



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
West Coast Region  
501 West Ocean Boulevard, Suite 4200  
Long Beach, California 90802-4250

March 5, 2020

Refer to NMFS No: WCRO-2019-03526

Larry Bonner  
California Department of Transportation  
50 Higuera Street  
San Luis Obispo, California 93401

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the Nojoqui Creek  
Bridge Rail Upgrade Project on SR-101, Santa Barbara County (EA: 05-1F790)

Dear Mr. Bonner:

Thank you for your letter dated November 25, 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 California Department of Transportation's (Caltrans) Nojoqui Creek Bridge Rail Upgrade Project. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

The biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of the endangered Southern California Distinct Population Segment of steelhead (*Oncorhynchus mykiss*). NMFS believes the proposed action is likely to result in incidental take of steelhead, therefore, the attached incidental take statement includes the amount and extent of anticipated incidental take with reasonable and prudent measures and non-discretionary terms and conditions to minimize and monitor incidental take of endangered steelhead.

Please contact Jess Adams in Long Beach, California at [jessica.adams@noaa.gov](mailto:jessica.adams@noaa.gov) or (562) 980-4013 if you have a question concerning this consultation or if you require additional information.

Sincerely,

Alecia Van Atta  
Assistant Regional Administrator  
California Coastal Office

Enclosure

cc: Larissa Clarke, District 5 ([Larissa.Clarke@dot.ca.gov](mailto:Larissa.Clarke@dot.ca.gov))  
Copy to ARN File # 15422WCR2018CC00058



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

Nojoqui Creek Bridge Railing Upgrade

NMFS Consultation Number: *WCRO-2019-03526*

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?
Southern California steelhead ( <i>Oncorhynchus mykiss</i> )	Endangered	Yes	No	No	No

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

**Issued By:**



Alecia Van Atta  
Assistant Regional Administrator  
California Coastal Office

**Date:** March 5, 2020

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# **1 INTRODUCTION**

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

## **1.1 Background**

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

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' California Coastal Office, Southern California Branch in Long Beach, California.

## **1.2 Consultation History**

On March 22, 2018, NMFS received from the California Department of Transportation (Caltrans) a request for concurrence that the Nojoqui Creek Bridge Rail Upgrade Project (proposed action) was not likely to adversely affect endangered southern California steelhead (*Oncorhynchus mykiss*). After concluding that the information provided with Caltrans' request was insufficient to begin consultation, NMFS sent a letter dated April 4, 2018, to Caltrans that requested more information. After 30 days of no response from Caltrans, NMFS closed the consultation on May 8, 2018. On May 18, 2018, NMFS received Caltrans' reinitiation request along with additional information. Subsequent correspondences continued to clarify the proposed action until sufficient information was received on May 30, 2018. NMFS issued a letter of concurrence on June 4, 2018.

On November 25, 2019, NMFS received Caltrans' biological assessment and letter requesting reinitiation of consultation due to water being found in the creek during June 2019 surveys. Subsequent changes to the proposed action were made involving dewatering, steelhead relocation, and a condensed timeline. NMFS sent a letter requesting more information regarding the diversion and action area on December 4, 2019. Caltrans responded with the requested information on December 5, 2019, and consultation was initiated the same day.

## **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).

### **1.3.1 Overview of the Proposed Action**

Caltrans proposes to widen both the northbound and southbound bridge structures on State Route

(SR) 101 (No. 51-001S) over Nojoqui Creek to increase safety through replacing the non-standard bridge rail. Construction will occur during one season, with instream construction confined to June 1 through October 31. Best-management practices (BMP) are incorporated into the proposed action and will be implemented when bridge-construction activities are undertaken.

### 1.3.2 Proposed Activities to Prepare the Work Area for Construction

To prepare for construction in dry conditions, vegetation will be cleared to gain access to the stream channel, the work area will be temporarily isolated from surface flow, and any steelhead within the affected area will be relocated.

Equipment access will occur via privately owned land on the southern approach to the northbound bridge. Clearing and grubbing of vegetation will occur in this area for creek access. Temporary vegetation removal will be minimized to the extent feasible and will be restored to pre-construction conditions, including grades and vegetation following completion of the proposed action.

Removing steelhead will involve installing block nets upstream and downstream of the work space. Caltrans proposes that NMFS-approved biologists will enter the work space to capture steelhead with dip nets and subsequently release them downstream of the construction area. Once all steelhead have been removed from the work area, the creek will be dewatered.

The water diversion will include a cofferdam beginning approximately 90-feet from the upstream side of the bridges, continuing 300-feet, and returning to the creek approximately 60-feet from the downstream side of the bridges. The diversion will be roughly 20-feet wide, spanning the width of the creek. The cofferdams will be designed to ensure flows do not overtop or circumvent the dams. Surface flow will be redirected through the work area via a flexible or rigid pipe with water-tight joints that will be installed and aligned with the streambed. Caltrans will ensure the diversion pipe is properly sized to accommodate flows. The diversion may be gravity fed or pumped. The outlet will be designed to match flows to prevent erosion and scour at the outlet. The size of the pipe may be adjusted to accommodate field conditions, but will not exceed 36-inches. These measures will be in place, though Caltrans anticipates that Nojoqui Creek will be dry for the majority of the summer season.

Water born sediment will be captured by pumping water to a temporary sediment basin, adjacent uplands, or use a Baker-tank system for filtration. Dewatering discharge points will be placed downstream of the dewatered area at locations where the discharge will not result in erosion or scour. The sediment basin will be maintained as necessary to ensure adequate functionality. Sediment trapped in the basin will be removed and incorporated into the embankments on the project.

Upon completion of diversion activities, all equipment and infrastructure associated with the diversion will be removed in a manner that will not cause adverse impacts to water quality. Diversion locations will be restored to preexisting conditions.

The following measures will be used to minimize take of steelhead and adverse effects to aquatic habitat during capture-relocation and dewatering activities:

- Caltrans will prepare a Water Pollution Control Plan or a Storm Water Pollution Prevention Plan, which will be implemented during and after construction as necessary to avoid and minimize erosion and stormwater pollution in and near the work area.
- Prior to construction, a qualified biologist will conduct an informal worker environmental training program including a description of steelhead and habitats and avoidance/minimization measures to be implemented during the project.
- A qualified biologist will conduct a preconstruction survey to determine if steelhead may be present in the work area during construction.
- If the biologist determines that protected species may be present in the work area during construction, the biologist will:
  - prepare a fish handling and relocation plan;
  - conduct, monitor, and supervise all fish capture, handling, exclusion, and relocation activities (ensure that sufficient personnel are available to safely and efficiently collect steelhead and that personnel have been properly trained to identify and safely capture and handle steelhead);
  - ensure that steelhead are relocated the shortest distance possible to suitable habitat unaffected by construction activities;
  - initiate salvage activities within temporarily drained waterbodies within a time frame necessary to avoid injury or mortality of steelhead;
  - complete capture, handling, exclusion, and relocation activities no earlier than 24 hours before construction begins to minimize the probability that steelhead will recolonize the area;
  - continuously monitor in-water activities (e.g., placement of cofferdams, dewatering of isolated areas) for the purpose of removing and relocating any steelhead that were not detected or could not be removed and relocated prior to construction.
- During construction, instream work will be limited to the low-flow period from June 1 and October 31, when the surface water is likely to be at seasonal minimum and to avoid adult steelhead spawning migration and peak smolt emigration or outside of that period if the stream channel is dry.
- Instream construction work will only be performed in a dry work environment. Dewatering and clear water diversions will be performed, and upstream and downstream passage of steelhead will be maintained at all times.
- During instream work, if pumps are incorporated to assist in temporarily dewatering the site, intakes will be completely screened with no larger than 3/32-inch (2.38 mm) wire mesh to prevent steelhead from entering the pump system. Pumped water will be directed through a silt-filtration bag and/or into a settling basin allowing the suspended sediment to settle prior to re-entering the stream outside of the dewatered area. All pumps will be checked weekly, at a minimum, by a qualified biologist to ensure a dry work environment and minimize adverse effects to steelhead and aquatic habitats.

### 1.3.3 Proposed Construction Activities

After the work area has been dewatered, Caltrans will remove the existing rock-slope protection (RSP) on the south bank of the creek, widen the bridges, and install new RSP. The southbound

roadway will be shifted two feet to the west to match the new widened configuration. Excavation and drilling for six 4- by 4-foot cast-in-drilled-hole (CIDH) piles will be placed in line with the piles of the existing structures. Four of these piles will be placed below the ordinary high water mark (OHWM), resulting a permanent impact of 64 ft<sup>2</sup>. An additional 4.5-foot diameter CIDH pile will be placed at the southern abutment of the southbound bridge on the creek bank. Pile driving is not proposed and excavated areas will be backfilled. An additional 122-yd<sup>3</sup> of RSP more than the existing amount will be installed to accommodate a 100-year storm event, resulting in a permanent impact to riparian vegetation of 190-ft<sup>2</sup> between the two bridges. No RSP placement below the OHWM is proposed. After the bridges are widened, road features will be constructed including cold planing, rumble strips, new bridge rails, road signs, and striping. Equipment to be used includes trucks, excavators, dump trucks, loaders, backhoes, cranes, drill rig for CIDH piles, concrete truck, concrete pump, man lifts, hoe rams, generators, jack hammers, torches, welding equipment, power saw, auger boring machine and tunnel boring machine or other equipment of similar size and function. The following measures will be implemented to minimize adverse effects to aquatic habitat during construction activities.

- Caltrans will keep demolition debris and construction materials from entering the active channel.
- Spill prevention and cleanup materials will be kept on site at all times during construction and any hazardous-materials spills within the action area will be cleaned immediately.
- Erosion-control measures will be installed, and include silt fencing, fiber rolls, and barriers.
- Cleaning and refueling equipment and vehicles will occur only within a designated staging area. This area will be a minimum of 100 ft from aquatic areas or if the area is less than 100 ft from aquatic areas the area will be surrounded by barriers (e.g. fiber rolls or equivalent).
- Immediately upon completing in channel work, temporary fills, cofferdams, diversions, and other in channel structures will be removed in a manner that minimizes disturbance to downstream flows and water quality.
- All temporary excavations and fills within project limits will be removed in their entirety and the affected areas returned to pre-construction elevations.

#### 1.3.4 Proposed Post-Construction Activities

Following construction of the proposed action, Caltrans proposes to implement a mitigation and monitoring plan (MMP) that includes planting native plant species. The MMP provides Caltrans' approach for the replacement of riparian habitat temporarily and permanently lost as a result to the proposed action. Caltrans has not yet provided the MMP to NMFS; under the proposed action, the MMP is supposed to stipulate that riparian habitat along channel banks would be replaced at a 1:1 ratio for temporary impacts and a 3:1 ratio for permanent impacts, resulting in 0.074 acres of mitigation planting. Plantings will be monitored and maintained to ensure successful revegetation at six months after implementation and then once a year for five years. Maintenance will include weeding, debris removal, replanting if necessary, repair of any vandalism, fertilizing, and/or pest control. Disturbed areas that are not replanted with riparian shrubs or trees will be stabilized and seeded with native grasses and forbs. Plantings will be detailed in Caltrans' Landscape Architecture planting plan. Compensatory mitigation area plantings will be monitored against success criteria for a total of five years from installation.

We considered 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 non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

Designated critical habitat for southern California steelhead does not occur within the action area and therefore no effects to critical habitat are anticipated.

### **2.1 Analytical Approach**

This biological opinion includes a jeopardy analysis which 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.

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



proposed action is likely to: (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 habitat as a whole for the conservation of a listed species.

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

## **2.2 Rangewide Status of the Species and Habitat**

This opinion examines the status of endangered steelhead that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species faces, 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.

### **2.2.1 Status of the Species**

The endangered SC Distinct Population Segment (DPS) of steelhead extends from the Santa Maria River in Santa Barbara County to the Mexican border (inclusive). NMFS characterized the abundance of steelhead in the DPS when the species was originally listed (August 18, 1997, 62 FR 43937) and cited this information as the basis for the re-listing of the SC DPS of steelhead as endangered (May 3, 2006, 71 FR 834). Estimates of historical (pre-1960s) and more recent (1997) abundance show a precipitous drop in numbers of spawning adults for major rivers in the southern California DPS. An updated status report states that the chief causes for the numerical decline of steelhead in southern California include urbanization, water withdrawals, channelization of creeks, human-made barriers to migration, and the introduction of exotic fishes and riparian plants (Good et al. 2005), and the most recent viability assessments and status reviews indicate these threats are essentially unchanged (NMFS 2011; Williams et al. 2011; NMFS 2016; Williams et al. 2016). Historical data on steelhead numbers for this region are sparse. The historic and recent steelhead abundance estimates, and percent decline are summarized in Table 1. The run-size estimates illustrate the severity of the numerical decline for the major rivers within range of the SC DPS of steelhead (Good et al. 2005; NMFS 2011; Williams et al. 2011; NMFS 2016; Williams et al. 2016).

Stream surveys to document the species' current pattern of occurrence concluded that of the 46 watersheds in the DPS which steelhead occupied historically, *O. mykiss* currently occupy only about 40% to 50% of these watersheds (Boughton et al. 2005). Fish surveys by NOAA's Southwest Fisheries Science Center (SWFSC), direct observations by NMFS biologists, and anecdotal information from local biologists working on major rivers and creeks throughout the DPS suggest that although steelhead populations continue to persist in some coastal watersheds, the population numbers are exceedingly small (Good et al. 2005; Williams et al. 2011; Williams et al. 2016). On a positive note, there have been observations of steelhead recolonizing vacant watersheds during years with abundant rainfall, notably San Mateo Creek and Topanga Creek (Good et al. 2005; Bell et al. 2011) including a recent observation of *O. mykiss* in San Mateo Creek (NMFS 2017). Also, California Department of Fish and Wildlife discovered an adult

female steelhead (TL 57.46 cm) on April 26, 2013, during a flow-rate survey in Conejo Creek (Camarillo, California).

NMFS reviews the status and viability of the SC DPS of steelhead on the basis of available information (including new information) about the species abundance, population growth rate, spatial structure, and diversity (McElhany et al. 2000) every five years as required by the ESA. In the last two status reviews, NMFS concluded that the risk of extinction of the endangered SC DPS of steelhead was unchanged (NMFS 2011; NMFS 2016).

Table 1. Historical and recent abundance estimates of adult steelhead in the Southern California DPS. Data are from Good et al. (2005), (NMFS 2011), and NMFS SWR redd surveys 2009-2011 (R. Bush, NMFS, personal communication).

	<b>Pre-1950</b>	<b>Pre-1960</b>	<b>1990s</b>	<b>2000s</b>	<b>Percent Decline</b>
Santa Ynez River	20,000-30,000		< 100		99
Ventura River		4,000-5,000	< 100	< 100	96
Santa Clara River		7,000-9,000	< 100	< 10	99
Malibu Creek		1,000	< 100		90

#### 2.2.1.1 General Life History of Steelhead

*O. mykiss* possesses an exceedingly complex life history (Behnke 1992). Distinctly different than other Pacific salmon, steelhead adults can survive their first spawning and return to the ocean to reside until the next year to reproduce again. For returning adults, the specific timing of spawning can vary by a month or more among rivers or streams within a region, occurring in winter and early spring. The spawning time frames depend on physical factors such as the magnitude and duration of instream flows and sand-bar breaching. Once they reach their spawning grounds, females will use their caudal fin to excavate a nest (redd) in streambed gravels where they deposit their eggs. Males will then fertilize the eggs and, afterwards, the females cover the redd with a layer of gravel, where the embryos (alevins) incubate within the gravel. Hatching time can vary from approximately three weeks to two months depending on surrounding water temperature. The young fish (fry) emerge from the redd two to six weeks after hatching. As steelhead begin to mature, juveniles or "parr" will rear in freshwater streams anywhere from 1-3 years. Juvenile steelhead can also rear in seasonal coastal lagoons or estuaries of their natal creek, providing over-summering habitat.

Juvenile steelhead emigrate to the ocean (as smolts) usually in late winter and spring and grow to reach maturity at age 2-4, but steelhead can reside in the ocean for an additional 2-3 years before returning to spawn. The timing of emigration is influenced by a variety of parameters such as photoperiod, temperature, breaching of sandbars at the river's mouth and streamflow. Extended droughts can cause juveniles to become landlocked, unable to reach the ocean (Boughton et al. 2006).

Through studying the otolith (ear stone) microchemistry of *O. mykiss*, researchers further understand the complex and intricate life history of steelhead. Specifically, resident rainbow trout can produce steelhead progeny; likewise, steelhead can yield resident rainbow trout

progeny (Zimmerman and Reeves 2000). Additionally, evidence indicates that sequestered populations of steelhead (e.g., above introduced migration barriers) can exhibit traits that are the same or similar to anadromous specimens with access to the ocean. Examples include inland resident fish exhibiting smolting characteristics and river systems producing smolts with no regular access for adult steelhead. This evidence suggests the ecological importance of the resident form to the viability of steelhead and the need to reconnect populations upstream and downstream of introduced migration barriers. The loss or reduction in anadromy and migration of juvenile steelhead to the estuary or ocean is expected to reduce gene flow, which strongly influences population diversity (McElhany et al. 2000). Evidence indicates genetic diversity in populations of southern California steelhead is low (Girman and Garza 2006).

#### 2.2.1.2 Steelhead Habitat Requirements

Habitat requirements of steelhead generally depend on the life history stage. Steelhead encounter several distinct habitats during their life cycle. Water discharge, water temperature, and water chemistry must be appropriate for adult and juvenile migration. Suitable water depth and velocity, and substrate composition are the primary requirements for spawning. Furthermore, dissolved oxygen concentration, pH, and water temperature are factors affecting survival of incubating embryos. The presence of interspatial area between large substrate particle types is important for maintaining water-flow through the nest as well as dissolved oxygen levels within the nest. These spaces can become filled with fine sediment, sand, and other small particles. Additionally, juveniles need abundant food sources, including insects, crustaceans, and other small fish. Habitat must also provide places to hide from predators, such as under logs, root wads and boulders in the stream, and beneath overhanging vegetation. Steelhead also need places to seek refuge from periodic high-flow events (side channels and off channel areas), and may occasionally benefit from the availability of cold-water springs or seeps and deep pools during summer. Estuarine habitats can be utilized during the seaward migration of steelhead, as these habitats have been shown to be nurseries for steelhead. Estuarine or lagoon habitats can vary significantly in their physical characteristics from one another, but remain an important habitat requirement as physiology begins to change while juvenile steelhead become acclimated to a saltwater environment.

Perennial streams with conditions suitable for steelhead are fewer in the southern portion of the DPS compared to the northern portion. Some of this is due to the amount of coastal development and because there is generally less rainfall in the southern region. During the summer many creeks at the southern edge of the range become intermittent in sections or dry completely (in some cases this occurrence is natural and in other cases it is due to anthropogenic factors), and stream temperatures may become a factor in terms of suitability for rearing steelhead. Overall, steelhead over-summering habitat is thought to have a restricted distribution more so than winter spawning and rearing habitat in the SC steelhead DPS (Boughton et al. 2006).

While many streams in the DPS have been found to have high conservation value for survival and recovery of the species, the spawning, rearing, and migratory habitat within the DPS are heavily impacted by dams, diversions, and human development. As a result, much of the available habitat has become severely degraded, and habitat degradation has been a main contributing factor to the current endangered status of the DPS (Good et al. 2005). The most recent status reviews found that these threats have remained essentially unchanged (Williams et

al. 2011; NMFS 2016; Williams et al. 2016). Habitat for steelhead has suffered destruction and modification, and anthropogenic activities have reduced the amount of habitat available to steelhead (Nehlsen et al. 1991; NMFS 1997; Boughton et al. 2005; NMFS 2006). In many watersheds throughout the range of the SC DPS, the damming of streams has precluded steelhead from hundreds of miles of historical spawning and rearing habitats (e.g., Twitchell Reservoir within the Santa Maria River watershed, Bradbury Dam within the Santa Ynez River watershed, Matilija Dam within the Ventura River watershed, Rindge Dam within the Malibu Creek watershed, Pyramid Dam and Santa Felicia Dam on Piru Creek). These dams created physical barriers and hydrological impediments for adult and juvenile steelhead migrating to and from spawning and rearing habitats. Likewise, construction and ongoing impassable presence of highway projects have rendered habitats inaccessible to adult steelhead (Boughton et al. 2005).

Within stream reaches that are accessible to this species (but that may currently contain no fish), urbanization (including effects due to water use) have in many watersheds eliminated or dramatically reduced the quality and amount of living space for juvenile steelhead. The number of streams that historically supported steelhead has been dramatically reduced (Good et al. 2005). Groundwater pumping and diversion of surface water contribute to the loss of habitat for steelhead, particularly during the dry season (e.g., NMFS 2005; see also Spina et al. 2006). The extensive loss and degradation of habitat is one of the leading causes for the decline of steelhead abundance in southern California and listing of the species as endangered (NMFS 1997, 2006).

A significant amount of estuarine habitat has been lost across the range of the DPS with an average of only 22-percent of the original estuarine habitat remaining (Williams et al. 2011). The condition of these remaining wetland habitats is largely degraded, with many wetland areas at continued risk of loss or further degradation. Although many harmful practices have been halted, much of the historical damage remains to be addressed and the necessary restoration activities will likely require decades. Many of these threats are associated with the larger river systems such as the Santa Maria, Santa Ynez, Ventura, Santa Clara, Los Angeles, San Gabriel, Santa Ana, San Luis Rey, Santa Margarita, San Dieguito, and San Diego rivers, but they also apply to smaller coastal systems such as Malibu, San Juan, and San Mateo creeks. Overall, these threats have remained essentially unchanged for the DPS as determined by the last status review (NMFS 2016) though some individual, site specific threats have been reduced or eliminated as a result of conservation actions such as the removal of small fish passage barriers.

#### 2.2.1.3 Influence of a Changing Climate on the Species

One factor affecting the rangewide status of endangered steelhead, and aquatic habitat at large, is climate change. For the Southwest region (southern Rocky Mountains to the Pacific Coast), the average temperature has already increased roughly 1.5°F compared to a 1960-1979 baseline period. High temperatures will become more common, indicating that southern California steelhead may experience increased thermal stress even though this species has shown to endure higher than preferable body temperatures (Spina 2007).

Precipitation trends are also important to consider. The Southwest region, including California, showed a 16 percent increase in the number of days with heavy precipitation from 1958 to 2007. Potential impacts to southern California steelhead in freshwater streams include damage to spawning redds and washing away of incubating eggs due to higher winter stream flow

(USGCRP 2009), and poor freshwater survival due to longer and warmer periods of drought (Hanak et al. 2001; Mastrandrea and Luers 2012), which may lead to lower host resistance of steelhead to more virulent parasitic and bacterial diseases (McCullough 1999; Marcogliese 2001). Snyder and Sloan (2005) projected mean annual precipitation in southwestern California to decrease by 2.0 cm (four percent) by the end of the 21st century.

Wildfires periodically burn large areas of chaparral and adjacent woodlands in autumn and winter in southern California (Westerling et al. 2004). Increased wildfire activity over recent decades reflects sub-regional responses to changes in climate, specifically observations of warmer and earlier onset of spring along with longer summer-dry seasons (Westerling et al. 2004; Westerling and Bryant 2008).

The Thomas Fire impacted SC steelhead viability through direct and indirect effects to physical and biological features (PBF) mainly in the Ventura River Watershed relative to the Santa Clara River Watershed. The fire burned nearly 80 miles of designated critical habitat. In general, fire impacts include changes in geomorphology (e.g., sediment filled pools and riffles), decreased pool depth, increased solar radiation owing to losses in riparian cover, changes in water quality, increased dissolved nutrients and pH, and changes in pool:riffle ratios (Dunham et al. 2003; Earl and Blinn 2003; Aha et al. 2014). However, these effects may be pronounced or muted depending on the fire burn severity, timing of subsequent rainfalls (e.g., January 9, 2018, storm event), intensity and duration of ensuing rains, and volume of debris and sediment entering streams.

After a fire disturbance, decreased water quality and loss of SC steelhead habitat can be facilitated by the following physical, chemical and biological changes (USFS 2018):

- Increased surface flows resulting in flooding
- Increased sedimentation leading to changes in food web structure, reducing primary productivity, with effects to grazers and other benthic macroinvertebrates and their predators (e.g., fish)
- Changes to water quality and chemistry due to ash, smoke, nutrients, and hazardous materials
- Increased water temperature due to reduction/elimination of riparian cover and increased fine sediment loads
- Scouring of riparian/aquatic vegetation
- Changes in streambed/pool habitat due to geomorphic movement (debris flows)
- Mass failure of culverts leading to stream habitat degradation
- Flushing and extirpation of aquatic biota with limited ability to recolonize rivers, including fish, downstream during and after flood events, respectively.

Debris flows are among the most hazardous consequences of rainfall on burned hillslopes (WERT 2018). The January 9, 2018, storm event triggered a debris flow when Matilija Canyon received approximately six inches of rain in 24 hours. This storm event initiated several debris flows within the Santa Ynez Mountains, and consequently inundated areas within Montecito and Carpinteria in Santa Barbara County. The overall peak runoff throughout impacted areas will likely increase relative to unburned areas for the 2-year and 10-year recurrence intervals.

The Thomas Fire affected 11% of total designated critical habitat within the range of the SC DPS of steelhead; burned critical habitat was mainly in the Ventura River Watershed (56%) and to a lesser degree in the Santa Clara River Watershed (18%). Indirect effects from the fire (e.g., mudflow, mudslides) likely increase the extent and amount of habitat destruction downstream to the estuary-ocean interface by altering PBFs essential to the conservation of a species including a delay in development of such features, which the species relies upon during various life stages.

Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia et al. 2002). Additionally, upper ocean temperature is the primary physical factor influencing the distribution of steelhead in the open ocean, and a warming climate may result in a north-ward shift in steelhead distribution (Myers and Mantua 2013).

In summary, observed and predicted climate-change effects are generally detrimental to the species, given the unprecedented rate of change and uncertainty about the ability to adapt, so unless offset by improvements in other factors, status of the species and critical habitat is likely to decline over time. The climate change projections referenced above cover the time period between the present and approximately 2100. In general, climate change projections cannot be distinguished from annual and decadal climate variability for approximately the first 10 years of the projection period (see Cox and Stephenson 2007). While there is uncertainty associated with projections beyond 10 years, which increases over time, the direction of change is relatively certain (McClure et al. 2003).

### **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 proposed action will take place in Nojoqui Creek which provides habitat for SC steelhead. No critical habitat has been designated in Nojoqui Creek, however, less than a mile from the project site, the creek flows into the Santa Ynez River, which is designated critical habitat for the species. The action area includes the linear extent (upstream and downstream) of the Hwy 101 Bridge at Nojoqui Creek and encompasses the riparian corridor to the top of the bank. The action area extends from 100 feet upstream of the diversion to about 500 feet down stream of the diversion where temporary sedimentation effects due to the proposed action are anticipated to cease. The approximate length of Nojoqui Creek within the action area is 900 feet. This section of the creek is expected to be dry during some or all of the proposed action due to the intermittent nature of the creek.

### **2.4 Environmental Baseline**

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

#### 2.4.1 Status of Steelhead in the Action Area

Steelhead are anticipated to be in low abundance within the action area. Migrant trapping and snorkel surveys observed 1-3 steelhead in 1995, 1997, and 1998 (SYRAMC 2009). The lower portion of Nojoqui Creek is intermittent and typically dry most of the year. Caltrans observed surface water in June 2019 after a wet winter, though no steelhead were observed. During wetter years that sustain flows in Nojoqui Creek there is a potential for steelhead to migrate through the action area. NMFS estimates that there may be up to 5 juvenile steelhead in the action area if water is present. Adult steelhead are not expected to be present within the action area during the time of construction activities (June 1 to October 31).

#### 2.4.2 Status of Habitat in the Action Area

Aquatic habitat within the action area consists of pool and riffle, and the channel bed is sandy and includes small cobble. The lower portion of Nojoqui Creek provides poor quality habitat for steelhead, but there is potential spawning and rearing habitat farther upstream (SYRAMC 2009; Becker et al. 2010). The 16 mi<sup>2</sup> watershed is dominated by private ranchland and crossed several times by Hwy-101 (Block and Francis 2013). There is a culvert that is a total barrier to steelhead 5.6 miles upstream of the confluence with the Santa Ynez (PAD<sup>1</sup> ID 705154) and a natural barrier caused by a waterfall 4.1 miles upstream of the culvert (PAD ID 720414). Riparian vegetation within the action area mainly consists of chamise chaparral (*Adenostoma fasciculatum*), mulefat thickets (*Baccharis salicifolia*), annual grasslands (*Bromus*), and coast live oak woodland (*Quercus agrifolia*). Nojoqui Creek is classified as a perennial stream, but the lower portion that contains the action area is intermittent. Groundwater pumping in the area may be causing a significant portion of Nojoqui Creek to dry (Becker and Reining 2008). The reach involved in the proposed action mainly functions as a migratory corridor for steelhead when water is present. In the action area, the threat to SC steelhead from climate change is likely to include a continued increase in summer air temperatures, more extreme heat waves, and an increased frequency in drought (McClure et al. 2003).

#### 2.4.3 Factors Affecting Species Environment in the Action Area and Vicinity

##### 2.4.3.1 Road Encroachment

Highway 101 traverses the creek within the action area and crosses several more times throughout the watershed. The location of the roads and ranches likely results in runoff from the road surfaces entering the creek during rainstorms, and a related reduction in water quality within the action area to an unknown degree. Runoff from road surfaces can contain dirt, oils, automotive fluids, and petro chemicals that are harmful to aquatic life, including steelhead (Spence et al. 1996). The road and the limited rural development located along the creek within the action area have contributed to the confinement of the stream channel and diminished the breadth of riparian vegetation.

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<sup>1</sup> California's fish Passage Assessment Database (PAD).

#### 2.4.3.2 Agricultural Development

Cultivated fields and open farmlands are located upstream of the action area on Nojoqui Creek and the upper portion of the watershed is in Los Padres National Forest. Agricultural conversions of floodplains are recurring sources of threats to instream habitat. There is potential for increased turbidity or nutrient loading due to runoff from agriculture areas adjacent to the creek. High turbidity concentrations can cause fish mortality, reduce fish feeding efficiency and decrease food availability (Berg and Northcote 1985; McLeay et al. 1987; Gregory and Northcote 1993; Velagic 1995). Agricultural runoff can transfer nutrients and pesticides to the creek, which can in turn lower dissolved oxygen levels by increasing algae growth in streams and decreasing forage for steelhead (Spence et al. 1996).

### 2.5 Effects of the Action

Under the ESA, “effects of the action” are all consequences to listed species or 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 Temporarily Altering Aquatic Habitat

Installing the water diversion in the work area is expected to temporarily prevent about 300 ft of Nojoqui Creek from serving as a freshwater migration corridor for endangered steelhead for up to five months during the dry season (June 1 through October 31). The temporary loss of habitat is expected to have at least a few consequences, described as follows.

The temporary loss of habitat is expected to translate into temporary loss of aquatic macroinvertebrate forage within the action area. Aquatic insects provide a source of food for instream fish populations and may represent a substantial portion of food items consumed by juvenile steelhead. Effects to aquatic macroinvertebrates resulting from stream flow diversions and dewatering will be temporary because construction activities will be temporary, and rapid recolonization (about one to two months) of the restored channel area by macroinvertebrates is expected following re-watering (Cushman 1985; Thomas 1985; Harvey 1986). In addition, the effect of macroinvertebrate loss as a food source is expected to be negligible because food from upstream sources would be available downstream of the isolated area via drift and this section of creek is typically naturally dry during most of the season of the proposed action. Consequently, the temporary loss of aquatic macroinvertebrates as a result of dewatering activities is not expected to adversely affect forage opportunities within the area over the long term.

The temporary loss of habitat due to dewatering activities represents an adverse effect to habitat for steelhead, for at least a few reasons. First, the loss of habitat translates into a loss of a freshwater migration corridor, which is essential for the growth and survival of juvenile steelhead (the life stage expected to be present at the time the proposed action is implemented). Without freshwater migration corridors, the habitat cannot fulfill the intended conservation role for the species. Second, the quality and availability of habitat in the action area has already been



diminished and reduced due to a number of anthropogenic factors. Therefore, the loss of habitat due to dewatering represents further loss of habitat. However, the area impacted by the diversion is relatively small compared to the amount and extent of habitat available elsewhere in Nojoqui Creek and, perhaps more importantly, the diversion will be removed following completion of the proposed action and the creekbed will be restored to pre-project conditions. Freshwater migration corridors upstream and downstream of the action area will be unaffected by the proposed action and, therefore, continue providing the intended conservation role for the species. Overall, the loss of aquatic habitat associated with the water diversion will be temporary, and no long-term diminishment is anticipated from the proposed action in the physical capacity of the habitat to serve the intended functional role for steelhead.

#### 2.5.2 Disturbance to the Creekbed

Although manipulation and disturbance of the creekbed can result in changes to channel morphology and hydraulic conditions that may create impediments to steelhead migration, review of the proposed action indicates the footprint and alignment of the new bridge are not expected to result in any substantive changes to channel morphology. As a result the habitat characteristics and conditions that are important to sustain steelhead migration through this reach are expected to remain the same. The increase of RSP on the streambanks is above the OHWM and is not expected to result in a loss of habitat. The existing rearing conditions in the action area are influenced by the lack of pools during the dry season. Therefore, the increase of RSP along the creekbank is not expected to diminish the overall functional value of rearing habitat within the action area. Based on these findings, the proposed action is not anticipated to appreciably reduce the functional value of the action areas as sites of freshwater migration or rearing.

#### 2.5.3 Alteration of Water Quality

NMFS does not expect acute or chronic effects on aquatic habitat or steelhead in Nojoqui Creek because increases in sedimentation and turbidity levels resulting from construction activities are expected to be minimal and temporary, for a few reasons. First, the proposed action includes a number of sediment and erosion-control measures to reduce the likelihood that sediment would be introduced to the wetted area such as silt fencing, fiber rolls, and barriers. These measures are expected to minimize the effects of sedimentation and turbidity on water quality. Second, the success of these measures has been documented during other similar projects (J. Ogawa, NMFS, 2019, personal communication). NMFS expects that the disturbance on the creekbanks will not result in increases in sedimentation or turbidity concentrations that would adversely affect habitat.

Although the proposed action has the potential for temporary chemical contamination of Nojoqui Creek from machinery (e.g., fuels, oils, etc.) and drilling mud, such contamination is discountable due to BMPs. For instance, the BMPs require that all equipment is free of leaks, and that refueling, maintenance, and staging occur at least 100-feet from the creek. Additionally, the BMPs require all hazardous material spills be cleaned up immediately.

#### 2.5.4 Disturbance to Streamside Vegetation

The proposed action has the potential to temporarily cause a discrete loss of shade and cover along Nojoqui Creek. This loss has the potential to translate into increased water temperatures

(Mitchell 1999; Opperman and Merenlender 2004) and decreased water quality (Lowrance et al. 1985; Welsch 1991). However, the loss of vegetation as a result of the proposed action is expected to be temporary and confined to a small localized area. In addition, riparian vegetation will be replanted throughout the disturbed areas to minimize impacts from project construction. Based on NMFS' experience observing the response of riparian vegetation to human-made disturbances (J. Ogawa, NMFS 2019, personal communication), the riparian zone is expected to recover from the project one to two years following the completion of construction. Although Caltrans proposes to monitor replanted areas within the action area following completion of the project, the proposed action does not include a provision to notify NMFS of the success of the proposed plantings over time. Overall, the small amount of riparian vegetation temporarily affected by the proposed action is not expected to diminish the overall functional value of the migratory corridor within the action area.

#### 2.5.5 Effects of the Action on Endangered Steelhead

The expected effects of the action on endangered steelhead are related to the proposed dewatering in Nojoqui Creek within the action area to facilitate construction in the dry. Although a general work window is proposed, there is no clear proposed reporting to keep NMFS up to date on actual construction time frames and effects to steelhead. What follows is a discussion of these effects, including discussion of the expected effects due to the proposed capture and relocation of steelhead.

Although dewatering the action area has the potential to harm or kill rearing juvenile steelhead, the proposed action includes precautions to reduce the likelihood of harm and mortality to juvenile steelhead within the isolated area. Prior to dewatering, the workspace will be isolated with block-nets and then biologists will capture and relocate steelhead to the nearest suitable habitat downstream of the work space, though suitable habitat is not described by Caltrans. Sites selected for relocating juvenile steelhead should have ample habitat, but relocated fish may compete with other fish, potentially increasing competition for available food and habitat (Keeley 2003). Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas, is expected to be temporary, because when the proposed action is finished steelhead will be able to colonize the area that had been dewatered. The proposed action does not include a description of how suitable relocation sites would be identified or evaluated, or a provision to address the potential effects of crowding on steelhead.

In the event one or more steelhead are missed by the biologists and stranded in the dewatered area, steelhead mortality is likely. However, Caltrans proposes that biologists will be approved by NMFS, and will continuously monitor the placement of the diversion and dewatering in order to capture and relocate any stranded steelhead. Although Caltrans will document the capture and relocation of juvenile steelhead within the isolated area, the proposed action does not include a provision to notify NMFS of the number of steelhead that may be harmed or injured as a result of the proposed action.

The temporary loss of habitat owing to dewatering could translate into an adverse effect on juvenile steelhead, chiefly through the short-term loss of a freshwater corridor and displacement of steelhead, presuming presence of this species. This could increase densities of steelhead in neighboring reaches of the creek outside the action area. However, based on our observations of

the creek upstream and downstream of the action area, and our general familiarity of steelhead abundance, we anticipate that the lower portion of Nojoqui Creek will be dry for several months during the summer and therefore dewatering will be a minor extension of this occurrence. In addition, the diversion will contain pipes that will allow steelhead movement between habitats upstream and downstream of the isolated area while water is still present, which appear to be similar quality as the affected area. The diversion would be removed and the site restored to pre-project conditions following completion of the proposed action. Overall, we anticipate the presence of the water diversion would affect only a small number of steelhead for a relatively short period of time during the dry season, with the effect primarily limited to an increased potential for crowding in neighboring reaches.

The effect of macroinvertebrate loss on juvenile steelhead is expected to be negligible because food from upstream sources would be available downstream of the isolated area via drift. Consequently, the temporary loss of aquatic macroinvertebrates as a result of the presence of the diversion is not expected to adversely affect steelhead

Based on steelhead survey results of steelhead in the vicinity of the action area on Nojoqui Creek, NMFS expects no more than 5 juvenile steelhead will need to be relocated from the dewatered area. NMFS expects that 1 juvenile steelhead may be injured or killed as a result of the proposed action. This estimated mortality is based on NMFS' experience and knowledge gained on similar projects in Santa Barbara County during the last several years. Based on NMFS' general familiarity of steelhead abundance in southern California in general, and Santa Barbara County streams in particular, the anticipated number of juvenile steelhead that may be injured or killed as a result of the proposed action is likely to represent a small fraction of the overall watershed-specific populations and the entire SC DPS of endangered steelhead. Therefore, the effects of the relocation on steelhead are not expected to give rise to population-level effects.

## **2.6 Cumulative Effects**

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

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

## **2.7 Integration and Synthesis**

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we

add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminishes the value of designated or proposed critical habitat for the conservation of the species.

Juvenile steelhead are expected to be present in the action area during the time the proposed action will be implemented and, therefore, subject to effects of the proposed action. The main risk to individual steelhead involves effects due to capture and relocation. The adverse effects include potential injury or mortality during the process of capture and relocation during dewatering activities, but precautions are in place to minimize, if not eliminate, the risk of injury and mortality, and downstream habitats are expected to suitably harbor the relocated steelhead. The expected effects associated with the habitat alteration due to dewatering will be short lived and localized.

Based on steelhead surveys and observations described in the environmental baseline section, NMFS concludes non-lethal take of no more than 5 juvenile steelhead that may be captured and relocated each construction season as a result of dewatering the action area, with a potential lethal take of no more than 1 out of the 5, thus the risk of mortality is low. Any juvenile steelhead present in the action area likely make up a small proportion of the SC DPS of steelhead.

Overall, the impacts to habitat are expected to be temporary and not translate into a reduction in the functional value of the habitat in the long term. The replanted areas are expected to create a functional riparian zone that provides cover for steelhead within the action area of Nojoqui Creek. Additionally, the MMP will provide sufficient mitigation and enhancement of sensitive habitats to mitigate for permanent loss due to the proposed action. The impacts from disturbing the streambed are not expected to adversely affect the quality or quantity of aquatic habitat; rather, the proposed action is expected to maintain steelhead passage conditions in the localized area. Maintained passage conditions are expected to favor the viability of the endangered SC DPS of steelhead.

The action area could be subject to higher average summer temperatures and lower precipitation levels in the future as a result of climate change, which would lead to warmer creek temperatures and longer dry periods. Reductions in the amount of precipitation would reduce the amount and extent of flow. For this project, the above effects of climate change are unlikely to be detected by the time construction is completed. The short-term effects of the proposed action would have completely elapsed prior to these climate change effects. The long-term changes in the channel at the bridge site are confined to small areas and are unlikely to significantly magnify the likely climate change impacts.

## **2.8 Conclusion**

After reviewing and analyzing the current status of the listed species, 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 southern California steelhead. No critical habitat has been designated within the action area for this species; therefore, none was analyzed.

## **2.9 Incidental Take Statement**

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

### **2.9.1 Amount or Extent of Take**

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows: All steelhead within the action area, expected to be no more than 20 juveniles that are captured or harassed during project activities. No more than 2 juvenile steelhead are expected to be injured or killed as a result of dewatering the action area and relocating the species. No other incidental take is anticipated as a result of the proposed action. The accompanying biological opinion does not anticipate and form of take that is not incidental to the proposed action.

### **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.

### **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 and monitor incidental take of steelhead. The results of the analysis provide the basis for the following reasonable and prudent measures:

1. avoid and minimize harm and mortality of steelhead during relocation and dewatering activities;
2. prepare and submit a post-construction report regarding the effects of fish relocation and construction activities.

#### 2.9.4 Terms and Conditions

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

1. The following terms and conditions implement reasonable and prudent measure 1:
  - a. Caltrans' biologist shall identify and evaluate the suitability of steelhead relocation habitat(s) prior to undertaking dewatering activities to isolate the work area from flowing water. The biologist shall evaluate potential relocation sites based on attributes such as adequate water quality (a minimum dissolved oxygen level of 5 mg/L and suitable water temperature), cover (instream and overhanging vegetation or woody debris), and living space. Multiple relocation habitats may be necessary to prevent overcrowding of a single habitat depending on the number of steelhead captured, current number of steelhead already occupying the relocation habitat(s), and the size of the receiving habitat(s). One or more of the following methods shall be used to capture steelhead: seine, dip net, minnow trap, or by hand.
  - b. Captured salmonids will be relocated as soon as possible to an instream location in which suitable habitat conditions are present to allow for adequate survival for transported fish and fish already present. Fish will be distributed between multiple pools if biologists judge that overcrowding may occur in a single pool.
  - c. Caltrans shall contact NMFS (Jess Adams, 562-980-4013) immediately if one or more steelhead are found dead or injured. The purpose of the contact shall be to review the activities resulting in take and to determine if additional protective measures are required. All steelhead mortalities shall be retained, frozen as soon as practical, and placed in an appropriate-sized sealable bag that is labeled with the date and location of the collection and fork length and weight of the specimen(s). Frozen samples shall be retained by the biologist until additional instructions are provided by NMFS. Subsequent notification must also be made in writing to Jess Adams, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, California 90802 within five days of noting dead or injured steelhead. The written notification shall include 1) the date, time, and location of the carcass or injured specimen; 2) a color photograph of the steelhead; 3) cause of injury or death; and 4) name and affiliation of the person whom found the specimen.
2. The following terms and conditions implement reasonable and prudent measure 2:
  - a. Caltrans shall provide a written report to NMFS by January 15 of the year following the construction season. The report shall be sent to Jess Adams, NMFS, 501 West Ocean Boulevard, Suite 4200, Long Beach, California 90802.

The reports will contain, at a minimum, the following information:

- i. **Construction related activities** – The report will include the dates construction began and was completed; a discussion of any unanticipated effects or unanticipated levels of effects on steelhead, 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 steelhead; the number of steelhead killed or injured during project construction; and photographs taken before, during, and after the activity from photo reference points.
- ii. **Fish Relocation** – The report will include (1) the number and size of all steelhead relocated during the proposed action; (2) the date and time of the collection and relocation; (3) a description of any problem encountered during the project or when implementing terms and conditions; and (4) any effect of the proposed action on steelhead that was not previously considered.
- iii. **Revegetation** – The report will include a description of the locations seeded or planted, the area revegetated, proposed methods to monitor and maintain the revegetated area, criteria used to determine the success of the plantings, and pre-and post-planting color photographs of the revegetated area. Caltrans shall provide the results of the vegetation monitoring by January 15 following completion of each annual site inspection for up to five years following completion of the project as described in the proposed action. Each report shall include color photographs taken of the project area during each inspection and before implementation of the proposed action.

## **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 related to the proposed action considered in this biological opinion.

## **2.11 Reinitiation of Consultation**

This concludes formal consultation for the Nojoqui Creek Bridge Railing Upgrade Project on Highway 101. As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner

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

### **3 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 users of this opinion is Caltrans. Other interested users could include California Department of Fish and Wildlife and U.S. Fish and Wildlife Service. Individual copies of this opinion were provided to Caltrans. 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, and 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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