles is not expected to be significantly affected as these life stages will move unimpeded through the site. Summer rearing habitat which is currently degraded due to limited surface flow is expected to remain in a simplified degraded condition. To minimize effects to rearing habitat within the action area the County proposes to install LWD structures and place boulders to create low velocity rearing habitat for adult and juvenile use. The RSP component of this project will likely compromise the value of available critical habitat in the action area for steelhead rearing by reducing natural development of undercut banks, but will be minimized by LWD and boulder placement within the action area.

Instream grading within the 400 foot project reach is proposed to restore fish passage by removing a failed retaining wall that has resulted in a 3-foot water surface drop, which classifies the current conditions as a barrier to adult and juvenile steelhead based on California Department of Fish and Wildlife fish passage assessment guidelines (CDFG, 2002). Channel restoration designs for the site meet current fish passage standards, as described in CDFG (2009) and NMFS (2001). Grading the channel and removal of the fish migration impediment at the project site will improve passage to approximately 0.8 miles of designated critical habitat in upper Robinson Creek.

The grading of the stream channel to restore the channel geometry and gradient for fish passage is expected to result in about 220 cubic yards of course sediment transport downstream (Caltrans 2020). As discussed above, this sediment is expected to move downstream and route through Robinson Creek with onset of winter high flow events. Both, beneficial and negative effects could result from this sediment transport, including effects to spawning areas and bank erosion. Given that the amount of material (i.e., 220 cubic yards) is relatively small for the stream channel, we expect the overall effects to be minor and temporary as it routes through the system during winter high flow events. Overall, the grading and redesign of the channel including point bars, riparian tree planting is expected to minimize impacts to salmonid habitat at the project site and improve anadromous fish passage to critical habitat in upper Robinson Creek.

Upon completion of instream work and bridge construction, AMMs will be implemented to reduce sediment runoff from disturbed work areas and to revegetate the site. Implementation of Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasures Plan (SPPC) are expected to maintain water quality within Robinson Creek during the project and at the conclusion of project activities. These AMMs, such as silt fence and/or fiber rolls that will be placed at bridge abutments, excavation areas, and any other locations where work could result in loose sediment possibly entering the creek. The silt fence/fiber rolls would be maintained and kept in place for the duration of the project. Any sediment or debris captured by the fence/rolls will be removed before the fence/rolls are

removed. Additional erosion, sediment, and material stockpile AMMSs would be implemented to disturbed areas in order to avoid runoff to the stream channel. With these measures in place, NMFS does not expect that measureable or significant erosion from the construction site will occur.

Although the proposed project addresses the potential run-off from the construction of the new bridge, post construction storm water AMMs were not proposed as part of the project to address water quality concerns associated with road projects as detailed by numerous sources such as the California State Water Resources Control Board (CSWRCB). The CSWRCB has issued a storm water permit for Caltrans, which includes background information from a recent publication that identifies a degradation product of tires as the causal factor in salmonid mortalities at concentrations of less than a part per billion (Tian et al., 2020). This contaminant is widely used by multiple tire manufacturers and the tire shreds that produce it have been found to be ubiquitous where both rural and urban roadways drain into waterways (Sutton et al., 2019). Previous published work first focused on identifying the issue and determining the cause of observed mortalities of adult coho salmon in the wild (Scholz et al., 2011) and then showed mortality to juvenile coho salmon in laboratory settings (Chow et al., 2019). More recent examinations of juvenile steelhead and Chinook salmon by NMFS Northwest Fisheries Science Center and partners also indicates mortality of up to 40% for steelhead and up to 10% for Chinook (Tian et al., 2020). The presence of steelhead will likely coincide with the rainy season that may bring them into contact with contaminants from the bridge and roadway. Therefore, run-off from the bridge deck and the road approaches to the new bridge are likely to deliver tire shreds to stream channel and result in adverse effects to salmonids within the action area. Mortality of steelhead is expected to be low due to the rural setting and low traffic use at the Lambert Lane Bridge and may be minimized with proper road drainage at the site.

2.5.5 Critical Habitat Effects

The action area is designated critical habitat for NC steelhead, and CCC coho salmon. Generally speaking, PBFs of critical habitat for both steelhead and salmon found within the action area include sites for migration, spawning, and rearing (see section 2.4). Effects of the Project on designated critical habitat include temporary disturbance to the streambed, bank, and flow from dewatering; temporary disturbance to waterways from bank revetment construction; temporary and permanent loss of riparian vegetation, temporary loss of habitat from proposed dewatering activities, temporary effects from sediment transport, and beneficial effects to anadromous fish passage.

Regarding effects to critical habitat from project site dewatering, for the same reasons described above for juvenile salmonids, adverse effects to NC steelhead and critical habitat PBFs are expected to be temporary, insignificant, and will recover relatively quickly (one to two months) after the project site is re-watered. Similarly, for reasons described above for juvenile salmonids, turbidity levels from suspended sediment are expected temporary and have minor effects to the value of critical habitat in the action area. Based on the size of the area to be dewatered (250 linear feet) for the instream construction activities, their will a reduction in available wetted habitat over the proposed June 15 to October 15 construction window. NC steelhead, and CCC coho salmon critical habitat will be unavailable as a summer rearing habitat. The action area is

dry during most years, and provides marginal habitat during the summer months for NC steelhead, therefore this temporary loss of wetted habitat is not expected to result in a significant impact to the amount available critical habitat for steelhead in Robinson Creek.

Minor impacts to LWD recruitment and shade are expected to reduce habitat quality in the action area. Loss of LWD from removal of streambanks will reduce the potential for removed trees to recruit to the channel and provide habitat in the future. The loss of this LWD recruitment is not expected to significantly reduce cover or habitat forming roughness elements in Robinson Creek. Revegetation proposed by the County is expected to provide similar shade to the action area within 2-5 years of project completion. Channel grading is expected to result in improved passage conditions for adult and juvenile steelhead, but may cause minor changes in turbidity and habitat conditions from sediment transport as it routes through Robinson Creek. Bank revetment work to protect the new bridge is expected to result in simplification of habitat along the action area reach within 400 feet of Robinson Creek. Although these effects are likely to be long term due the nature of RSP structures, the hybrid RSP methods, riparian planting, LWD and boulder placement are expected to minimize the loss of PBFs within the action area.

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).

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 diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

NC steelhead status remains as threatened (Seghesio and Wilson 2016) due to the continuing threats that face this species including poor ocean conditions, drought and reduced freshwater

habitat quality. The most current status review for this species shows no strong evidence to indicate conditions for winter-run populations in the DPS have worsened appreciably since the status review by (Seghesio and Wilson 2016). The temporary and minor loss of steelhead habitat along the Robinson Creek is unlikely to reduce the overall abundance of the Navarro River steelhead population in the NC steelhead DPS.

The reduction in habitat quality within the action area is expected to reduce available rearing habitat in a relatively small area in Robinson Creek. The proposed project is not expected to limit the number of steelhead utilizing Robinson Creek, given the current population abundance in the Navarro River, and that few individual juvenile fish utilize Robinson Creek during the summer when this project will occur. A small number of steelhead inhabiting the action area may experience a reduced likelihood of survival prior to reaching the smolt lifestage and migrating to sea, primarily due to reduced fitness and growth brought on by project construction and loss of wetted habitat. However, the anticipated loss of a small number of juvenile steelhead is unlikely to appreciably impact the future survival and recovery at the DPS scale since adequate quantities of habitat remain within the tributary reaches of the Navarro River from which the lost production can be regained.

Global climate change presents another real threat to the long-term persistence of NC steelhead, especially when combined with the current depressed population status and human caused impacts. Regional (i.e., North America) climate projections for the mid to late 21st Century expect more variable and extreme inter-annual weather patterns, with a gradual warming pattern in general across California and the Pacific Northwest. However, extrapolating these general forecasts to our smaller action area is difficult, given local nuances in geography and other weather-influencing factors. Water temperatures may rise somewhat in the action area due to climate change over the next several decades, reinforcing the likelihood of reduced carrying capacity in the action area due to the increased frequency of droughts in California.

The proposed action will degrade PBFs and essential habitat types in the action area, namely those related to juvenile rearing. The project will also improve migration conditions to habitat in the upper 0.8 miles of Robinson Creek, which is expected to improve survival of steelhead utilizing this tributary. When considering the overall effects of the proposed action, when added to the environmental baseline, cumulative effects, and species status, are not expected to appreciably reduce the quality and function of critical habitat at the larger CCC coho salmon ESU or NC steelhead DPS, given the small area being degraded compared to the quality and quantity of habitat within the Navarro River watershed. Thus, the proposed action will not impair the ability of critical habitat to play its intended conservation role of supporting populations of CCC coho salmon, and NC steelhead at the ESU and DPS levels.

2.8. Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of NC steelhead and or destroy or adversely modify its designated critical habitat.

After reviewing and analyzing the current status of the 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 destroy or adversely modify CCC 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 listed juvenile NC steelhead may occur during fish relocation and dewatering in a 250 linear foot reach at the project site between June 15 and October 15. The number of NC steelhead that may be incidentally taken during dewatering activities is expected to be small, and limited to the pre-smolt and young-of-year juvenile life stage. NMFS expects that no more than 3 percent of juvenile steelhead within the 250 linear foot dewatering area of Robinson Creek will be injured, harmed, or killed during fish relocation and dewatering activities. If more than 3 percent of the total number juvenile steelhead captured are harmed or killed, incidental take will have been exceeded.

In addition, low numbers of NC steelhead within the action area may be incidentally taken due to stormwater run-off delivered to Robinson Creek from the new bridge and the road approaches to the bridge. Mortalities associated with Stormwater runoff is unquantifiable, but are expected to low due to low traffic use associated with the rural setting of the project.

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 NC steelhead:

1. undertake measures to ensure that injury and mortality to salmonids resulting from fish relocation and dewatering activities is low;
2. undertake measures to minimize harm to salmonids from construction of the project and degradation of aquatic habitat;
3. implement measures to reduce direct delivery of run-off from road approaches and the bridge deck to Robinson Creek;
4. prepare and submit plans and reports regarding the effects of fish relocation, and post-construction revegetation performance.

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. The Caltrans/County shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids. The applicant shall ensure that all fisheries biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed salmonids. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to the *NOAA Fisheries Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.* See: http://www.nwr.noaa.gov/ESA-Salmon-Regulations-Permits/4d-Rules/upload/electro2000.pdf.

b. The fisheries biologist shall monitor the construction site during placement and removal of cofferdams, and channel diversions, to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events in anadromous fish streams to ensure that all ESA-listed salmonids are captured, handled, and relocated safely. During fish relocation activities the fisheries biologist shall contact NMFS North Coast Branch staff at (7070 575-6050, if mortality of federally listed salmonids exceeds 3 percent of the total for each species collected, at which time NMFS will stipulate measures to reduce the take of salmonids.

c. If ESA-listed fish are handled, it shall be with extreme care and they shall be kept in water to the maximum extent possible during rescue activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream and fish shall not be removed from this water except when released. To avoid predation the biologist shall have at least two containers and segregate young-of-year salmonids from larger age-classes and other potential aquatic predators. Captured salmonids will be relocated as soon as possible to a suitable instream location (pre-approved by NMFS) where suitable habitat conditions are present to allow for survival of transported fish and fish already present.

d. Non-native fish that are captured during fish relocation activities shall not be relocated to anadromous streams, or areas where they could access anadromous habitat.

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

a. Caltrans/County will 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. Any pumps used to divert live stream flow will be screened and maintained throughout the construction period to comply with NMFS' Fish Screening Criteria for Anadromous Salmonids (2000).

c. Construction equipment used within the river channel will be checked each day prior to work within the river channel (top of bank to top of bank) and, if necessary, action will be taken to prevent fluid leaks. If leaks occur during work in the channel, Caltrans or their contractors will contain the spill and removed the affected soils.

d. Once construction is completed, all project-introduced material must be removed, leaving the river as it was before construction. Excess materials will be disposed of at an appropriate disposal site. Minor grading to return the channel to pre-project form can be performed if necessary.

3. The following terms and conditions implement reasonable and prudent measure 3:

   a. Caltrans/County must implement measures to minimize road generated run-off to Robinson Creek by diverting road surface flow to vegetated areas between the road and the stream channel.

   b. Measures should be implemented to reduce run-off from the bridge deck to Robinson Creek.

   c. Any structures such as relief ditches, grading to direct flow, other diversion structures must receive regular long term maintenance, with a focus on early fall to reduce run-off from the first rains that cause materials from the summer months to enter the stream channel.

4. The following terms and conditions implement reasonable and prudent measure 4:

   a. **Project Construction and Fish Relocation Report** – Caltrans must provide a written report to NMFS by January 15 of the year following construction. The report must be submitted to NMFS' North-Central Coast Office, Attention: North Coast Branch Chief, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report must contain, at minimum, the following information:

      i. **Construction related activities** – The report(s) must include the dates construction began and was completed; a discussion of any unanticipated effects or unanticipated levels of effects on salmonids, including 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 ESA-listed fish; the number of salmonids killed or injured during the project action; and photographs taken before, during , and after the activity from photo reference points.

      ii. **Fish relocation** – The report(s) must 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; if an electrofisher was used for fish collection, a copy of the logbook must be included; the number of fish relocated by species; the number of fish injured or killed by species and a brief narrative of the circumstances surrounding ESA-listed fish 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.

   b. **Post-Project Annual Monitoring Reports** – Annual Project reports will be sent to the address above in 3a, and must include the following contents:

      i. **Post-Construction Vegetation Monitoring and Reporting** – Caltrans must develop and submit for NMFS' review, a plan to assess the success of the revegetation of the site. A draft of the revegetation monitoring plan

must be submitted to NMFS (address specified in 3a above) for review and approval 30 days prior to the beginning of project construction (i.e., must be submitted May 15, which is 30 days before the proposed June 15, 2021 start date). Reports documenting post-project conditions of vegetation installed at the site will be prepared and submitted annually for the first five years following project completion, unless the site is documented to be performing poorly, then monitoring requirements will be extended. Reports will document vegetation health and survivorship and percent cover, natural recruitment of native vegetation (if any), and any maintenance or replanting needs. Photographs must be included. If poor establishment is documented, the report must include recommendations to address the source of the performance problems.

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).

1. NMFS recommends that Caltrans and/or the County develop a LWD project in or near the action area to promote salmonid habitat quality in Robinson Creek. This project would benefit recovery of critical habitat PBFs for juvenile and adult lifestages of NC steelhead. This project should encompass approximately 500 feet in length and provide 10 to 20 key pieces of LWD.

2.11. Reinitiation of Consultation

This concludes formal consultation for the Lambert Lane 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 or critical habitat in a manner or to an extent not considered in this opinion, (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

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

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA , EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)]

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

3.1. Essential Fish Habitat Affected by the Project

Pacific coast salmon EFH may be adversely affected by the proposed action. Specific habitats identified in the PFMC (2014) for pacific coast salmon include habitat areas of particular concern (HAPCs), identified as: 1) complex channels and floodplain habitats; 2) thermal refugia; and 3) spawning habitat. HAPCs for CCC coho salmon include all waters, substrates, and associated biological communities falling within critical habitat areas described above in the accompanying biological opinion for the Lambert Lane Bridge Replacement project located on Robinson Creek in the Navarro River watershed. Essentially, all CCC coho salmon habitat located within the proposed action is considered HAPC as defined in PFMC (2014).

3.2. Adverse Effects on Essential Fish Habitat

The potential adverse effects of the Project on EFH have been described in the preceding biological opinion and include disturbance of the channel bed and banks, temporary loss of wetted habitat, temporary loss of riparian vegetation, and sediment transport through the action area. Therefore, the effects of the project on ESA-listed species are anticipated to be the same as the effects to EFH in the action area.

3.3. Essential Fish Habitat Conservation Recommendations

Section 305(b)(4)(A) of the MSA authorizes NMFS to provide EFH Conservation Recommendations that will minimize adverse effects of an activity on EFH. Although temporary potential adverse effects are anticipated as a result of the project activities, the proposed minimization and avoidance measures, and best management practices in the accompanying biological opinion are sufficient to avoid, minimize, and/or mitigate for the anticipated affects. Therefore, no additional EFH Conservation Recommendations are necessary at this time that would otherwise offset the adverse effects to EFH.

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 effects the basis for NMFS' EFH Conservation Recommendations (50 CFR600.920(1)).

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 is the California Department of Transportation (Caltrans) and the Mendocino County Department of Transportation and individual copies of this opinion were provided to Caltrans. 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, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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