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

May 22, 2020 **Refer to NMFS No:** WCRO-2019-03571

Tom Holstein
Environmental Branch Chief
California Department of Transportation, District 4
P.O. Box 23660, MS-1A
Oakland, California 94623-6371

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the Big Sulphur Creek Bridge Replacement Project

Dear Mr. Holstein:

Thank you for your letter of November 6, 2019, 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 Big Sulphur Creek Bridge Replacement Project (project). The bridge is located on Geysers Road, approximately 10 miles east of the town of Cloverdale, in Sonoma County, California. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA)(16 U.S.C. 1855(b)) for this action. However, after reviewing the proposed action, we concluded that it would not adversely affect EFH, therefore, no EFH consultation is required.

The enclosed biological opinion is based on our review of the proposed projects and describes NMFS' analysis of the potential effects on endangered CCC coho salmon (*Onchorhynchus. kisutch)*, and threatened Central California Coast (CCC) steelhead (*O. mykiss*) and California Coastal (CC) Chinook salmon (*O. tshawytscha)*, and on designated critical habitat in accordance with section 7 of the ESA.

In the enclosed biological opinion, NMFS concludes that the project is not likely to jeopardize the continued existence or result in the destruction or adverse modification of critical habitat for CCC steelhead. However, NMFS anticipates take of CCC steelhead in the form of injury or mortality during dewatering activities. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion. NMFS has also found that the proposed project is not likely to adversely affect CCC coho, CC Chinook salmon, or designated salmonid critical habitat.

Please contact Jodi Charrier of the NMFS North-Central Coast Office in Santa Rosa, California at (707) 578-6069, or jodi.charrier@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: Copy to ARN File #151422WCR2019SR00251

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

Big Sulphur Creek Bridge Replacement Project

NMFS Consultation Number: WCRO-2019-03571

Action Agency: California Department of Transportation (CalTrans)

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 | Yes | No |
| Central California Coast coho salmon (*O. kisutch* | Endangered | No | N/A | No | N/A |
| California coastal Chinook (*O. tshawytscha*) | Threatened | No | N/A | N/A | NA |

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

**Issued By**:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

**Date**: May 22, 2020

**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 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 (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.

## 1.2 Consultation History

- February 15, 2018, NMFS met with the California Department of Transportation (CalTrans)[1], the California Department of Fish and Wildlife (CDFW) and representatives of the Sonoma County Department of Public Works (DPW) to discuss the designs of Big Sulphur Creek Bridge Replacement.
- November 6, 2019, CalTrans requested to initiate consultation with NMFS.
- January 2, 2020, NMFS initiated consultation with CalTrans.

## 1.3 Proposed Federal Action

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

DPW (in conjunction with CalTrans) proposes to construct a new bridge downstream of the existing bridge, which will remain in its present location. The existing bridge will remain open to traffic while the new bridge is under construction. When the new bridge is open to traffic, DPW will conduct minor maintenance of the existing historic bridge, after which the bridge will be closed to all traffic.

The new bridge is a multi-span (three spans) concrete box girder bridge. The new bridge is 32 feet wide having two 11-feet travel lanes, two 3-feet wide shoulders and two 2-feet wide ST-70 bridge rail systems. The road approaches on the southeast and northwest ends are 150feet and 275 feet respectively. The alignment of the new bridge curves across the stream to ease the existing abrupt, short radius turn that occurs at the southeast end of the existing bridge. At the northwest end of the bridge, the approach road will be realigned to provide a 25 mph design

[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.

speed while minimizing encroachment into the floodplain of Big Sulphur Creek. The approach road on the northwest end of the bridge will be raised to the new required bridge elevation by placing fill and installing a 205-feet long retaining wall. Both road approaches include drainage features and are widened to match the dimensions of the new bridge. The piers of the new bridge will likely be large-diameter cast in drilled-hole or cast in steel shell piles. Both the proposed bridge and existing bridge will maintain 1.2 feet of freeboard from the lowest bridge soffit to the 100-year flood event water surface elevation. Piers will be located outside the low-flow channel.

DPW will construct the project over one construction season. Construction begins in the winter with vegetation removal to avoid the bird-nesting season. Shrubby riparian vegetation along the bridge alignment will be trimmed, and six trees will be removed at the abutments and along the bridge approaches. Vegetation removal will be the minimum necessary to construct the new bridge.

Between May 15th and June 15th, work will occur within the dry areas between the top of bank and the wetted channel. Work in the wetted channel will occur between June 15th and October 15th and begins with a qualified fisheries biologist installing block nets at the upstream end of the work area. Fish will be then be herded downstream out of the project area to the extent feasible. A downstream block net will then be installed to create an isolated work area. The biologist will relocate any fish remaining in the work area to suitable habitat. Next, culvert(s) will be placed on the stream bed to limit water contact with the construction work pad. The engineer will provide hydraulic calculations to ensure creek flow and velocities within the culverts are conducive for habitat life. Prior to placing the culverts, any low spots within the culvert alignment will be leveled by placing small amounts of clean river run gravel on the stream bed. Excavation of the channel bottom is not necessary. Culverts will be placed with equipment operating from the existing gravel bar, outside the flowing water. Culverts will be installed to avoid a backwater on the upstream end of the work pad and increasing water velocities at the outlet of the culverts. The number and size of culverts used will be determined based on stream flow.

Once the bypass culverts are in place, a dam of imported clean river-run gravel and K-rails will be used to direct flowing water into the culverts. Dam construction will be limited to equipment operating from the existing gravel bar, outside the flowing water. The diversion dam will be lined with impermeable plastic and will be located approximately 30 feet upstream of the existing bridge structure. A filter dam, lined with filter fabric, will be constructed at the downstream end of the work pad. Material to construct the downstream dam will be lowered into the channel by an excavator working from the existing gravel bar.

Once upstream and downstream dams are in place, the work pad will be constructed. The pad will extend across the entire stream bed to provide a level, compacted working surface for the drill rig to sit on, and to support falsework for pouring the bridge deck. The work pad will extend 30 feet upstream and downstream of the proposed 32-foot wide bridge alignment, for a total pad length of approximately 92 feet. The pad may be longer if access to the channel is required for rehabilitation of the existing bridge. The pad's depth will be approximately two feet thick and constructed of clean river run material with a top layer of aggregate base for stability. A fabric layer may be placed between the river-run gravel and base rock layer to ease removal following construction. Gravel will be placed at such a rate that displaced water does not overtop either

dam. This will be accomplished by either pumping out the trapped water while depositing the clean river-run gravel or by adding the gravel slowly enough for the filter dam to sieve the water through its mesh. If water is pumped out, it will be pumped either: 1) to a holding tank for storage and disposal, 2) to an upland location where it will not drain back into the creek, or 3) to an on-site stilling basin. The layer of compactable aggregate (crushed rock) to be placed on top of the river-run gravel will not exceed the minimum amount needed to provide sufficient support for the safe and efficient operation of heavy equipment. Loss of compactable aggregate over the edges of the work pad will be avoided by maintaining a minimum buffer of uncovered river-run gravel at the ends of the work pad. The block nets will be removed once the pad was complete.

Once the pad is complete, bridge construction commences with drilling for the piers. A drill rig sitting on the work pad will drill the holes for the pier foundation. If the geotechnical investigations show deep unconsolidated materials beneath the stream bed, steel casing will likely be used to keep the holes from collapsing. If steel casings are used, drilling fluids will be used only to lubricate the drill. If casing are not used, drilling fluids will be used to keep the drilled holes from collapsing. Drilling fluids will be recovered from the drilled holes and contained in tanks for recycling or disposal off-site. Drill cuttings will be disposed of off-site in a permitted manner. Once the hole(s) are ready, steel cage reinforcement(s) will be lowered into the holes by crane and then filled with poured concrete. Water that seeps into the drilled holes, which is then displaced when the concrete is poured, will be pumped to tanks and then to trucks for offsite disposal.

For the abutment foundations, roadway fill will be placed along the new alignment. The area at each abutment will be graded. A drill rig will operate from the fills to drill holes for the concrete piles. Work for abutment construction will not require an access road down the bank. Excavation will be required for the placement of rock slope protection. Excavated materials will be stored and be reused on-site for final roadway grade finishing and engineered fill construction. Armoring with rock slope protection (RSP) will be required on creek banks and will extend approximately 30 feet upstream of the existing bridge to approximately 15 feet downstream of the proposed bridge. Approximately 302 square feet of RSP will be placed below ordinary high water mark, but will be placed below grade to allow the channel to naturally fill with gravel.

Steel reinforcement for piles will be prefabricated and lowered using a crane. Steel reinforcement and falsework for abutments and wingwalls may be installed in-place by hand or prefabricated and lowered into place by crane. A concrete pump will be located on new fill and used to transfer concrete from the delivery trucks to the pour locations. Backfilling of the abutments will occur once the concrete has cured. Next, wood falsework for pouring of the bridge superstructure will be constructed on the work pad. The concrete bridge will be cast in place. Necessary equipment includes cranes, generators, air compressors and a concrete pump located at each approach.

After the stem and soffit concrete has cured, falsework and reinforcing steel will be placed and the deck poured. A temporary work platform alongside the deck will be built, supported from the falsework. Equipment needed for this work will be placed on the approach fills. Forms, temporary work platform and falsework will be removed after the deck is cured. During concrete pour, the creek will be protected from spillage and other contaminating debris. The bridge

railings will then be constructed, rebar will be placed, standard metal forms secured, and the concrete will be cast.

Following the completion of in-channel work, and prior to October 15, the work pad will be removed as described below. Immediately prior to work pad removal, block nets, or another suitable method identified by a fisheries biologist, will be installed upstream of the work pad to prevent fish from entering the water diversion culverts. The compactable aggregate layer of the pad will be removed and loaded directly onto a truck for transport and disposal at an acceptable location. After all of the compactable aggregate is removed from the top, as much river-run gravel will be removed from the pad as is feasible without encountering water or on-site gravels. River-run gravel will also be removed to expose the water diversion culverts. The culverts will then be lifted out of the channel, starting with the downstream section of each culvert, working back upstream. Each culvert section will be lifted slowly from the upstream end, so that water remaining in the culvert will flow out in the downstream direction. A qualified biologist will be on-site during culvert removal in the unlikely event that any fish remain in the culvert or become stranded by the culvert removal. The biologist will inspect any areas of ponded water created by removal of each section of culvert to ensure they are clear of fish. Then workers using hand shovels will smooth out the gravel to re-establish normal flow through the channel created where the culvert was removed. The remaining river run gravel will be left in the channel to be transported downstream with winter flows. After the pad has been smoothed and the re-established channel has stabilized, all equipment will be removed from below top of bank, along with all surplus materials and debris. The block nets will be removed and fish will be allowed to return to the site.

### 1.3.1 Conservation Measures

Section 1.4.5 of the biological assessment (Caltrans 2019) is incorporated here by reference and describes several construction methods and best management practices that will be implemented to avoid and minimize impacts to listed species and their habitat in the action area including, but not limited to:

- Erosion and Sediment Control
- Prevention of Accidental Spills and Pollution
- Air Quality and Dust Control
- Vegetation Replacement in Riparian Areas – Specifically, onsite restoration will occur in areas that have been disturbed during project construction and within interstitial spaces of the RSP. The amount of habitat created/restored will be at a 3:1 ratio of new plantings per large (6 in. in diameter at breast height) woody plant removed. This replanting ratio will help ensure successful establishment of at least one vigorous native plant for each plant removed.
- Prevention of Spread of Invasive Species.

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

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of

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

## 2.1 Analytical Approach

This biological opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "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(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a ''destruction or adverse modification'' analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not change the scope of our analysis and in this opinion we use the terms "effects" and "consequences" interchangeably.

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

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat,

analyze whether the proposed action is likely to: (1) directly or indirectly reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species, or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

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

2.1.1 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 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: Geysers Road over Big Sulphur Creek Bridge Replacement Project, Sonoma County, CA. 04-SON-0CR. October 2019. (Caltrans 2019).
- CDFW Stream Inventory Report: Big Sulphur Creek. 2006. (CDFW 2006).
- NMFS Final Coastal Multispecies Recovery Plan: CC Chinook Salmon, Northern California Steelhead, CCC Steelhead. West Coast Region, Santa Rosa, CA. October 2016. (NMFS 2016).

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 administrative record of this consultation is on file at the NMFS North-Central Coast Office in Santa Rosa, California (Administrative Record Number 151422WCR2019SR00251).

## 2.2 Rangewide Status of the Species and Critical Habitat

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

This biological opinion analyzes the effects of the proposed action on the following listed species Distinct Population Segment (DPS) and designated critical habitat:

**Threatened Central California Coast (CCC) steelhead**

Listing determination (71 FR 834; January 5, 2006)
Critical habitat designation (70 FR 52488; September 2, 2005).

2.2.1 CCC Steelhead Status

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 Vicente, Pudding, Caspar 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, Williams *et al.* 2011, and Williams *et al.* 2016.

CCC steelhead have experienced serious declines in abundance 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 remain present in most streams throughout the DPS, roughly approximating the known historical range, CCC steelhead likely possess a resilience that is likely to slow their decline relative to other salmonid DPSs or Evolutionarily Significant Units (ESUs) in worse condition. The 2005 status review concluded that steelhead in the CCC steelhead DPS remain "likely to become endangered in the foreseeable future" (Good *et al*. 2005). On January 5, 2006, NMFS issued a final determination that the CCC steelhead DPS is a threatened species, as previously listed (71 FR 834).

A more recent 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

[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).

viable[3] (Spence *et al.* 2008). Although there were average returns (based on the last ten years) of adult CCC steelhead during 2007/08, research monitoring data from the 2008/09 and 2009/10 adult CCC steelhead returns shows a decline in returning adults across their range compared to the last ten years (Jeffrey Jahn, NMFS, personal communication, 2010). The most recent status update concludes that steelhead in the CCC steelhead DPS remains "likely to become endangered in the foreseeable future" (Howe, 2016), as new and additional information available since Williams *et al.* (2011) does not appear to suggest a change in extinction risk.

2.2.2 Status of CCC Steelhead Critical Habitat

In designating critical habitat, NMFS considers, among other things, the following requirements of the species: 1) space for individual and population growth, and for normal behavior; 2) food, water, air, light, minerals, or other nutritional or physiological requirements; 3) cover or shelter; 4) sites for breeding, reproduction, or rearing offspring; and, generally; and 5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of this species (50 CFR 424.12(b)). In addition to these factors, NMFS also focuses on PBFs and essential habitat types within the designated area that are essential to the conservation of the species and that may require special management considerations or protection (81 FR 7414).

PBFs for critical habitat, and their associated essential features within freshwater include:

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

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 currently depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat[4]: logging, agriculture, mining, urbanization, stream channelization and bank stabilization, dams, wetland loss, and water

[3] Viable populations have a high probability of long-term persistence (> 100 years).

[4] Other factors, such as over fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability from such factors as drought and poor ocean productivity.

withdrawals (including unscreened diversions for irrigation). Habitat impacts of concern include altered stream bank and channel morphology, elevated water temperature, lost spawning and rearing habitat, habitat fragmentation, impaired gravel and wood recruitment from upstream sources, degraded water quality/quantity, lost riparian vegetation, and increased sediment delivery into streams from upland erosion (Weitkamp *et al*. 1995; Busby *et al.* 1996; 64 FR 24049; 70 FR 37160; 70 FR 52488). In addition, widespread diverting of rivers and streams, as well as the pumping of groundwater hydraulically connected to stream flow, has dramatically altered the natural hydrologic cycle in many of the streams within steelhead DPSs, which can delay or preclude migration and dewater aquatic habitat.

2.2.3 Additional Threats to Critical Habitat

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

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

For Northern California, most models project heavier and warmer precipitation. Extreme wet and dry periods are projected, increasing the risk of both flooding and droughts (DWR 2013). Estimates show that snowmelt contribution to runoff in the Sacramento/San Joaquin Delta may decrease by about 20 percent per decade over the next century (Cloern *et al.* 2011). Many of these changes are likely to further degrade CCC steelhead habitat by, for example, reducing stream flow during the summer and raising summer water temperatures. Estuaries may also experience changes detrimental to salmonids. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002, Ruggiero *et al.* 2010). In marine environments, ecosystems and habitats important to juvenile and adult salmonids are likely to experience changes in temperatures, circulation, water chemistry, and food supplies (Brewer and Barry 2008; Feely 2004; Osgood 2008; Turley 2008; Abdul-Aziz *et al*. 2011; Doney *et al*. 2012). The projections described above are for the mid to late 21st Century. In shorter time frames, climate conditions not caused by the human addition of carbon dioxide to the atmosphere are more likely to predominate (Cox and Stephenson 2007; Santer *et al.* 2011).

## 2.3 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for the project encompasses the active channel of Big Sulphur Creek where the existing bridge crosses the creek as well as the active channel 30 feet upstream and downstream of the bridge. The action area also includes the road approaches, 150 feet on the southeast side and 275 feet on the northwest side.

## 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).

Big Sulphur Creek and its tributaries drain a basin of approximately 85.43 square miles. Big Sulphur Creek is a fifth order stream and has approximately 22.34 miles of blue line stream, according to the USGS 7.5 minute quadrangles entitled "Cloverdale", "Asti", "The Geysers", "Whispering Pines", "Jimtown", and "Mt. St. Helena". Major tributaries include Hale, Frasier, Little Sulphur, Hot Springs, Cobb and Carpenter Creeks. Elevations range from about 299 feet at the mouth of the creek to 4,498 feet in the headwaters. The creek originates in the northwest slope of Pine Mountain and runs down a narrow and steep "V"-shaped canyon, occasionally opening into shallow valleys. The lower basin is wide and shallow. Oak woodland dominates the watershed followed by shrubland. Riparian vegetation is limited along the entire stream, but especially in the lower reaches. Stream flow in the action area varies from intermittent flow in the summer to high flow events in the winter that reach several thousands of cubic feet per second.

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

*Species in the Action Area*

The current status of natural origin CCC steelhead populations in Big Sulphur Creek is unknown. During electrofishing surveys on Big Sulphur Creek in 2006, roach, sculpin, sucker, and steelhead were found (CDFW 2006). Steelhead likely utilize the action area for spawning and rearing, though elevated stream temperatures during the summer may limit juvenile rearing opportunities. Many juvenile steelhead likely move downstream into the mainstem Russian River where summer stream temperature may be suitable in wet years due to water cold-water releases from Lake Mendocino (SCWA 2003). In most years, juvenile steelhead migrate upstream in search for thermal refugia.

Factors affecting salmonids within the action area are extensive habitat degradation, a long history of artificial propagation with the use of non-native stocks, recent droughts, and poor ocean conditions (Weitkamp et al. 1995). Logging, agriculture and mining activities, urbanization, stream channelization, dams, wetland loss, water withdrawals and unscreened diversions for irrigation have contributed to the decline of salmonids within the Russian River watershed.

*Critical Habitat within the Action Area*

Stream bed incision has reduced salmonid habitat function within the action area. Streambank failure and other geomorphic features affects spawning habitat quality for adult salmonids. Additional impacts due to river incision include the loss bank stability and riparian vegetation and increased stream temperatures which reduces rearing habitat quality for juvenile steelhead. Poor habitat quality in this reach has likely led to reduced numbers of juvenile salmonids utilizing this area and a reduced number of steelhead within this portion of the Russian River watershed.

Habitat conditions throughout the Russian River watershed have been impacted by agricultural development and rural development over the past 150 years. Many landowners have encroached on the floodplain, reduced the riparian areas along the river and many divert stream flow for vineyards and domestic purposes. In general, these actions have created stream conditions throughout the valley reaches of the Russian River tributaries that have less than optimal flows and stressful temperature conditions for juvenile steelhead (Steiner Environmental Consulting 1996). CDFW has conducted many biological inventories of Big Sulphur Creek and results suggest that Big Sulphur has historically been a problem area for salmonids, being highly influenced from the energy development operations waste discharges, high water temperatures and the presence of predacious non-native fish (CDFW 2006).

In October of 2017, a wildfire burned much of the upper watershed. Erosion control measures were implemented in most burned areas, but post fire modeling from the burned areas shows that run-off will increase in smaller sub-basins affected by the Pocket Canyon fire (Calfire 2017). This condition is likely to reduce habitat quality in some affected tributaries and lower stream reaches, while some upper portions of the watershed still provide quality habitat for salmonids.

*Previous Section 7 Consultations and Section 10 Permits in the Action Area*

There are no other section 7 consultations or Section 10 Permits 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. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

### 2.5.1 Impacts to CCC Steelhead

Juvenile CCC steelhead residing within the action area are expected to be directly affected by dewatering, fish relocations, and increased turbidity, and indirectly affected by post project impacts to habitat conditions.

The proposed project may require dewatering and relocation of steelhead during construction period. The stream channel within the project site will be dewatered and fish will be removed and relocated to an appropriate stream reach that will minimize impacts to captured fish as well as fish that are residing at the release site. Fish relocation activities may injure or kill rearing juvenile steelhead because of the associated risk that collecting poses to fish, including stress, disease transmission, injury, or death (Hayes 1983). The amount of 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. The effects of seining and dip-netting on juvenile steelhead include stress, scale loss, physical damage, suffocation, and desiccation. Electrofishing can kill juvenile steelhead, and researchers have found serious sub-lethal effects including spinal injuries (Nielsen 1998, Nordwall 1999). Based on prior experience with current relocation techniques and protocols likely to be used to conduct the fish relocation, unintentional mortality of juvenile CCC steelhead expected from capture and handling procedures is not likely to exceed 3 percent. Mortality from these activities can be reduced to near 1 percent with increased skill and experience of the operator, and field crew conducting the work.

Although sites selected for relocating fish will likely have similar water temperature as the capture site and should have ample habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other native and non-native fishes for available resources such as food and habitat. Some of the fish at the relocation sites may move and reside in areas that have more suitable habitat and lower fish densities. As each fish moves, competition is expected to remain localized to a small area or quickly diminish as fish disperse.

Most of the impacts to CCC steelhead associated with fish relocation is anticipated to be non-lethal, however, a very low number of rearing juveniles (mostly young of the year) captured may be injured or die. The number of CCC steelhead affected by increased competition is not expected to be significant at most fish relocation sites, based upon the suspected low number of relocated fish inhabiting the small project areas.

Effects to CCC steelhead associated with fish relocation activities are expected to be significantly reduced by implementing measures to reduce stress and potential for injury or death (CalTrans 2019). NMFS expects that fish relocation activities associated with this action will not significantly reduce the number of returning CCC steelhead adults. Fish relocation activities will occur during the summer low-flow period after emigrating smolts have left the proposed project site and before adult fish travel upstream in the late fall. Therefore, the majority of CCC steelhead that may be captured will be juveniles, generally young of the year and one-year age classes. Although most mortalities of steelhead during relocation activities are likely to occur almost exclusively at the young of the year stage, there is a potential of unintentional mortality of older age-class fish.

Any steelhead residing within the project stream reach during and immediately after construction activities are completed will likely experience short-lived, sub-lethal behavioral impacts (e.g., reduced feeding efficiency) due to temporarily increased levels of turbidity. These ephemeral turbidity impacts, likely lasting a couple to several hours, are not expected to reduce fish growth as feeding behaviors will quickly resume after the short pulse of turbidity.

The expected habitat loss may impact steelhead fitness and survival at the individual level, but not at the population level. Fish migrating, spawning, or rearing within the action area along the proposed stabilization site will experience degraded aquatic habitat caused by the project for varying durations. The time period during which juvenile or adult CCC steelhead are exposed to elevated turbidity resulting from instream construction will likely be short, approximately several hours. Moreover, the level of turbidity is anticipated to be slightly above background levels and well below levels found to injure or kill steelhead. Impacted fish are more likely to exhibit short-term behavioral effects, such as relocating to avoid the elevated turbidity, or reduced feeding if remaining in the turbid area. Fish that relocate away from the turbid area will likely experience greater feeding efficiency than those that remain. However, this greater efficiency will likely be tempered by increased competition, as fish densities rise within refugia areas. Whether relocating or remaining within the action area, impacts to CCC steelhead due to increased turbidity levels will likely be discountable, due to the short duration of construction activities associated with the proposed project.

2.5.2 Impacts to Critical Habitat

Features of critical habitat for CCC steelhead found within the action area include sites for migration, spawning, and rearing.[5] 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 or large rip-rap (*i.e.* boulders) 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.

Natural fluvial and geomorphic processes are important for maintaining PBFs of critical habitat. Streams transport water and sediment from upland sources to the ocean and, generally speaking, the faster the streamflow, the greater the erosive force. Natural processes constrain and moderate these erosive forces, such as when complex structure both within (*e.g.*, boulders or woody debris) and adjacent (*e.g.*, riparian vegetation) to the stream channel slows the water velocity and, by extension, its erosive force (Knighton 1998). Where existing geology and geomorphology allow, such as within the action area, a stream channel will also naturally "meander", eroding laterally to dissipate its hydraulic energy while creating a sinuous longitudinal course. Stream meandering efficiently regulates the erosive forces by lengthening

[5] See page 10 for a detailed listing of steelhead PBFs and essential habitat types.

the channel and reducing stream gradient, thus controlling the ability of the stream to entrain and transport available sediment. Meandering streams also create and maintain both the hydraulic and physical components of instream habitat used by fish and other aquatic species. For instance, specific to steelhead, a meandering, unconstrained stream channel sorts and deposits gravel and other substrate necessary for optimal food production and spawning success, maintains a healthy and diverse riparian corridor that supplies LWD, and allows floodplain engagement during appropriate winter flows (Spence *et al.* 1996).

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). Bank stabilization composed of rip-rap is typically designed to withstand high streamflow caused by large storm events. The rip-rap structure, and resulting impacts to instream habitat, are everlasting, harming fish generations well into the future. Streambank stabilization impacts not only extend temporally, but altered geomorphic and hydraulic processes can also propagate spatially (both upstream and downstream of hardened bank structures), dependent upon site- and structure-specific characteristics (Henderson 1986 and Arnaud-Fassetta *et al.* 2005, as cited in Florsheim *et al.* 2008), meaning that "bank stabilization often begets more bank stabilization." Rip-rap immediately and permanently replaces a natural earthen streambank, which can provide complex fish habitat (*e.g.*, undercut banks, submerged rootwads, *etc.*) (Fischenich and Copeland 2001), with a relatively simple streambank structure less suitable for juvenile steelhead (Schmetterling *et al.* 2001; Fischenich 2003).

DPW proposes to install 302 sq. feet of RSP placed below the ordinary high water mark and it will be placed below grade to allow the channel to naturally fill with gravel. However, the RSP and the bridge is located at the upstream end of a small alluvial valley. Bedrock outcroppings and steep terrain occupy the area immediately behind the RSP, so habitat gains from the lateral migration that is prevented by RSP is insignificant and discountable. Therefore, the project is unlikely to compromise the value of available critical habitat in the action area for spawning, migrating, and rearing 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). 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. NMFS does not anticipate any cumulative effects in the action area other than those from ongoing actions already described in the Environmental Baseline above.

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 versus cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

## 2.7 **Integration and Synthesis**

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a whole that resulted from implementing the action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (section 2.2), to formulate the agency's biological opinion as to whether the action is likely to: (1) reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminishes the value of designated or proposed critical habitat for the conservation of the species.

The Big Sulphur Creek watershed is part of the Upper Russian River "independent" population, and serves an essential role in CCC steelhead recovery efforts (NMFS 2016). A small number of steelhead inhabiting the action area will experience a higher likelihood of perishing prior to reaching adulthood and spawning, primarily due to reduced fitness and growth brought about by the proposed bank stabilization project construction and its negative impact on instream habitat. However, the anticipated small loss of juvenile steelhead is unlikely to appreciably impact the future survival and recovery at the DPS scale, since adequate quantities of habitat remain within the tributary reaches of the Big Sulphur Creek, where the lost production can be regained.

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

The proposed action will degrade PBFs and essential habitat types in the action area, namely those related to juvenile rearing. Yet, the effects of the proposed action, when added to the environmental baseline, cumulative effects, and species status, are not expected to appreciably reduce the quality and function of critical habitat at the larger CCC steelhead DPS, given the small area being degraded compared to the quality and quantity of habitat within the Russian River watershed. Thus, the proposed action will not impair the ability of critical habitat to play its intended conservation role of supporting populations of CCC steelhead at the DPS level.

## 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 action is not likely to jeopardize the continued existence of CCC steelhead or destroy or adversely modify its designated critical habitat.

## 2.9 Incidental Take Statement

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

### 2.9.1 Amount or Extent of Take

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

NMFS anticipates that the take of juvenile CCC steelhead associated with the construction of a new bridge over Big Sulphur Creek in Sonoma County, California will be in the form of harm, injury, or mortality caused by dewatering, fish relocation, bank stabilization, and increased turbidity levels over a period of four months.

The precise number of CCC steelhead that are likely to be taken by the project cannot always be accurately quantified because steelhead: (1) are relatively small (especially as eggs, alevins, and juveniles); and (2) live in aquatic environments where visibility is often low, hiding cover is often available, and predators feed. In cases where NMFS cannot specify a quantity of individuals that are expected to be incidentally taken by the action, incidental take must be quantified using a surrogate as an extent. Thus, NMFS has used habitat impacts as a surrogate for numbers of steelhead expected to be incidentally taken. Habitat impacts are a reasonable surrogate as we have identified habitat impacts and demonstrated their link to incidental take of listed steelhead in the biological opinion. Therefore, for harm associated with permanent bank stabilization along Sulphur Creek, the linear length of streambank covered by rock armor will serve as an effective take indicator. Specifically, the anticipated take will be exceeded if the total distance of rip-rap rock armor placement is longer than 50 linear stream feet, or the spatial area exceeds 302 sq. feet.

Turbidity releases from construction activities may result in minor reductions in steelhead egg, alevin, fry, and juvenile survival in the Big Sulphur Creek. Information is not available to specifically quantify take that may be associated with turbidity releases nor is information available to quantify an extent of this take using a surrogate such as the duration or timing of construction. In the preceding biological opinion, NMFS has assumed that the overall effect of

turbidity on the steelhead population in Big Sulphur Creek is low, given the small area and short duration of impacts.

In addition, if flowing water is present, Caltrans will relocate juvenile steelhead present in the channel lengths described above. Most juvenile steelhead are expected to be captured and relocated during channel maintenance activities. Some will remain and will be killed during dewatering. Three percent of the juvenile steelhead present are expected to be injured or killed during relocation and dewatering. As described in the biological opinion, the number of steelhead injured or killed is anticipated to be small.

### 2.9.2 Effect of the Take

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

### 2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of CCC steelhead:

1. Measures shall be taken to minimize the amount or extent of incidental take CCC steelhead resulting from fish relocation, dewatering, or instream construction activities.
2. Ensure completion of a monitoring and reporting program to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this ITS are effective in minimizing incidental take.

### 2.9.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and Caltrans or any applicant must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). Caltrans or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this incidental take statement (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.

The following Terms and Conditions implement Reasonable and Prudent Measure 1:

1. The applicant shall retain a qualified biologist with expertise in the areas of steelhead biology, including handling, collecting, and relocating; habitat relationships; and biological monitoring. The applicant shall ensure that all fisheries biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed steelhead. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to the *NOAA Fisheries Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act*, June 2000.

2. The fisheries biologist shall monitor the construction site during placement and removal of cofferdams to ensure that any adverse effects to steelhead are minimized. The biologist shall be on-site during all dewatering events to ensure that all ESA-listed steelhead are captured, handled, and relocated safely. The fisheries biologist shall notify NMFS staff at (707) 575-6069 or jodi.charrier@noaa.gov, one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities. During fish relocation activities the fisheries biologist shall contact NMFS staff at the above number, if mortality of federally listed steelhead exceeds 3 percent of the total collected, at which time NMFS will stipulate measures to reduce the take.

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

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

5. Pumps used to dewater the work area shall be equipped with screens that meet the following NMFS fish screening criteria:

    a. Perforated plate: screen openings shall not exceed 3/32 inches (2.38mm), measured in diameter.
    b. Woven Wire: screen openings shall not exceed 3/32 inches (2.38 mm), measured diagonally.
    c. Screen material shall provide a minimum of 27 percent open area.
    d. Approach velocity shall not exceed 0.33 feet per second.

The following Terms and Conditions implement Reasonable and Prudent Measure 2:

1. The applicant will prepare a vegetation monitoring plan to ensure establishment of streambank vegetation so that the streambank area functions at its maximum potential. Vegetation monitoring plan shall be submitted within 60 days of project conclusion.

2. The applicant will prepare a vegetation monitoring report for the first three years following the project and submit to NMFS annually by April 1. The vegetation monitoring report should include the following:

    a. Project identification-
        i. Permittee name, permit number, and project name.
        ii. Caltrans contact person.
        iii. Start and end dates of monitoring survey.

b. Vegetation condition-
    i. Photos of streambank vegetation conditions at the bridge site before, during, and after project completion. Include general views and close-ups showing details of the project and project area.
    ii. Label each photo with date, time, project name, photographer's name, and a comment about the subject.

c. Vegetation monitoring data-
    i. Dead or dying trees identified during vegetation monitoring survey will be removed and replanted to ensure at least 80% survival of vegetation plantings (including willow planting). Identify the number of dead or dying plants removed and replaced to ensure 80% survival.
    ii. Brief discussion about height and condition of the planted vegetation and contribution to replacement of lost functions (improved forage and natural cover) at the site.

3. The applicant shall submit an implementation monitoring report to NMFS, at the address above, within 30 days of completing all construction work. The implementation monitoring report will include the following information:

d. Project Identification-
    i. Permittee name, permit number, and project name.
    ii. Project location by sixth-field HUC or by latitude and longitude as determined from the appropriate United States Geological Survey 7-minute quadrangle map.
    iii. Caltrans or DPW contact person.

e. Habitat Conditions-
    i. Include photos of the streambank contouring operations for the rip-rap construction. Label each photo with date, time, project name, photographer's name, and a comment about the subject.
    ii. Photos of habitat conditions at the project site before, during, and after project completion. Include general views and close-ups showing details of the project and project area.

f. Project data-
    i. Number of days it takes to complete the construction.
    ii. Total linear length of the new revetment.
    iii. Width of rock placement.
    iv. The number and type of any rootwads placed in the revetment, or any other structures designed to minimize habitat degradation.

Send plans and reports to:

NMFS
Attn. North Coast Branch Supervisor
777 Sonoma Avenue, Room 325
Santa Rosa, CA 95404

## 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 recommends Caltrans purchase conservation bank credits at a NMFS-approved conservation bank for the following: (1) permanent loss of natural streambank and channel processes; and (2) temporary loss of cover and forage habitat due to rip-rap armoring.

## 2.11 Reinitiation of Consultation

This concludes formal consultation for the Project. As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental taking specified in the incidental take statement is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

## 2.12 "Not Likely to Adversely Affect"' Determinations

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. 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. Discountable effects are those extremely unlikely to occur.

NMFS does not anticipate the proposed action will adversely affect:

**Central California Coast (CCC) coho salmon ESU (*O. kisutch*)**
Endangered (70 FR 37160; June 28, 2005)
Critical habitat (64 FR 24049; May 5, 1999);

**California Coastal (CC) Chinook salmon ESU (*O. tshawytscha*)**
Threatened (June 28, 2005; 70 FR 37160).

CCC coho salmon have never been observed in the action area, and though historically may have occasionally been observed in the upper river portion of the Russian River, they have not been observed in several decades, and are currently thought to occupy the Russian River watershed only in the watershed below Healdsburg. CC Chinook salmon are found in the upper Russian River mainstem and lower gradient tributaries, but have not been found in the action area, and would have migrated downstream to the ocean prior to the timing of project operations. Thus, these ESA-listed salmonids are unlikely to be present in the action area during the project's in-water construction activities and the effects of the project's activities are anticipated to be discountable.

Critical habitat has not been designated in the action area for CC Chinook and the action area does not contain PBFs considered essential for the conservation of CCC coho salmon. Therefore, the potential effects of the project are not expected to result in either a net change to existing habitat values or adverse impacts to designated critical habitat for CC Chinook or 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 Caltrans. Other interested users may include DPW. Individual copies of this opinion were provided to Caltrans and DPW. 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.

***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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### 4.1 Federal Register Notices

62 FR 43937: National Marine Fisheries Service. Final Rule: Listing of Several Evolutionary Significant Units of West Coast Steelhead. Federal Register 62:43937-43954. August 18, 1997.

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70 FR 52488: Endangered and Threatened Species; Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California; Final Rule. Federal Register 70:52488-52536. September 2, 2005.

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