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

November 8, 2021 **Refer to NMFS No:** WCRO-2021-00749

Thomas Holstein
Environmental Branch Chief
Office of Local Assistance
California Department of Transportation, District 4
P.O. Box 23660, MS-10B
Oakland, California 94623-0660

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Winship Avenue Bridge Replacement Project on San Anselmo Creek (BRLO-5176 (008)

Dear Mr. Holstein:

Thank you for your letter of March 18, 2021, 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 Winship Avenue Bridge Replacement Project.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action. However, after reviewing the proposed action, we concluded that there are no adverse effects on EFH. Therefore, we are hereby concluding EFH consultation.

The enclosed biological opinion is based on our review of California Department of Transportation's (Caltrans)[1] proposed project and describes NMFS' analysis of potential effects on threatened Central California Coast (CCC) steelhead and the designated critical habitat for the species. NMFS concludes that the project is not likely to jeopardize the continued existence of the species; nor is it likely to destroy or adversely modify critical habitat. However, NMFS anticipates that take of the species would occur in the form of harm, injury, or mortality during dewatering and fish relocation activities. An incidental take statement with terms and conditions is included with the enclosed biological opinion. NMFS has also found that the proposed bridge project is not likely to adversely affect designated critical habitat for CCC coho salmon.

[1] Caltrans is acting as the lead agency under direction of the June 2007 Memorandum of Understanding (MOU) (23 U.S. C. 326) between Caltrans and the Federal Highway Administration. As assigned by the MOU, Caltrans is responsible for the environmental review, consultation and coordination on this project.

Please contact Andrew Trent, North Central Coast Office in Santa Rosa, California at (707) 578-8553, or email at andrew.trent@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Keevan Harding, Caltrans, Oakland, CA, keevan.harding@dot.ca.gov
Copy to ARN E-File #151422WCR2021SR00070

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion

Winship Avenue Bridge Replacement Project

NMFS Consultation Number: WCRO-2021-00749
Action Agency: California Department of Transportation

Table 1. 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?
Central California Coast steelhead (*Oncorhynchus mykiss)*	Threatened	Yes	No	No	No
Central California Coast coho (*O. kisutch*)	Endangered	No	No	No	No

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

Issued By:
Alecia Van Atta
Assistant Regional Administrator
West Coast Region

Date: November 8, 2021

TABLE OF CONTENTS

1. INTRODUCTION

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

1.1 Background

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

We 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 NMFS North-Central Coast Office in Santa Rosa, California (ARN #151422WCR202100070).

1.2 Consultation History

- March 18, 2021: NMFS received an email from the California Department of Transportation (Caltrans) that included: 1) a letter requesting initiation of Section 7 consultation for potential impacts on CCC steelhead, and their designated critical habitat due to implementation of the proposed project; 2) the March 2021 Biological Assessment (BA) for the Winship Avenue Bridge Replacement Project, Marin County, Bridge No. 27C0074, State of California Department of Transportation and the Town of Ross, Caltrans District 4 - No. BRLO-5176(008). Though Caltrans did not specifically request an EFH consultation in their incoming request letter, effects to EFH were included in the BA.

- April 22, 2021: NMFS sent insufficiency letter via email to Caltrans for information regarding the linear feet of dewatering, clarification on pile-driving operations, stormwater management, and whether in-stream complexity components will be included in the design.

- June 1, 2021: Caltrans response to NMFS letter sent via email with requested information on dewatering limits, stream grading, and pile driving. Included was a figure showing the Project dewatering limits, and figures showing the Project area grading and rock slope protection (RSP) limits, and figures showing proposed stream cross sections.

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

The Town of Ross in cooperation with Caltrans is proposing to replace the Winship Avenue Bridge over San Anselmo Creek in order to adhere to current design standards and to improve the hydrologic capacity of the creek under the bridge. The Winship Avenue Bridge (Caltrans Bridge No. 27C0074) is located on Winship Avenue where it crosses over San Anselmo Creek in the Town of Ross, in Marin County, California. The existing bridge would be replaced with a single span, cast-in-place or precast concrete slab type bridge. Work would include creek contour grading and the placement of buried RSP and biotechnical bank stabilization in order to address flooding and scour concerns. The elevation of the new bridge deck and the adjacent approach roadways and sidewalks would be approximately 4.5 feet higher than the existing bridge and would gradually slope down to meet the existing pavement grade of Winship Avenue approximately 100 feet to the west and 40 feet to the east, respectively.

Replacement of the existing18.25 foot wide plus 2.75 foot wide walkway bridge would include removal of the existing bridge and installment of a single span, cast-in-place or precast concrete slab type bridge with a curb-to-curb width of 20 feet and a 4.5-foot-wide walkway on the north side. The opening over San Anselmo Creek under the new single-span bridge would be enlarged by approximately 36 square feet. The project would result in a net removal of 593 cubic yards of fill due to the removal of the existing pier within the stream. The new bridge would also be approximately 3.5 feet wider to encompass increases of 1.75 feet to the traveled roadway and the pedestrian walkway, respectively. The roadway profile would be raised between 2 and 4 feet to meet flood control requirements. The new single span bridge would be supported on concrete abutments placed in the streambed.

1.3.1 Removal of Existing Bridge and New Bridge Construction

The existing bridge would be demolished by saw-cutting and jack-hammering. After removal of the earth fill from over the arch barrels, segments of the structure would be broken into large pieces and removed by a crane situated on the roadway. Removal of the existing piers is anticipated to involve excavation of an area approximately 30 feet long, 5 feet wide, and up to 4 feet deep below the existing streambed. Depending on the depth of the existing footings, the piers would either be removed or jack hammered to about 3 feet below the streambed elevation and left in place; however, it is anticipated that most of the existing abutments would be removed due to the deep excavations required for the new abutments

The Project proposes to install a single span, cast-in-place or precast concrete slab type bridge supported on concrete abutments placed in the streambed, which would provide for a traveled way width of 20 feet and a 4.5-foot walkway on the north side which would tie in with existing sidewalks to the east and west. The new west bridge abutment would extend toward the middle of the creek by approximately 7 feet (from the existing west abutment) and the new east bridge abutment would extend away from the middle of the creek by approximately 13 feet (from the existing east abutment) to align with the upstream and downstream creek dimensions.

The new abutment foundations would be supported on spread footings, which would be founded in bedrock approximately 10 to 12 feet deep. Temporary shoring consisting of driven sheet piles or driven/drilled soldier piles may be required depending on site conditions. Vertical concrete abutments would be formed on top of these footings, and a concrete bridge deck would be cast-in-place on top of the abutments. Construction of the new bridge abutments would require two excavation areas, which would utilize temporary shoring as needed, to dry out the work areas. The abutment footing areas would be approximately 12 feet by 28 feet, with a slightly larger area of 14 feet by 30 feet required for the temporary cofferdams (sheet piling shoring). Sheet pile driving activities would last approximately two to three days and would utilize a pile driver and/or an impact hammer to ensure the piles reach required depth to bedrock. Seal course concrete may be placed within the cofferdam limits below the footings to control water seepage, if needed. Where right of way permits, planter strips are included between the back of curb and sidewalk allowing the sidewalk to drain to the planter strips.

The Project construction activities includes creek contour grading, placement of buried RSP, and biotechnical bank stabilization. An approximately 0.07 acre area along the stream banks would require creek contour grading; approximately 289 cubic yards of RSP would be placed over this area, including 153 cubic yards of RSP below the ordinary high water mark (OHWM). All RSP will be buried up to a foot or more and would be covered with either native soil or native gravel. Biotechnical bank stabilization would occur on both downstream banks over a total area of 396 square feet. RSP and biotechnical bank stabilization installation would follow fish passage guidelines consistent with the CDFW's California Salmonid Stream Restoration Manual (CDFW 2010) and NMFS's Anadromous Salmonid Passage Facility Design (NMFS 2008). RSP and other cut and fill work would impact approximately 80 linear feet along the creek channel and banks. The total amount of fill placed from the project would be approximately 348 cubic yards. The project would result in the removal of approximately 941 cubic yards of fill for a net reduction of approximately 593 cubic yards of fill.

Construction activities within the banks of San Anselmo Creek would be performed between June 15 and October 15 when little or no precipitation is anticipated, and stream flow is lowest. If there is no flow in the creek during the construction period, it is anticipated that only localized dewatering or short cofferdams would be needed at the abutment locations to control groundwater during abutment construction. Activities within the channel would commence only after appropriate dewatering and storm water quality Best Management Practices (BMP) are in place. BMPs would consist of all applicable federal, state, and local erosion and sediment control policies including those outlined under the Marin County Stormwater Pollution Prevention Program. Any water-intake structure would be installed, operated, and maintained in accordance with current NMFS criteria (NMFS 1996).

1.3.2 Dewatering and Fish Relocation Activities

If water is present in the channel, the flow would be diverted by placing cofferdams upstream a maximum extent of approximately 105 feet from the edge of the bridge and downstream a maximum extent of 53 feet from the bridge. Impacted waters located in the work area would either be treated per the requirements of a Storm Water Pollution Prevention Plan prepared for the project or disposed of per RWQCB requirements. Water would always be bypassed or pumped downstream at an appropriate rate to maintain downstream flows. The outlet of all diversions would be positioned to avoid bank erosion or channel scour as well as maintain pre-project hydraulic conditions. Diverted flows would be returned to the stream channel immediately downstream of the work area. Upon project completion, the diversion pipe and cofferdam material would be removed from the channel.

Upon completion of cofferdam installation, a NMFS-approved biologist will initiate a program to capture and relocate native vertebrates to a suitable location upstream. Fish will be collected using seining, dip netting or electrofishing. The biologist will minimize handling of salmonids, and when handling is necessary, the biologist will always wet hands or nets prior to touching fish. Captured fish will be held in a container with a lid that contains cool, shaded water that will be continuously aerated with a battery-powered external bubbler. Fish will not be subjected to jostling or excess noise and will not be overcrowded in the containers. Two holding containers will be available to segregate young-of-the-year fish from larger fish to avoid predation. Fish will not be removed from the container until the time of release. Captured fish will be relocated to the nearest point immediately downstream of the dewatered area in a site with suitable habitat conditions. For all captured individuals the biologist will identify species, estimate year-classes, and record estimated numbers at the time of release. The fish will not be anesthetized or measured. A report summarizing the fish relocation activities will be submitted to NMFS on January 31 following the relocation effort.

Upon completion of construction, all temporary fills associated with the dewatering and flow bypass system including sandbags and/or rock will be removed and the area restored to preconstruction conditions.

1.3.3 Vegetation and Tree Removal

The project is likely to require the removal of 15 trees within the Action Area. The project will comply with the Town of Ross's tree protection ordinance, which may include procuring a tree removal permit and submitting a tree protection plan. Riparian trees would be planted in areas on-site and in-kind to those requiring removal for construction access. Riparian plants would also be planted along the banks in the areas of bank stabilization, RSP placement, and any disturbed areas. Live willow cuttings would be used at the appropriate lower bank elevations (just above bank toe).

1.3.4 Sewer Line Relocation

Sewer line relocation would be the initial construction task, and would be restricted to an approximately four-week period beginning in mid-May and completing before June 15. The Ross Valley Sanitary District would relocate the sewer line immediately upstream of the new bridge and approximately 8 feet below the creek bed using a trenchless jack and bore construction method. The jack and bore operation would require an insertion pit and a receiving pit to be excavated at each end of the pipe segments with the pit locations located outside of the bed and banks of San Anselmo Creek.

1.3.5 Avoidance and Minimization Measures

- Construction activities within the banks of San Anselmo Creek would be performed between June 15 and October 15 when little or no precipitation is anticipated, and stream flow is lowest.

- The approved aquatic biologist in coordination with NMFS would develop a fish rescue plan. Individual organisms would be relocated the shortest distance possible to an adjacent upstream area with sufficient aquatic habitat. Within occupied habitat, capture, handling, exclusion, and relocation activities would be completed no earlier than 48 hours before construction begins. If electrofishing is conducted, it must be performed by an approved biologist following NMFS guidelines (NMFS 2000).

  During fish relocation, all organisms would be kept in water to the maximum extent possible and captured steelhead would be kept in cool, shaded, well-aerated water and protected from disturbance and overcrowding until they are released. To avoid predation, two containers would be used: one for young-of-the-year fish and one for second- or third-year old fish. Captured fish would be relocated to suitable upstream rearing habitat that is as close to the dewatered area as possible while meeting the survival needs (adequate water quality/quantity, cover, and forage) of both the relocated individuals and the fish already inhabiting the relocation site.

- If flowing water is present in the channel, the flow would be diverted around the work area by creating a temporary diversion to isolate a dry active construction work area. Impacted waters located in the work area would either be treated per the requirements of a Storm Water Pollution Prevention Plan, or disposed of per RWQCB requirements. All activities within the channel would commence only after appropriate BMPs for dewatering and protecting water quality are in place.

- During in-water activities, a biologist will continuously monitor all activities (e.g., installation and removal of cofferdams and pipes) to insure any undue impacts to listed species and their habitat will be avoided and minimized.

- Downed trees, stumps, boulders, suitable spawning sites, and other fish refugia will remain undisturbed to the extent possible.

- The creek bed and banks would be protected to prevent permanent impacts from temporary construction access and project construction. Low ground pressure construction equipment would be used in the channel to minimize compaction of the creek bed. To the greatest extent possible, the creek bed and banks would be restored to natural and stable conditions following construction and revegetated with native riparian plantings.

- Disturbance and removal of riparian, emergent, and aquatic vegetation would be minimized.

- Modified or disturbed portions of the stream channel, banks, and riparian areas would be restored as nearly as possible to natural and stable contours (elevations, profile, and gradient). Native substrates removed during excavations and earthwork would be stockpiled and returned to the creek bed and banks. A native grass seed mix would be applied to areas disturbed by construction, creek access, and contouring, as well as to areas where native soils overlay the buried RSP. As mentioned above, riparian trees would be planted in areas on-site and in-kind to those requiring removal for construction access.

- RSP installation would follow fish passage guidelines consistent with the California Salmonid Stream Restoration Manual (CDFW 2010) and the NMFS Anadromous Salmonid Passage Facility Design (NMFS 2008).

- No discharge of pollutants from vehicle and equipment cleaning are allowed into storm drains or watercourses.

- Vehicle and equipment fueling and maintenance operations must be at least 50 feet away from watercourses. If refueling or servicing of equipment within 50 feet of a watercourse is necessary, secondary containment and absorbent pads will be used.

- Concrete wastes collected in washouts and water from curing operations will be collected and disposed of, and not allowed into watercourses. All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and 150 feet, at a minimum, from any aquatic habitat, culvert, or drainage feature. If storage of grindings and asphaltic-concrete waste within 150 feet of Corte Madera Creek is necessary (i.e., at the Town of Ross Maintenance Yard), secondary containment and absorbent pads will be used; in addition, a protective barrier will be installed between the yard and the creek to prevent any spills and run-off from entering the creek.

- Sediment control measures will be implemented including the use of silt fence, filter fabric, and/or straw bales/fiber rolls. Erosion, sediment, and material stockpile BMPs will be employed between work areas and the adjacent waterway. No fill or runoff will be allowed to enter waterways at any time.

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

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

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

(RPMs) and terms and conditions to minimize such impacts.

2.1 Analytical Approach

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

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

The designation of critical habitat for Central California Coast (CCC) steelhead uses the term primary constituent element (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) that revised the 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 ESA Section 7 implementing regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the final rule revising the definition and adding this term (84 FR 44976,44977; August 27, 2019), that revision 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.

2.1.1 Use of Best Available Scientific and Commercial Information

To conduct the assessment presented in this opinion, NMFS examined an extensive amount of information from a variety of sources. Detailed background information on the biology and status of the listed species and critical habitat has been published in a number of documents including peer reviewed scientific journals, primary reference materials, and governmental and non-governmental reports. Additional information regarding the potential effects of the proposed Project-related activities on the listed species in question, their anticipated response to these actions, and the environmental consequences of the actions as a whole was formulated from the aforementioned resources, and the following biological assessment.

- Biological Assessment: Winship Avenue Bridge Replacement Project, Marin County. Bridge No. 27C0074. State of California Department of Transportation and the Town of Ross. Caltrans District 4 – BRLO-5176(008).

- Fishery Resources Conditions of the Corte Madera Creek Watershed, Marin County, California. Prepared by: Alice A. Rich, Ph.D., A. A. Rich and Associates, 140 Woodside Drive, San Anselmo, California 94690. Prepared for: Friends of Corte Madera Creek Watershed. November 10, 2000.

- California Department of Fish and Wildlife, East Marin County, San Francisco Bay Watersheds Stream Habitat Assessment Reports: San Anselmo Creek. Surveyed 2009. Report Completed in 2013.

For information that has been taken directly from published, citable documents, those citations have been reference in the text and listed at the end of this document. A complete record of this consultation is on file at NMFS North-Central Coast Office in Santa Rosa, California (ARN #151422WCR2021SR00070).

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" for the jeopardy analysis. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the function of the PBFs that are essential for the conservation of the species.

2.2.1 Listed Species

This biological opinion analyzes the effect of the proposed Winship Avenue Bridge Replacement Project in the Town of Ross, Marin County, California on CCC steelhead in San Anselmo Creek.

CCC steelhead are listed as threatened under the ESA (71 FR 834, January 5, 2006). The CCC steelhead distinct population segment (DPS) includes steelhead in coastal California streams from the Russian River to Aptos Creek, and the drainages of Suisun Bay, San Pablo Bay, and San Francisco Bay. CCC steelhead occur in San Anselmo Creek and are expected to be present in the action area during construction. The action area includes critical habitat for CCC steelhead (70 FR 52488; September 2, 2005).

2.2.2 Steelhead General Life History

Steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan 2001). Although variation occurs in coastal California, steelhead usually live in freshwater for 1 to 2 years in central California, then spend 2 or 3 years in the ocean before returning to their natal stream to spawn. Steelhead may spawn 1 to 4 times over their life. Adult steelhead returning from the ocean to the Corte Madera Creek watershed which includes San Anselmo Creek typically immigrate to freshwater between December and April, peaking in January and February, and juveniles migrate as smolts from the watershed to the ocean from January through June, with peak emigration occurring in April and May (Fukushima and Lesh 1998).

Steelhead fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Rearing steelhead juveniles prefer water temperatures of 7.2-14.4 degrees Celsius (°C) and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). They can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996). Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows, to the ocean to continue rearing to maturity.

Adults returning to spawn may migrate several miles, hundreds of miles in some watersheds, to reach their natal streams. Although spawning typically occurs between January and May, the specific timing of spawning may vary a month or more among streams within a region, and within streams interannually. Spawning (and smolt emigration) may continue through June (Busby *et al*. 1996). Female steelhead dig a nest in the stream and then deposit their eggs. After fertilization by the male, the female covers the nest with a layer of gravel. Steelhead do not necessarily die after spawning and may return to the ocean, sometimes repeating their spawning migration one or more years. The embryos incubate within the nest. Hatching time varies from about three weeks to two months depending on water temperature. The young fish emerge from the nest about two to six weeks after hatching.

2.2.3 Status of CCC Steelhead

In this opinion, NMFS assesses four population viability parameters to help us understand the status of CCC steelhead and the population's ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). NMFS has used existing information to determine the general condition of each population and factors responsible for the current status of the DPS. We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.20). For example, the first three parameters are used as surrogates for numbers, reproduction, and distribution. We relate the fourth parameter, diversity, to all three regulatory 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.

Historically, approximately 70 populations[2] of steelhead existed in the CCC steelhead DPS (Spence *et al.* 2008, Spence *et al.* 2012). Many of these populations (about 37) were independent, or potentially independent, meaning they had a high likelihood of surviving for 100 years absent anthropogenic impacts (Bjorkstedt *et al.* 2005). The remaining populations were dependent upon immigration from nearby CCC steelhead DPS populations to ensure their viability (McElhaney *et al*. 2000, Bjorkstedt *et al*. 2005).

While historical and present data on abundance are limited, CCC steelhead numbers are substantially reduced from historical levels. A total of 94,000 adult steelhead were estimated to spawn in the rivers of this DPS in the mid-1960s, including 50,000 fish in the Russian River - the largest population within the DPS (Busby *et al.* 1996). Recent estimates for the Russian River are on the order of 4,000 fish (NMFS 1997). Abundance estimates for smaller coastal streams in the DPS indicate low but stable levels with recent estimates for several streams (Lagunitas, Waddell, Scott, San Vincente, Soquel, and Aptos creeks) of individual run sizes of 500 fish or less (62 FR 43937). Some loss of genetic diversity has been documented and attributed to previous among-basin transfers of stock and local hatchery production in interior populations in the Russian River (Bjorkstedt *et al*. 2005). In San Francisco Bay streams, reduced population sizes and fragmentation of habitat has likely also led to loss of genetic diversity in these populations. For more detailed information on trends in CCC steelhead abundance, see: Busby *et al*. 1996, NMFS 1997, Good *et al*. 2005, Spence *et al*. 2008, Spence *et al.* 2012, Williams *et al.* 2011.

CCC steelhead abundance has declined significantly in recent decades, and long-term population trends suggest a negative growth rate. This indicates the DPS may not be viable in the long term. DPS populations that historically provided enough steelhead immigrants to support dependent populations may no longer be able to do so, placing dependent populations at increased risk of extirpation. However, because CCC steelhead have maintained a wide distribution throughout

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[2] Population as defined by Bjorkstedt *et al*. 2005 and McElhaney *et al*. 2000 as, in brief summary, a group of fish of the same species that spawns in a particular locality at a particular season and does not interbreed substantially with fish from any other group. Such fish groups may include more than one stream. These authors use this definition as a starting point from which they define four types of populations (not all of which are mentioned here).

the DPS, roughly approximating the known historical distribution, CCC steelhead likely possess a resilience that will slow their decline relative to other salmonid DPSs or Evolutionary Significant Units in worse condition. On January 5, 2006, NMFS determined that the CCC steelhead DPS remained a threatened species, as previously listed (71 FR 834). A 2008 viability assessment of CCC steelhead concluded that populations in watersheds that drain to San Francisco Bay are highly unlikely to be viable, and that the limited information available did not indicate that any other CCC steelhead populations could be demonstrated to be viable (Spence *et al.* 2008). The most recent status review reaffirmed that steelhead in the CCC steelhead DPS remain "likely to become endangered in the foreseeable future" (Williams *et al.* 2011).

2.2.4 CCC Steelhead Critical Habitat Status

Critical habitat was designated for CCC steelhead on September 2, 2005 (70 FR 52488). In designating critical habitat, NMFS considers, among other things, the essential PBFs within the designated area that are essential to the conservation of the species and that may require special management considerations or protection.

PBFs for CCC steelhead 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.

The condition of CCC steelhead 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 present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation. Impacts of concern include alteration of streambank and channel morphology, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased streambank erosion, loss of shade (higher water temperatures) and loss of nutrient inputs (Busby *et al.* 1996, 70 FR 52488). Water development has drastically altered natural hydrologic cycles in many of the streams in the DPS. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids. Overall, current condition of CCC steelhead critical habitat is degraded, and does not provide the full extent of conservation value necessary for the recovery of the species.

A final recovery plan for CCC steelhead was prepared by NMFS in October 2016 (NMFS 2016). The plan describes key threats, actions needed to achieve recovery, and measurable criteria by which NMFS will determine when recovery has been reached. Recovery plan actions are primarily designed to restore ecological processes that support healthy steelhead populations, and address the various activities that harm these processes and threaten the species' survival. The recovery plan calls for a range of actions including the restoration of floodplains and channel structure, restoring riparian conditions, improving streamflows, restoring fish passage, protecting and restoring estuarine habitat, among other actions.

2.2.5 Global Climate Change

One factor affecting the range-wide status of the CCC steelhead DPS, and aquatic habitat at large is climate change. 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 has declined (Kadir *et al*. 2013). However, total annual precipitation amounts have shown no discernable change (Kadir *et al*. 2013). CCC steelhead 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. In addition, CCC steelhead are not dependent on snowmelt driven streams and, thus, not affected by declining snow packs.

The threat to CCC steelhead 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).

In the San Francisco Bay region, warm temperatures generally occur in July and August, but as climate change takes hold, the occurrences of these events will likely begin in June and could continue to occur in September (Cayan *et al*. 2012). Climate simulation models project that the San Francisco region will maintain its Mediterranean climate regime, but experience a higher degree of variability of annual precipitation during the next 50 years and years that are drier than the historical annual average during the middle and end of the 21st Century. The greatest reduction in precipitation is projected to occur in March and April, with the core winter months remaining relatively unchanged (Cayan *et al.* 2012).

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 *et al.* 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 Winship Avenue Bridge Replacement Project consists of new bridge footprint, the banks disturbed by RSP and bank stabilization placement, and the streambed of San Anselmo Creek for a distance of approximately 677 linear feet. This channel reach contains the area of the cofferdams, streambed area to be dewatered, and the channel downstream to include the length of the waterway in which any temporary disruption to habitat (e.g., fine sediment plume) might be detectable. Additionally, the action area includes 500 feet upstream of the construction site where fish relocation activities may occur.

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 CCC Steelhead and Critical Habitat in the Action Area

According to Leidy et al. 2005, San Anselmo Creek may be the most important Corte Madera Creek tributary for salmonid production. The lower reach of San Anselmo Creek containing the Project action area (approximately 1,315 feet upstream from the confluence of Corte Madera and Ross Creek) was described by A. A. Rich and Associates as characterized by long alternating lateral scour pool/riffle sequences with many man-made structures, mainly concrete retaining walls. Pools (lateral scour associated with concrete walls, primarily) were generally shallow (approximately 8 to 20 inches in depth), with gravel substrate, but covered with organic detritus. Riffles ranged from approximately 9 feet to 18 feet in width, with substrate composed of gravel and cobble. Although there was abundant shade and clean gravel, low streamflows limit summer trout habitat. On average, pool depths ranged between 0.5 and 2.5 feet deep at the time of the field survey. Bottom substrates within the action area generally consist of gravels and sands in pool sections and cobbles and gravels in riffle sections. A. A. Rich and Associates estimates the mean trout populations, as a function of habitat type within San Anselmo Creek, to be .01 – 12.76 fish per square meter.

Project surveyors in August of 2017 observed juvenile steelhead/rainbow trout in the action area during a field survey in pools located approximately 100 feet upstream and 175 feet downstream of the bridge, respectively (approximately 75 to 100 individuals total in a range of size classes between approximately 50 and 150 millimeters). No other recent survey data was available, but surveys in the 1990s consistently found O. mykiss of multiple age classes in the Corte Madera Creek watershed which suggests good natural propagation. CDFG surveys in the 1960s reported that the majority of the steelhead nursery area in San Anselmo Creek was in the lower half of the creek. CDFG surveys in 1969 estimated the steelhead population of San Anselmo Creek to be 23,000 individuals with juveniles inhabiting the 2 miles of creek between the confluence with Fairfax Creek and Winship Avenue Bridge (Leidy et al. 2005b).

2.4.2 Factors Affecting the Species Environment in the Action Area

San Anselmo Creek is a tributary to Corte Madera Creek, which is a tributary to San Francisco Bay, located in Marin County California that drains a watershed of approximately 14.7 square miles. The creek is located primarily in developed residential areas but it originates in the less impacted reaches within the Cascade Canyon Open Space Preserve. Mixed hardwood forest dominates the watershed. The watershed is located in a Mediterranean climatic region, with over 90 percent of annual precipitation occurring between November and April. Cool, moist coastal fog generally alternates with clear, warm weather during the months of May through September, and significant rainfall during that time is rare. The project is in the lower reaches of San Anselmo Creek within the urbanized corridor of eastern Marin County. The lower reaches of San Anselmo Creek are heavily altered from decades of grazing, logging, and farming of the area, and ultimately urbanization. The creek banks are generally steep and deeply cut below the floodplain. To prevent erosion, the creek has been semi-channelized in many locations where the banks have been reinforced with RSP, concrete, and retaining walls.

In the action area, San Anselmo Creek is a low-gradient perennial stream characterized by lateral scour pool and riffle sequences. This reach is heavily impacted by channel incision and bank armoring. Several lateral scour pool/riffle sequences identified within the action area are associated with RSP, undercut banks, the bridge structure, and a concrete retaining wall. The upstream banks are both variably armored with RSP and the downstream right bank is also armored, first with RSP and then with a concrete retaining wall further downstream.

2.4.3 Previous Section 7 Consultations Affecting the Action Area

No known previous Section 7 consultations have occurred within the action area.

2.4.4 Climate Change Impacts in the Action Area

The long-term effects of climate change have been presented under the Rangewide Status of the Species and Critical Habitat section of this opinion (2.2.5). These include changes to streamflow regimes, water temperatures, and rainfall patterns. Listed species in the action area may have already experienced some detrimental impacts from climate change. These natural factors are likely less influential on fish abundance and distribution than anthropogenic impacts across the action area. Future climate change impacts in the action area are likely to increase as air and water temperatures warm, and precipitation rates change. However, during the timeframe considered in this opinion, these changes are expected to materialize as insignificant alterations to current habitat conditions in the action area.

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 (see 50 CFR 402.02). 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 the factors set forth in 50 CFR 402.17(a) and (b).

Construction activities associated with the proposed project may affect CCC steelhead and their habitat. The following may result from construction activities: unintentional direct mortality during fish collections, relocations, and dewatering activities; temporary loss of benthic habitat, reductions in riparian vegetation and cover, and temporary impacts to channel bed morphology.

2.5.1 Fish Relocation Activities

To facilitate construction, the Project proposes to dewater up to approximately 180 linear feet of the San Anselmo Creek stream channel. The Project proposes to collect and relocate fish in the work area prior to dewatering to avoid fish stranding and exposure to construction activities. Relocation activities would occur during the summer low-flow period after emigrating smolts have left and before adults have immigrated for spawning. Therefore, NMFS expects capture of listed steelhead for relocation would be limited to pre-smolting juveniles. Before and during dewatering of the construction site, juvenile steelhead and other fish would be captured by seining, dip netting and electrofishing. Collected fish would be relocated away from the work site to an appropriate location within San Anselmo Creek with adequate water quality/quantity, cover, and forage.

Data to precisely quantify the amount of steelhead that would be relocated by this Project are not available. Due to recent observations, perennial flow through the area, and suitable fish habitat characteristics in the action area even though it is heavily modified, NMFS expects steelhead to be present. To estimate the number of juvenile steelhead likely to be present in the action area, NMFS took into account the Project surveyors observations of 75 to 100 individual trout, as well as A. A. Rich and Associates estimate of the relative number of trout in the creek as 1.5 per square meter (3.28 square feet). The width of San Anselmo Creek through the project area during the construction season is approximately 20 feet and the length is approximately 180 feet giving an approximate area of 3,600 square feet (334.5 square meters). NMFS is using the 1.5 trout/square meter to approximate the number that will be present since some habitat in the action area will be poor, while the pools should hold more fish, making it a reasonable estimate for the entire area to be dewatered. Using a density estimate of 1.5 fish per square meter, approximately 502 juvenile steelhead would be present in the 180 foot dewatered stretch of creek. Based on this information, NMFS expects the maximum number of steelhead that will be captured and relocated from the action area by this Project to be 502 pre-smolting juvenile steelhead.

Fish relocation activities pose a risk of injury or mortality to rearing juvenile salmonids. Any fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) 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 would be conducted by qualified fisheries biologists, direct effects to, and mortality of juvenile salmonids during capture would be minimized.

Although sites selected for relocating fish should have similar water temperature as the capture sites and are expected to have adequate habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may have to contend with other fish causing increased competition for available resources such as food and habitat area. Frequent responses to crowding by steelhead include emigration and reduced growth rates (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 steelhead. As each fish moves, competition remains either localized to a small area or quickly diminishes as fish disperse. NMFS does not expect impacts from increased competition would be large enough to adversely affect the survival chances of individual steelhead, or cascade through the watershed population of these species based on the small area that would likely be affected and the small chance of mortality of salmonids likely to be relocated. Sufficient habitat appears to be available in San Anselmo Creek upstream and downstream of the Project site to sustain fish relocated without crowding other juvenile steelhead.

Based on information from other relocation efforts, NMFS estimates injury and mortalities would be less than three percent of those steelhead that are relocated. Data on fish relocation efforts since 2004 shows most mortality rates are below three percent for steelhead (Collins 2004, CDFG 2005, 2006, 2007, 2008, 2009, 2010a, 2010b). Fish that avoid capture during relocation effects may be exposed to risks described in the following section on dewatering.

2.5.2 Dewatering

The Project proposes to isolate the work with cofferdams and bypass streamflow around the construction area. Dewatering of the channel would affect approximately 180 linear feet of San Anselmo Creek.

NMFS anticipates temporary changes to instream flow within and downstream of the Project site during the dewatering process prior to construction. These fluctuations in flow are anticipated to be small, gradual, and short-term. Once the cofferdams and pipeline bypass system is installed, streamflow above and below the work sites should be the same as free-flowing pre-project conditions except within the dewatered work area where streamflow is bypassed. The dewatering of 180 feet of channel is expected to cause a temporary reduction of aquatic habitat. Juvenile steelhead that avoid capture in the Project work area would likely die during dewatering activities due to desiccation, thermal stress, or crushed by heavy equipment during construction operations. However, due to the pre-dewatering fish relocation efforts to be performed by qualified biologists, NMFS expects that the number of juvenile steelhead that would be killed as a result of stranding during dewatering activities would be less than one percent of the fish within the action area prior to dewatering.

The temporary cofferdams and water diversion structures in the stream are not expected to impact juvenile steelhead movements in San Anselmo Creek beyond typical summer low-flow conditions. The cofferdams and dewatered reach would restrict movement of juvenile steelhead in a manner similar to the normal seasonal reduction of flow that typically occurs during summer within portions of some streams throughout the range of CCC steelhead. Although steelhead do not experience intermittent flows in the action area in all summers, the limited duration of water diversion is unlikely to adversely affect individual steelhead rearing upstream or downstream of the dewatered reach. By conforming to NMFS screen criteria (NMFS 1996), the screen's mesh size will prevent fish from passing into the pump and intake water velocities will be low enough to allow small steelhead life stages to swim away.

Benthic (i.e., bottom dwelling) aquatic macroinvertebrates within the Project site may be killed or their abundance reduced when 180 linear feet of creek habitat is dewatered (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from stream dewatering would be temporary because construction activities would be relatively short-lived and the dewatered reach is relatively small. Rapid recolonization (typically one to two months) of disturbed areas by macroinvertebrates is expected following rewatering (Cushman 1985, Thomas 1985, Harvey 1986). In addition, the effect of macroinvertebrate loss on juvenile steelhead would likely be negligible because food from upstream sources (via drift) would be available downstream of the dewatered areas since streamflow would be bypassed around the Project work site. Food sources derived from the riparian zone would not be affected by the Project. Based on the foregoing, NMFS does not expect the loss of aquatic macroinvertebrates as a result of dewatering activities would adversely affect threatened CCC steelhead.

As described above, NMFS expects injury and mortality of juvenile steelhead associated with fish relocation to be less than three percent of the total amount of steelhead captured, and mortality associated with dewatering activities to be less than one percent of the number of steelhead present within the action area prior to dewatering. Given our assumption of three percent injury or mortality for relocation activities, and less than one percent mortality for dewatering activities, NMFS expects no more than 20 juvenile steelhead would be injured or killed by construction-related dewatering and fish relocation efforts.

2.5.3 <u>Increased Mobilization of Sediment in the Stream Channel and Water Quality</u>

The proposed action would result in the disturbance of the streambed and banks for equipment access and construction. Disturbed soils may become mobilized when fall and winter rains return subsequent to construction. NMFS anticipates these activities would result in small short-term increases in turbidity during rewatering and subsequent higher flows caused by winter storms after construction is completed. Instream and near-stream construction activities have been shown to result in temporary increases in turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al*. 1991, and Spence *et al.* 1996).

Sediment may affect fish by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelley 1961, Bjornn *et al.* 1977, Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Sigler *et al*. 1984, Berg and Northcote 1985, Gregory and Northcote 1993, Velagic 1995, Waters 1995). Even small pulses of turbid water may cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Although sediment and turbidity may affect listed salmonids as described above, sedimentation and turbidity levels associated with the proposed Project, including bridge removal and replacement, grading, placement of RSP, and biotechnical bank stabilization, are not expected to rise to the levels discussed in the previous paragraph because the Project proposes several measures to prevent the mobilization of sediment during and after construction. During construction, NMFS expects sediment input to the creek would be minimal, because the Project proposes to control exposed soil by stabilizing slopes and protecting channels (e.g., using silt fences and straw wattles).

Post-construction, modified or disturbed portions of the stream channel, banks, and riparian areas would be restored as nearly as possible to natural and stable contours (elevations, profile, and gradient). Native substrates removed during excavations and earthwork would be stockpiled and returned to the creek bed and banks. A native grass seed mix would be applied to areas disturbed by construction, creek access, and contouring, as well as to areas where native soils overlay the buried RSP. Riparian trees would be planted in areas on-site and in-kind to those requiring removal for construction access. Riparian plants would also be planted along the banks in the areas of bank stabilization, RSP placement, and any disturbed areas. Live willow cuttings would be used at the appropriate lower bank elevations (just above bank toe). NMFS anticipates any resulting elevated turbidity levels would be small and only occur for a short time, well below levels and durations shown in scientific studies as causing injury or harm to salmonids (see for example Newcombe and Jensen 1996). NMFS expects any sediment or turbidity generated by the Project would not extend more than 100 feet downstream of the work site based on site conditions (low flows) and methods used to control sediment and turbidity. NMFS does not anticipate harm, injury, or behavioral impacts to CCC steelhead associated with exposure to elevated suspended sediment levels that would be generated by this Project.

While the proposed project addresses the potential run-off from the construction of the new bridge, some post construction storm water BMPs were 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). Diverting the stormwater runoff into a vegetated area prior to entering the waterbody, allows it to infiltrate into soils through large amounts of organic matter. This infiltration is expected to mitigate deleterious effects to salmonids by the process of binding the 6-PPD quinone, filtering out tire particles, and removing other contaminants related to automobiles (polycyclic aromatic hydrocarbons, oil, greases, metals, etc.) by preventing it from reaching the waterbody (Caltrans 2003; McIntrye et al. 2015).

Mortality is expected to be low due to the addition of impervious surfaces being minimized and limited to adding the sidewalk facilities on Winship Avenue. Furthermore, where right of way permits, planter strips are included between the back of the curb and sidewalk allowing the new sidewalk to drain into the planter strips. This should reduce the amount of stormwater runoff directly into the creek as a result of the small increase in impervious surface.

2.5.4 Effects of Underwater Sound Exposure

The dual metric criteria for injury to fish from pile driving was established by the Fisheries Hydroacoustic Working Group (FHWG 2008) and includes a threshold for peak pressure (206 dB) and cSEL (187 dB for fishes 2 grams or larger and 183 dB for fishes smaller than 2 grams). Injury would be expected if either threshold is exceeded. There is uncertainty as to the behavioral response of fish to underwater sound produced when driving piles in or near water, NMFS believes a 150 dB root mean square pressure (RMS) threshold for behavioral responses for salmonids is appropriate.

This project includes two abutments that will support the bridge. The new abutment foundations would be supported on spread footings, which would be founded in relatively shallow bedrock (approximately 10 to 12 feet deep). Temporary shoring consisting of driven sheet piles or driven/drilled soldier piles may be required depending on site conditions. The impact pile driving for the sheet piles could cause elevated underwater sound levels. The proposed dewatering of the area upstream and downstream will avoid salmonid exposure to levels of 150 dB RMS, which otherwise could cause disturbance or behavioral effects to juvenile salmonids. The removal of juvenile fish from the potential zone of pile driving effects above 150dB RMS is expected to avoid any adverse effects within the Project area.

2.5.5 Impacts to Channel Form and Function

RSP and other cut and fill work would impact approximately 80 linear feet along the creek channel and banks. 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).

The proposed RSP and channel armoring for this project is expected to maintain simplification of habitat in the future. However, by reducing the amount of fill in the Project area through the removal of the existing bridge abutment and grading, the new bridge abutments will encroach less on the stream channel as compared to existing bridge. The reduction of fill in the creek is expected to allow the stream channel to transport sediment and develop a natural pool and riffle sequence. The areas where the RSP is placed will continue to impede channel migration and riparian development along approximately 80 feet on both sides of San Anselmo Creek. The change in habitat function is not expected to change significantly from the highly modified conditions that existed with the previous bridge in place. Upon completion of instream work and cofferdam removal, instream habitat may be temporarily decreased due to equipment disturbance and redistribution of gravel within the construction area. Disturbance from using heavy equipment in the streambed is expected to be minimized with winter high flow events that will redistribute gravels and restore channel form.

2.5.6 Toxic Chemicals

Oils and similar substances from construction equipment can contain a wide variety of polynuclear aromatic hydrocarbons (PAHs) and metals. Both can result in adverse impacts to salmonids. PAHs can alter salmonid egg hatching rates and reduce egg survival as well as harm the benthic organisms that are a salmonid food source (Eisler 2000). Some of the effects that metals can have on salmonids are immobilization and impaired locomotion, reduced growth, reduced reproduction, genetic damage, tumors and lesions, developmental abnormalities, behavior changes (avoidance), and impairment of olfactory and brain functions (Eisler 2000).

The Project has proposed several measures to prevent the discharge of contaminants and avoid degradation of creek waters during construction activities. The stream would be dewatered when construction equipment is working in the streambed; spill containment and remediation material would be nearby; and vehicles would not be fueled or otherwise serviced within the stream bed. Due to these measures, NMFS expects that an accidental spill and toxic chemical contamination of the action area would be unlikely.

2.5.7 Impacts to Critical Habitat

Features of critical habitat for CCC steelhead found within the action area include sites for migration, spawning, and rearing. Effects of the proposed project on designated critical habitat may include elevated turbidity, streambank and floodplain habitat degradation, and precluding natural fluvial and geomorphic channel dynamics.

Caltrans proposes to place RSP to protect the new bridge. Bio-engineering techniques such as willow spring planting through the riprap and large woody debris (LWD) embedded below the ordinary high water line will be used. In order to place the rip-rap armoring onto the streambank, heavy machinery will dig within the streambank for access to the site and disrupt the streambed to excavate a toe trench for placing rip-rap. The proposed disturbance of the site will likely dislodge previously armored and sequestered inter-gravel fine sediment and allow it to be mobilized and transported downstream when the action area re-waters the following fall.

As mentioned above, streambank stabilization projects prevent lateral channel migration and simplify the channel. The 80 feet of RSP and armoring on both sides of the channel will hinder channel migration and riparian development along San Anselmo Creek. However, this channel is already heavily constrained by urbanization and by reducing the amount of fill in the Project area through the removal of the existing bridge abutment and grading, the new bridge abutments will encroach less on the stream channel as compared to existing bridge. The reduction of fill in the creek is expected to allow the stream channel to transport sediment and develop a natural pool and riffle sequence. The change in habitat function is not expected to change significantly from the highly modified conditions that existed with the previous bridge in place. Therefore, the project is unlikely to compromise the value of available critical habitat in the action area for the foreseeable future.

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 earlier in the discussion of environmental baseline (Section 2.4).

2.7 Integration and Synthesis

The Integration and Synthesis section is the final step in assessing the risk that the proposed action poses to species and critical habitat. 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.

CCC steelhead are listed as threatened. Based on the loss of historic habitat due to dams and the degraded condition of remaining spawning and rearing areas, CCC steelhead populations in watersheds that drain to San Francisco Bay, including San Anselmo Creek, have experienced severe declines. Due to incised banks, channel armoring, and urbanization, steelhead occur in San Anselmo Creek in densities and abundance lower than historic levels. Juvenile CCC steelhead are expected to be present within the action area during construction; however, the number of individuals that are present is expected to be lower due to the small area of stream affected and low summer streamflows. Those present likely make up a small proportion of steelhead in San Anselmo Creek. Due to the timing of the proposed action, no adult steelhead or migrating steelhead smolts would be adversely affected by the Project.

As described in the *Effects of the Action* section above, NMFS identified dewatering and fish relocation as the adverse effects on CCC steelhead in the action area that would result from the proposed Project. Prior to dewatering 180 linear feet of creek for construction, fish would be collected and relocated from the work area. Fish that elude capture and remain in the Project area during construction activities would likely die due to desiccation or thermal stress, or be crushed by heavy equipment during construction operations. However, based on the low mortality rates for similar capture and relocation efforts, NMFS anticipates few juvenile steelhead would be injured or killed by fish relocation and construction activities during implementation of this Project. Anticipated mortality from capture and relocation is expected to be less than three percent of the fish relocated, and mortality expected from dewatering is expected to be less than one percent of the fish in the area prior to dewatering. Because no more than 502 juvenile steelhead are expected to be present, NMFS expects no more than 20 juvenile steelhead would be injured or killed by fish relocation and dewatering. Due to the relatively large number of juveniles produced by each spawning pair, steelhead spawning in the San Anselmo Creek watershed in future years are likely to produce enough juveniles to replace the few that may be lost at the Project site due to relocation and dewatering. It is unlikely that the small potential loss of juveniles by this Project would impact future adult returns. In addition, the planting of native vegetation is expected to create shade, produce allochthonous food and shelter, and assist with stabilizing bank sediments.

Regarding future climate change effects in the action area, California could be subject to higher average summer air temperatures and lower total precipitation levels. Reductions in the amount of snowfall and rainfall would reduce streamflow levels in Northern and Central Coastal rivers. Estuaries may also experience changes in productivity due to changes in freshwater flows, nutrient cycling, and sediment amounts. For this Project, in-water activities will occur in a single year between June 15 and October 15, and the above effects of climate change will not be detected within that time frame. If the effects of climate change are detected over the short term, they will likely materialize as moderate changes to the current climate conditions within the action area. These changes may place further stress on CCC steelhead populations. The effects of the proposed action combined with moderate climate change effects may result in conditions similar to those produced by natural ocean-atmospheric variations as described in the Environmental Baseline section of this opinion (Section 2.4) and annual variations. CCC steelhead are expected to persist throughout these phenomena, as they have in the past, even when concurrently exposed to the effects of similar projects.

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 CCC steelhead or adversely modify its designated critical habitat.

2.9 Incidental Take Statement

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

2.9.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows: NMFS anticipates that take of threatened CCC steelhead during removal of the existing bridge and construction of the replacement bridge on Winship Avenue over San Anselmo Creek in the town of Ross, California will be associated with fish collection and relocation during stream dewatering.

The number of threatened steelhead that may be incidentally taken during Project activities is expected to be limited to the pre-smolt juvenile life history stage. Take is anticipated to occur during fish relocation and dewatering in a 180-foot long reach at the Project site between June 15 and October 15. The number of juvenile steelhead relocated during Project construction is anticipated to be no more than 502, and no more than 20 juvenile steelhead are expected to be injured, or killed during fish relocation and dewatering activities.

If more than 502 juvenile steelhead are captured, or more than 20 juvenile steelhead are injured or killed, incidental take will have been exceeded.

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 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 (RPM) are necessary and appropriate to minimize take of CCC steelhead:

(1) Undertake measures to ensure that harm and mortality to listed steelhead resulting from fish relocation and dewatering activities is low.

(2) Undertake measures to minimize harm to CCC steelhead resulting during and from construction of the Project.

(3) Undertake measures to monitor the performance of the Project’s post-construction revegetation performance.

(4) Prepare and submit reports which summarize the effects of construction, fish relocation, and dewatering activities, and post-construction site performance.

2.9.4 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the federal action agency must comply (or must ensure that any applicant complies with the following terms and conditions. Caltrans has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

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

    a. At least 60 days prior to the initiation of construction, a stream dewatering plan and a fish relocation plan shall be provided to NMFS for review and approval.

    b. Captured fish shall be handled with extreme care and kept in water to the maximum extent possible during relocation 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 fish from larger age classes and other potential aquatic predators. Captured salmonids will be relocated, as soon as possible, to a suitable instream location in which habitat condition are present to allow for adequate survival of transported fish and fish already present.

c. If any salmonids are found dead or injured, the biologist shall contact NMFS biologist Andrew Trent by phone immediately at (707) 578-8553 or the NMFS North-Central Coast Office at (707) 575-6050. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities shall be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location of collection, fork length measured, and frozen as soon as possible. Frozen samples shall be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS North-Central Coast Office without obtaining prior written approval from NMFS. Any such transfer will be subject to such conditions as NMFS deems appropriate.

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

   a. Construction equipment used within the creek channel will be checked each day prior to work within the creek 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 (top of bank to top of bank), Caltrans, the Town of Ross or their contractor will contain the spill and remove the affected sediment.

   b. In areas where concrete is used, a dry work area must be maintained to prevent conveyance of runoff from curing concrete to the surface waters of the adjacent stream at all times. Water that inadvertently contacts uncured concrete must not be discharged into surface waters.

   c. Once construction is completed, all Project-introduced material (pipe, cofferdam, *etc*.) must be removed. Excess materials will be disposed of at an appropriate disposal site. All cofferdams, pumps, pipes and other diversion materials will be removed from the stream upon work completion and no later than October 15.

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

   a. At least 60 days prior to the initiation of construction, the Town of Ross and Caltrans shall provide a plan to NMFS for review and approval regarding monitoring the success of the riparian vegetation.

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

   a. Caltrans or the Town of Ross must provide a written report to NMFS by January

31 of the year following construction of the proposed action. The report must be provided 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 a minimum, the following information:

i. Construction Related Activities – The report must include the dates construction began and was completed, a discussion of any unanticipated effects or unanticipated levels of effects on salmonids, a description of any and all measures taken to minimize those unanticipated effects and a statement as to whether or not the unanticipated effects had any effect on 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 must include a description of the location from which fish were removed and the release site including photographs, the date and time of the relocation effort, a description of the equipment and methods used to collect, hold, and transport salmonids, the number of fish relocated by species, the number of fish injured or killed by species and a brief narrative of the circumstances surrounding 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.

2.10 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, "conservation recommendations" are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02). NMFS has no conservation recommendations for this Project.

2.11 Reinitiation of Consultation

This concludes formal consultation for Winship Avenue Bridge Replacement Project on San Anselmo Creek in the Town of Ross, California.

Under 50 CFR 402.16(a): "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: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If 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 written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action."

2.12 "Not Likely to Adversely Affect"' Determinations

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 (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

Historically, the Corte Madera Creek watershed, including San Anselmo Creek, supported CCC coho salmon. Recorded observations of coho within the watershed date from 1926 to 1984; the last sighting of coho was in 1984 (Leidy et al. 2005b). Based on this information, NMFS considers endangered CCC coho extirpated from San Anselmo Creek and the greater Corte Madera Creek watershed. Thus, Caltrans has determined in the Project's biological assessment that the project is expected to have no effect on endangered CCC coho salmon. However, Corte Madera Creek, including San Anselmo Creek, is designated critical habitat for endangered CCC coho salmon (64 FR 24049).

For CCC coho salmon critical habitat, the following essential habitat types have been identified: 1) juvenile summer and winter rearing areas; 2) juvenile migration corridors; 3) areas for growth and development; 4) adult migration corridors; and 5) spawning areas. Within these habitat types, the PBFs of coho salmon 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). Within the action area, the PBFs for CCC coho salmon migration are moderate to good condition. PBFs in the action area for CCC coho salmon spawning are poor. PBFs for juvenile summer rearing, and growth and development are poor due to high summertime water temperatures, low summertime flow conditions, and impaired substrate, cover, shelter, and water velocity conditions.

NMFS evaluated the proposed project for potential adverse effects to CCC coho salmon critical habitat. NMFS considered the life history of CCC coho salmon (Weitkamp et al. 1995), aerial photographs of the work sites, and current habitat conditions. The effects of the proposed action on CCC coho salmon critical habitat are reasonably likely to include effects from dewatering, temporary increases in suspended sediment concentrations, temporary reductions in riparian vegetation, and perpetuation of impaired habitat conditions by the bridge structure within the action area.

As discussed in Section 2.5 of this opinion for CCC steelhead critical habitat, effects to habitat from proposed actions are expected to be temporary, insignificant, or discountable. Dewatering would result in temporary and minor impacts to water quality and streamflow, and could cause the temporary reduction of prey (macroinvertebrates) within the affected reaches. However, impacts to streamflow are not expected to impair habitat conditions beyond those that typically occur during summertime low flow conditions, and macroinvertebrate populations are expected to recover within one to two months after construction. Increases in turbidity will be negligible because of BMPs incorporated by the project to avoid or minimize the discharge of sediments. The potential for construction–related toxins and pollutants to be introduced to the stream is expected to be discountable due to the spill prevention, containment, and disposal measures that are included in the project. Disturbances to riparian vegetation would be minimal and the affected areas would be replanted. Riparian vegetation is expected to return rapidly to pre-project cover levels following the cessation of construction actions and the establishment of revegetated areas. The perpetuation of the structure (i.e., bridge) over the channel and on the banks is also not expected to impair critical habitat. For the above reasons, the potential effects of the Project are considered insignificant or discountable and are not expected to result in either a net change to existing habitat values in the action area or result in adverse impacts to designated critical habitat for CCC coho salmon.

3. 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.

3.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is the California Department of Transportation. Other interested users could include the Town of Ross, citizens of Marin County and others interested in the conservation of threatened steelhead. Individual copies of this opinion were provided to Caltrans. The document will be available within 2 weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adheres to conventional standards for style.

3.2 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.

3.3 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 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 reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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