UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

February 10, 2012

In response refer to:
2011/05632

James B. Richards
Deputy Director Environmental Planning and Engineering
Office of Natural Sciences and Permits
California Department of Transportation
111 Grand Avenue
Oakland, California 94623-0660

Dear Mr. Richards:

Thank you for your letter of October 26, 2011, requesting initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your letter requests consultation for the scour protection project at the Bowden Court Bridge over Llagas creek in Santa Clara County. Effective July 1, 2007, the Federal Highway Administration (FHWA) assigned, and the California Department of Transportation (Caltrans) has assumed all responsibilities for consultation and approval on most highway projects in California. Therefore, Caltrans is now considered the federal action agency for ESA consultations with NMFS for federally funded projects. This letter transmits NMFS' biological opinion for Caltrans' proposed scour protection project at the Bowden Court Bridge.

The enclosed biological opinion is based on our review of Caltrans' proposed project and describes NMFS' analysis of the potential effects on the threatened South-Central California Coast (S-CCC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS) and their designated critical habitat in accordance with the ESA. Threatened S-CCC steelhead are present in the project's action area and Llagas Creek is designated critical habitat for this species. In the enclosed biological opinion, NMFS concludes the scour protection project is not likely to jeopardize the continued existence of the S-CCC steelhead DPS. NMFS has also concluded the project is not likely to result in the destruction or adverse modification of critical habitat for S-CCC steelhead. However, NMFS anticipates take of listed S-CCC steelhead may occur as a result of project construction. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion.

Please contact Mr. Joel Casagrande at (707) 575-6016, or joel.casagrande@noaa.gov if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,

FOR Rodney R. McInnis
Regional Administrator

cc: Chris Yates, NMFS, Long Beach
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BIOLOGICAL OPINION

ACTION AGENCY: California Department of Transportation

ACTION: Scour Protection in Llagas Creek at Bowden Court Bridge, Santa Clara County, California

CONSULTATION CONDUCTED BY: National Marine Fisheries Service, Southwest Region

TRACKING NUMBER: 2011/05632

DATE ISSUED: **February 10, 2012**

I. CONSULTATION HISTORY

The California Department of Transportation (Caltrans) will be acting as the lead agency as per the agreement with the Federal Highway Administration (FHWA) in accordance with Section 6005 (a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (PL-109-59) to assume the FHWA Secretary's responsibilities under the National Environment Policy Act of 1969 (42 USC § 4351, *et seq.*) and all or part of the FHWA Secretary's responsibilities for environmental review, consultation, or other action required under any environmental law with respect to one or more highway projects within the state.

On February 16, 2011, NOAA's National Marine Fisheries Service (NMFS) received a letter dated February 14, 2011, from Caltrans requesting informal consultation with NMFS pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*) for six proposed bridge scour protection projects in southern Santa Clara County including the scour protection project at the Bowden Court Bridge over Llagas Creek. After a review of the six individual project proposals and additional correspondence with Caltrans and staff from the County of Santa Clara Roads and Airports Department (CSCRA), NMFS issued a letter of concurrence for five of the six proposed scour protection projects on March 14, 2011. NMFS determined one of the projects, Bowden Court Bridge over Llagas Creek, was likely to result in adverse effects to the threatened (S-CCC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS) and advised Caltrans to request formal consultation for this project.

On October 28, 2011, NMFS received a letter dated October 26, 2011, from Caltrans requesting formal consultation regarding the scour protection project at the Bowden Court Bridge over Llagas Creek. Caltrans determined the proposed project may adversely affect threatened S-CCC steelhead and designated critical habitat due to dewatering of Llagas Creek.

After reviewing the letter and the enclosed Biological Assessment (Caltrans 2011), NMFS determined the information provided was insufficient to initiate consultation. On November 17, 2011, NMFS contacted Caltrans via electronic mail (e-mail) and requested additional information and clarification of specific project design elements including access to the creek channel, general dewatering strategies, fish capture relocation plans, and information regarding potential channel response to the proposed placement of rock slope protection (RSP).

During subsequent email correspondence, staff from the CSCRA noted they had plans to re-route a portion of the thalweg of the creek channel from its current location, which was not mentioned or described in the original biological assessment. NMFS requested a revised and complete project description. A conference telephone call was held on January 10, 2012, with participants from Caltrans, CSCRA, and their consultants, to discuss project plans and the remaining information needed to begin consultation. Some of the requested information was provided during the conference call; on the call CSCRA and their consultants indicated additional information would be provided via email. On January 18, 2012, NMFS received an email from Caltrans containing the remaining requested information needed to initiate consultation. NMFS initiated consultation on January 18, 2012.

II. DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes to use funding from FHWA to repair scour damage to the Bowden Court Bridge over Llagas Creek, in Santa Clara County. A scour study conducted by Caltrans in 2001 concluded scour conditions for one of two bridge abutments and both supporting piers were critical, rendering the bridge unstable. Caltrans proposes to excavate soil from the footings around the bridge piers and one of two abutments, install rock to stabilize the footings, and cover the rock with native soil excavated from the channel to form a natural grade. To minimize future scour and erosion, a small section of the existing channel's thalweg where it abuts pier 2 will be recreated immediately adjacent to the placed rock. The work will require use of equipment in the creek channel, which is perennial due to upstream reservoir releases, and therefore, stream dewatering will be necessary. The entire project will be completed during one dry season between June 15 and October 15, and will go to construction in either 2012 or 2013. There are no interrelated or interdependent actions associated with this project.

A. Description of Project Activities

1. <u>Dewatering and Fish Relocation</u>

Stream flow will be present within the action area during the start of the in-channel work, and therefore a stream flow diversion will be necessary to repair scour conditions at the bridge piers and abutment. Temporary cofferdams will be constructed at the upstream and downstream ends of the bridge. The cofferdams will be constructed out of gravel filled bags containing clean,

washed gravel that will be wrapped in heavy plastic sheeting. The bags will be filled outside of the creek area. The upstream cofferdam will be used to divert water into a diversion pipe that will maintain pre-construction stream flow downstream of the project site via gravity. If gravity is not sufficient to maintain flow through the pipe, a pump screened with 0.2 inch mesh will be used to assist with the diversion. The downstream cofferdam will prevent back-flooding of the construction area.

Prior to construction of the cofferdams, block nets will be placed at the upstream and downstream ends of the area to be dewatered. Once the nets are in place, a NMFS-approved fisheries biologist will capture and relocate fish from this section of the creek until they are confident few or no fish remain. Fish will be captured using authorized methods (*i.e.*, backpack electrofishing and/or seining) and relocated to suitable habitat upstream of the construction area. The total length of the dewatered creek section will be no more than 325 feet. If necessary, pumps with 0.2 inch mesh will be used to remove standing water from the dewatered section of the creek to water storage containers or a temporary detention or filtration basin away from the stream channel to prevent direct discharge of this water to the creek. Fish relocation efforts will continue as needed during pumping activities to ensure no salmonids are left behind in the drying channel.

2. <u>Installation of Scour Protection</u>

Repair of the scoured areas will require access to the creek channel by a small excavator. Two access points will be necessary (one from the northwest corner of the project area for the two piers, and one from the southwest corner for the abutment). This will require minor vegetation clearing, including the removal of some trees (discussed below).

Once the channel is dewatered, existing soils will be excavated from the footings of piers 2 and 3 and abutment 1. The excavated areas will be backfilled with one-quarter ton rock which will extend 6 feet laterally from the edge of the piers and 12 feet laterally from the edge of abutment 1. All rock will be placed to a minimum depth of 3 feet below existing grade. The rock will be conveyed to the creek channel from the bridge deck while the final placement will be done using lighter construction equipment in the channel. Use of equipment in the dewatered creek channel is necessary due to the confined area of workspace created by the low bridge elevation and diagonal alignment of the bridge supports. The presence of overhead power lines just above the southern edge of the bridge alignment is also a constraint that requires use of light in-stream equipment. These constraints limit the feasibility of final rock placement using a long-reach excavator due to safety concerns and construction feasibility. Once the rock is placed, the excavated, native channel substrate will be used to backfill and bury the rock such that the finished channel grade will appear natural and match existing channel grades upstream and downstream of the bridge.

Currently, the existing channel's thalweg runs directly along pier 2 where it has formed a scour pool at the upstream end of the pier. This has caused the pier footing to become exposed and

unstable. To accommodate the added rock against pier 2, a 12-foot long section of the channel's well defined thalweg, will be moved towards abutment 1 approximately six feet. The depth of the moved thalweg section will match the existing depths. Movement of the thalweg will require the removal of a small portion (approximately 10 percent) of an extensive root wad supporting an arroyo willow along the southern bank of Llagas Creek. Caltrans expects that removal of the small portion of the root wad will not threaten the stability of the bank, or the health and ability of the root wad to germinate additional willow shoots.

3. Vegetation Removal and Restoration

As noted above, some trees and understory vegetation will be removed to access the creek channel. The precise number of trees to be removed is unknown, however it may include up to six willow (*Salix sp.*) seedlings that are less than 6 inches (") diameter at breast height (DBH), two willow trees between 15 and 18" DBH, one California valley oak (*Quercus lobata*) of approximately 24" DBH, two oak seedlings that are less than 6" DBH, and several non-native Himalayan blackberry bushes (*Rubus discolor*). The staging areas and their access paths have minimal vegetative cover and are dominated by non-native grasses.

Caltrans and their consultants have developed and submitted a re-vegetation and monitoring plan (WRA Environmental Consultants 2011) that is consistent with both local county ordinances and Regional Water Quality Control Board requirements. The project's Technically Conditioned Water Quality Certification requires Caltrans to plant riparian trees under 6" DBH at a 3:1 ratio, trees between 6 and 18" DBH to be planted at a 5:1 ratio, and trees over 18" DBH to be planted at a 10:1 ratio. Caltrans, or its consultants, will plant accordingly using species native to the project's action area. Also, the Regional Water Quality Control Board has requested Caltrans to incorporate understory shrub species in addition to the planted trees. All other exposed and disturbed areas will be seeded with native grasses.

4. Minimization Measures

Caltrans proposes to implement several best management practices (BMPs) and minimization measures during the project. These are specified in detail in Caltrans (2011) and include the following: (1) adhering to a project work window of June 15 through October 15; (2) avoiding the removal of large woody debris (LWD) to the greatest extent possible; (3) minimizing access routes and conducting as much work from the top of bank to the greatest extent possible; (4) creating a Spill Prevention and Control Plan which will require that equipment are checked daily for leaks, not utilizing equipment identified as having leaks until repaired, and refueling equipment at designated areas outside of the active stream channel; (5) applying erosion control measures including application of native grass seeds no later than seven days following end of construction; (6) replanting of removed or destroyed vegetation as outlined above; and (7) removing all falsework, pads, and other construction items by October 15.

B. Action Area

The action area is located near the unincorporated town of San Martin and the City of Morgan Hill in Santa Clara County, California. The action area for the proposed project includes approximately 325 feet of Llagas Creek (dewatered section including both banks), approximately 1,000 feet of additional creek downstream of the dewatered section (discussed below), and the staging areas outside of ordinary high water. NMFS expects there will be temporary increases in turbidity related to the construction and removal of dewatering facilities. Adverse effects related to increased turbidity are not expected to extend beyond approximately 1,000 feet, at which point, much of the suspended material will have settled and the temporary effects related to the turbidity will have become negligible. The 1,000 foot extended action area is based on observations by NMFS staff (Joel Casagrande, NMFS Biologist, personal observation, October 2010) of the downstream extent of turbidity during similar activities at a project site on neighboring Uvas Creek in southern Santa Clara County where substrate quality was similar but summer stream flows were greater (discussed in the Effects of the Action section). The total action area will constitute approximately 1,325 feet of Llagas Creek.

III. ANALYTICAL FRAMEWORK

A. Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which evaluates the DPS's range-wide conditions, the factors responsible for that condition, and the species' likelihood of both survival and recovery; (2) the Environmental Baseline, which evaluates the condition of S-CCC steelhead in the action area, the factors responsible for that condition, and the relationship of the action area to the likelihood of both survival and recovery of S-CCC steelhead; (3) the Effects of the Action, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the species in the action area; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on S-CCC steelhead.

The jeopardy determination is made by adding the effects of the proposed Federal action and any Cumulative Effects to the Environmental Baseline and then determining if the resulting changes in species status in the action area are likely to cause an appreciable reduction in the likelihood of both the survival and recovery of these listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on the range-wide likelihood of both survival and recovery of these listed species and the role of the action area in the survival and recovery of the listed species. The significance of the effects of the proposed Federal action is considered in this context, taken together with cumulative effects, for purposes of making the jeopardy determination. We use a hierarchical approach that focuses first on whether or not the

effects on ESA-listed salmonid species in the action area will impact their respective population. If the population will be impacted, we assess whether this impact is likely to affect the ability of the populations to support the survival and recovery of the DPS.

B. Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of destruction or adverse modification of critical habitat at 50 CPR 402.02[1]. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide condition of critical habitat for the S-CCC steelhead in terms of primary constituent elements (PCEs, sites for spawning, rearing, and migration), the factors responsible for that condition, and the intended conservation value of the critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of critical habitat in the action area, the factors responsible for that condition, and the conservation value of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs in the action area and how that will influence the conservation value of affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the conservation value of affected critical habitat units.

For purposes of the adverse modification determination, we add the effects of the proposed Federal action on S-CCC steelhead DPS critical habitat in the action area, and any Cumulative Effects, to the Environmental Baseline and then determine if the resulting changes to the conservation value of critical habitat in the action area are likely to cause an appreciable reduction in the conservation value of critical habitat range-wide. If the proposed action will negatively affect PCEs of critical habitat in the action area we then assess whether or not this reduction will impact the value of the S-CCC steelhead DPS critical habitat designation as a whole.

C. Use of Best Available Scientific and Commercial Information

To conduct the assessment, 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 effects of the project's actions 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, the biological assessment for this project, and project meeting notes if applicable. For information that has been taken

[1] This regulatory definition has been invalidated by Federal Courts.

directly from published, citable documents, those citations have been referenced in the text and listed at the end of this document.

IV. STATUS OF THE SPECIES/CRITICAL HABITAT

This biological opinion analyzes the effects of the Llagas Creek Bridge scour repair project on the S-CCC steelhead DPS, listed as threatened under the ESA (71 FR 834; January 5, 2006). Llagas Creek downstream of Chesbro Dam, including the action area, is within the designated critical habitat for S-CCC steelhead (70 FR 52488; September 2, 2005).

A. Species Description, Life History, and Status

In this opinion, NMFS assesses four population viability parameters to help us understand the status of S-CCC steelhead and the population's ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information to determine the general condition of each population and factors responsible for the current status of the DPS.

We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.20). For example, the first three parameters are used as surrogates for numbers, reproduction, and distribution. We relate the fourth parameter, diversity, to all three regulatory criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained resulting in reduced population resilience to environmental variation at local or landscape-level scales.

1. General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both freshwater and saltwater. Steelhead young usually rear in freshwater for one to three years before migrating to the ocean as smolts. Outmigration to the ocean usually occurs in the spring and appears to be more closely associated with size than age. In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the largest numbers of young-of-year (YOY, or Age 0+) and yearlings (Age 1+) steelhead moving downstream during spring and summer. Steelhead may remain in the ocean for one to five years (two to three years is most common) before returning to their natal streams to spawn (Busby *et al*. 1996, Moyle 2002). The distribution of steelhead in the ocean is not well known. Coded wire tag recoveries indicate that most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986). The timing of upstream migrating S-CCC steelhead adults is correlated with higher flow events, in winter or spring. In contrast to other species of *Oncorhynchus*,

steelhead may spawn more than one season before dying (iteroparity); although one-time spawners represent the majority.

Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Meehan and Bjornn 1991). However, juvenile steelhead tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids (Everest and Chapman 1972, Smith and Li 1983, Casagrande 2010). Young steelhead feed on a wide variety of drifting aquatic and terrestrial insects (Everest and Chapman 1972, Moyle 2002). In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris (Moyle 2002).

Water temperature can influence the metabolic rate, distribution, abundance, growth, and habitat use of rearing juvenile steelhead (Smith and Li 1983, Barnhart 1986, Bjornn and Reiser 1991, Myrick and Cech 2005). Optimal temperatures for steelhead growth range between 10 and 20 degrees (°) Celsius (C) (Hokanson *et al.* 1977, Wurtsbaugh and Davis 1977, Myrick and Cech 2005). Variability in the diurnal water temperature range is also important for the survivability and growth of salmonids (Busby *et al.* 1996, Casagrande 2010). Stream water temperature is regulated by multiple factors including air temperature, stream channel dimension and orientation, and the presence and abundance of riparian vegetation over the stream channel (Poole and Berman 2001).

Suspended sediment concentrations, or turbidity, also can influence the distribution and growth of steelhead (Bell 1973, Sigler *et al*. 1984, Newcombe and Jensen 1996). Bell (1973) found suspended sediment loads of less than 25 milligrams per liter (mg/L) were typically suitable for rearing juvenile steelhead.

2. Status of S-CCC Steelhead DPS

Boughton *et al.* (2007) determined the S-CCC steelhead DPS consists of 12 discrete sub-populations which represent localized groups of interbreeding individuals. Steelhead populations are present in most streams in the S-CCC DPS, however, these populations are fragmented and unstable (Good *et al.* 2005). Severe habitat degradation and compromised genetic integrity of some populations pose a serious risk to the survival and recovery of the S-CCC steelhead DPS (Good *et al.* 2005). None of these sub-populations currently meet the definition of viable and most of can be characterized by low population abundance, variable or negative population growth rates, and reduced spatial structure and diversity. The sub-populations in the Pajaro River and Salinas River watersheds are in particularly poor condition (relative to watershed size) and exhibit a greater lack of viability than many of the coastal subpopulations.

Populations of S-CCC steelhead throughout the DPS have exhibited a long-term negative trend since the mid-1960s. In the mid-1960s, total spawning populations were estimated at 17,750 individuals (Good *et al.* 2005). Available information shows the S-CCC steelhead population

continued to decline from the 1970s to the 1990s (Busby *et al.* 1996) and more recent data indicate this trend continues (Good *et al.* 2005). Current S-CCC steelhead run-sizes in the five largest systems in the DPS (Pajaro River, Salinas River, Carmel River, Little Sur River, and Big Sur River) are likely greatly reduced from 4,750 adults in 1965 (CDFG 1965) to less than 500 returning adult fish in 1996. More recent estimates for total run-size do not exist for the S-CCC steelhead DPS (Good *et al.* 2005).

In the winters of 2008/09 and 2009/10, adult returns in many streams within the DPS were considerably reduced relative to higher returns at the beginning of the decade. This has been attributed largely to poor ocean conditions along the eastern Pacific Ocean (Lindley *et al.* 2009). During the winter of 2010/11, the number of returning adult steelhead in some populations within the DPS rebounded, including the Carmel River where the total number of returning adults at the San Clemente Dam[2] was similar to recent high returns observed at the beginning of the decade.

On January 5, 2006, NMFS confirmed the listing of S-CCC steelhead as threatened under the ESA (71 FR 834). In the most recent status update (NMFS 2011, Williams *et al.* 2011) NMFS concluded there was no evidence to suggest the status of the S-CCC steelhead DPS has changed appreciably since the publication of previous status review (Good *et al.* 2005) and therefore S-CCC steelhead remain listed as threatened (76 FR 76386).

3. <u>Status of Critical Habitat</u>

The condition of critical habitat for S-CCC steelhead, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined the present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat: agriculture, grazing, and mining activities, urbanization, stream channelization, construction of dams and other migration impediments, wetland loss, and water resource development, including unscreened diversions for irrigation, and recreational harvest. Impacts of concern include alteration of stream bank and channel morphology, alteration of water temperatures, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, alteration of riparian vegetation communities, water extraction and stream desiccation, and fish passage constraints (Busby *et al.* 1996, Good *et al.* 2005, 70 FR 52488).

Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in S-CCC steelhead DPS, including Llagas Creek (Good *et al.* 2005, Casagrande *et al.* 2003, Smith 2007). Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to steelhead. Many of these anthropogenic impacts have been reduced or eliminated, and more recently, multiple restoration actions aimed at improving

[2] http://www.mpwmd.dst.ca.us/fishcounter/fishcounter.htm

critical habitat quality and access have been implemented that are intended enhance S-CCC steelhead abundances in the future. These include the installation of a fish passage facility at Los Padres Dam on the Carmel River, enhancement or removal of numerous other fish passage impediments throughout the DPS, continued efforts toward the removal of San Clemente Dam on the Carmel River, and the successful negotiation and implementation of a revised schedule of releases from Uvas Reservoir designed to improve habitat availability and quality for steelhead in Uvas Creek (NMFS 2011). Still, the overall current condition of S-CCC steelhead critical habitat throughout the DPS remains degraded, and may not provide the conservation value necessary for the full recovery of the species.

B. Factors Responsible for S-CCC Steelhead Decline

NMFS cites many reasons (primarily anthropogenic) for the decline of S-CCC steelhead (Busby *et al.* 1996, Good *et al.* 2005, Williams *et al.* 2011). The foremost reason for the decline in these anadromous populations is the degradation and/or destruction of freshwater and estuarine habitat, including critical habitat, caused by (as described briefly above) anthropogenic disturbances such as urban development, agriculture, logging, water resource development, and dams. Additional factors contributing to the decline of all salmonid stocks (including S-CCC steelhead) are: poor estuary/lagoon management (Smith 1990, Smith 1993, Bond 2006, Hayes *et al.* 2008, Hayes *et al.* 2011), commercial and recreational harvest, artificial propagation (Waples 1991), natural stochastic events, marine mammal predation (Hanson 1993, NMFS 1997, Wright *et al.* 2007), reduced marine-derived nutrient transport (Bilby *et al.* 1996, Bilby *et al.* 1998, Gresh *et al.* 2000, Moore *et al.* 2011), and most recently poor ocean conditions (Lindley *et al.* 2009).

C. Global Climate Change

Modeling of climate change impacts in California suggests average summer air temperatures are expected to increase (Lindley *et al*. 2007). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al*. 2004). Total precipitation in California may decline; critically dry years may increase (Lindley *et al*. 2007, Schneider 2007). The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled (Luers *et al*. 2006). Wildfires are expected to increase in frequency and magnitude, by as much as 55 percent under the medium emissions scenarios modeled (Luers *et al*. 2006). Vegetative cover may also change, with decreases in evergreen conifer forest and increases in grasslands and mixed evergreen forests. The likely change in amount of rainfall in northern and central coastal streams under various warming scenarios is less certain, although as noted above, total rainfall across the state is expected to decline. For the California North Coast, some models show large increases (75 to 200 percent) while other models show decreases of 15 to 30 percent (Hayhoe *et al*. 2004). Many of these changes are likely to further degrade salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002). In marine environments, ecosystems and habitats important to salmonids

are likely to experience changes in temperatures, circulation and chemistry, and food supplies (Feely *et al.* 2004, Brewer and Barry 2008, Osgood 2008, Turley 2008, Karl *et al.* 2009). The projections described above are for the mid to late 21st Century. In shorter time frames natural climate conditions are more likely to predominate (Cox and Stephenson 2007, Smith *et al.* 2007).

V. ENVIRONMENTAL BASELINE

The environmental baseline is the current status of the species and critical habitat in the action area based on analysis of the effects of past and ongoing human and natural factors. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The proposed project is located on Llagas Creek, a major tributary to the Pajaro River in the Santa Clara Valley. Bowden Court is located in a rural neighborhood just west of the unincorporated town of San Martin and just southwest of the City of Morgan Hill. The bridge was constructed in 1919 and consists of two concrete abutments and two concrete support pier walls forming three flow "cells". The low-flow channel and much of the winter runoff flows through the southern-most cell. The channel bottom elevation in the adjacent two cells is higher and both are completely dry during summer and fall.

A. Status of S-CCC Steelhead Critical Habitat in the Action Area

Chesbro Dam regulates stream flow on Llagas Creek which is released during the dry season for groundwater recharge in southern Santa Clara Valley. A portion of Llagas Creek below Chesbro Dam, including the action area, is perennial due to stream flow releases from the reservoir. General land use types surrounding the action area and upstream include rural residential development, agriculture (primarily vineyards and orchards), and grazing.

Through the action area, Llagas Creek is a single thread, moderately entrenched channel with a low flow channel that is approximately 2 to 3 meters wide. Within the action area, Llagas Creek transitions from a riffle-run immediately upstream of the bridge into an approximately 1.25 meter deep scour pool located at the upstream end of pier 2. The pool (directly beneath the bridge) empties at the east end of the bridge into another riffle-run sequence. The scour pool beneath Bowden Court Bridge, while a concern for bridge stability and the subject of this consultation, is ideal habitat for juvenile steelhead rearing because of its combination of depth and cover (*e.g.*, undercut bridge footing and surface turbulence), with fast-water inflow where steelhead can feed on drifting invertebrates. Both banks (upstream and beneath the bridge) are well-armored by an extensive network of root mats and overhanging vegetation. Substrate consists of a mixture of coarse and fine-grained sediments, with small gravel as the observed

dominant substrate class in the low flow channel (Joel Casagrande, NMFS personal observation, February and November 2011). The stream channel below Chesbro Dam and through the action area is well shaded by a dense riparian canopy. In the action area the canopy consists of willow (*Salix sp.*), California sycamore (*Platanus racemosa*), and coast live oak (*Quercus agrifola*), with an understory dominated by non-native Himalayan blackberry (*Rubus discolor*) and isolated patches of giant reed (*Arundo donax*) and cattails (*Typha latifolia*). Water temperatures in Llagas Creek between Chesbro Dam and Santa Teresa Boulevard (east of the action area) remain relatively cool through the dry season. Peak temperatures are generally less than 18 °C in this reach because stream flows are released from the bottom of Chesbro Reservoir (*i.e.*, cool hypolimnion waters) and the channel is mostly well-shaded downstream of the dam to near the town of San Martin. Water clarity (*i.e.*, turbidity), is seasonally reduced in late summer and fall due to the release of increasingly organic-rich hypolimnion waters as the reservoir volume declines. In late spring and early summer, however, water clarity is much better (Casagrande 2012).

Based on the above information, NMFS believes the overall PCEs for juvenile steelhead rearing in the action area are degraded because some essential elements (*e.g.*, degraded substrate, seasonally reduced water clarity) have been impacted by rural and sub-urban developments, agriculture, and water resource development. The PCEs for spawning habitat in the action area are also somewhat degraded based on degraded substrate conditions in the action area. Finally, the PCEs for migration are considered good, as no barriers to adult or juvenile migration are present in the action area.

B. Status of S-CCC Steelhead within the Action Area

The recent estimates for the Pajaro River Watershed (1,500 fish in 1964, 1,000 fish in 1965, and 2,000 fish in 1966) were reported in McEwan and Jackson (1996), but the methodology and data used to produce the estimates were not described. Good *et al.* (2005) estimated the adult steelhead run size in the Pajaro River Watershed to be less than 500 individuals. The primary limiting factor for steelhead in Llagas Creek is poor smolt out-migration conditions due to naturally high percolation rates; lower Llagas Creek (east of Highway 101 and well east of the action area) is dry by the middle of April in most years (Smith 2007).

Records of steelhead abundance in Llagas Creek prior to the 1970's are very limited. However, since the early 1970's, steelhead abundance in Llagas Creek (based on observed juvenile abundance during summer and fall sampling) has been consistently low, and may consist largely of resident trout in most years (Smith 2007). In 2005-2007, 2010, and 2011, fall sampling for juvenile steelhead was conducted at multiple sites in the Llagas Creek downstream of Chesbro Dam, including a site at or immediately downstream of the action area (Casagrande 2011, Casagrande 2012). In all years, juvenile steelhead/rainbow trout have been extremely scarce with no more than 10 fish captured in over 1,000 feet of sampled stream in a given year. In early November 2011, three juvenile steelhead/rainbow trout were captured at and immediately upstream of the Bowden Court Bridge (one in the scour pool formed beneath the bridge and two

immediately upstream of the bridge). Based on analysis of scales taken from each fish, two of the three fish were yearlings and the other was a young-of-the-year (YOY). This was the first in five years of recent sampling that juvenile steelhead/rainbow trout were captured in the vicinity of the action area, and in previous decades, presence of juvenile steelhead in this area was very rare (Smith 2007). Based on the above information, NMFS believes steelhead abundance remains very low in Llagas Creek; this low level of abundance has persisted for several decades.

C. Factors Affecting Species Environment within the Action Area

Threats to steelhead and riparian habitat quality in Llagas Creek, including the action area, are silt and other fine sediments from roads, rural development, and agriculture and other unknown chemical pollutants (Smith 2007 and Casagrande 2011).

D. Previous Section 7 Consultations and Authorized Research Activities in the Action Area

No other section 7 consultations have occurred in the action area.

Section 10(a)(1)(A) research and enhancement permits and research under exemptions granted under section 4(d) of the ESA could potentially occur in the Llagas Creek Watershed in the future. Based on NOAA's Authorizations and Permits for Protected Species (APPS) website[3], there are currently three active section 10(a)(1)(A) research and enhancement permits issued that authorize research on salmonids in the Pajaro River Watershed including Llagas Creek; Permits 10094 issued to CDFG Region 3, and Permits 1044 Modification 4 and 1112 Modification 2 issued to NMFS's Southwest Fisheries Science Center. Annually since 2005, NMFS has authorized one project under CDFG's annual 4(d) research program that includes sampling of juvenile steelhead in Llagas Creek during summer and fall using backpack electrofishing. In general, all research activities are closely monitored and require measures to minimize take during the research activities.

VI. EFFECTS OF THE ACTION

The purpose of this section is to identify the direct and indirect effects of the proposed action, and any interrelated or interdependent activities, on threatened S-CCC steelhead. Data to quantitatively determine the precise effects of the proposed action on S-CCC steelhead are limited or not available; the assessment of effects therefore focuses mostly on qualitative identification. This approach was based on knowledge and review of the ecological literature and other relevant materials. This information was used to gauge the likely effects of the proposed project via an exposure and response framework that focuses on what stressors (physical, chemical, or biotic), directly or indirectly caused by the proposed action, that salmonids are likely to be exposed to. Next, we evaluate the likely response of salmonids to these stressors in terms of changes to salmonid survival, growth, and reproduction, and changes

[3] https://apps.nmfs.noaa.gov/search/search.cfm

to the ability of PCEs to support the value of critical habitat in the action area. PCEs include sites essential to support one or more life stages of the species. These sites for migration, spawning, and rearing, in turn, contain physical and biological features that are essential to the conservation of the species.

A. Fish Capture and Relocation

The scour prevention repairs to the Bowden Court Bridge will require dewatering of the action area, and therefore fish capture and relocation will be necessary. Prior to construction of the dewatering facilities, block nets will be placed at the upstream and downstream end of each dewatered area. Once the nets are in place, a NMFS-approved fisheries biologist will capture and relocate salmonids from the dewatered area until they are confident few or no fish remain. Fish capture and relocation will continue once the dewatering process begins in order to ensure fish are not stranded during the drawdown of the dewatered area. All steelhead captured will be relocated upstream of the action area. Based on the current condition of rearing habitat present and the continued scarcity or absence of *O. mykiss* (anadromous and resident) in the action area and Llagas Creek (Smith 2007, Casagrande 2011, Casagrande 2012), NMFS expects the total number of juvenile steelhead likely to be present in the action area to be low and no more than 10 individuals.

Caltrans proposes to use a backpack electrofisher or seines to capture and relocate steelhead. Fish capture and relocation activities pose a risk of injury or mortality to fish species. Fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both the CDFG and NMFS guidelines, direct effects to and mortality of steelhead during capture will be minimized. Data from years of similar salmonid relocation activities indicate average mortality rate is below one percent (Collins 2004; CDFG 2005, 2006, 2007, 2008, 2009, 2010). Based on this information, NMFS will use three percent as the maximum amount of mortality likely from fish capture and relocation for the project; or no more than one juvenile steelhead.

Although sites selected for relocating fish 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 fish causing increased competition for available resources such as food and habitat (Keeley 2003). Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas will be minimal and temporary, because when the project is finished steelhead will be able to redistribute in the creek unimpeded. NMFS cannot estimate the number of fish affected by competition, but does not expect this impact will be large enough to affect the survival chances of individual fish. For example, the use of multiple release sites will help facilitate fish dispersion, limiting competition. Once the project is complete and the diversion facilities are removed, juvenile steelhead rearing space will return to

the dewatered area. Despite these impacts, fish relocation operations, if necessary, are expected to significantly minimize project impacts to juvenile steelhead by removing them from areas where they would have experienced high rates of injury and mortality.

B. Dewatering

Direct effects from dewatering will likely occur to juvenile steelhead within this reach. Low levels of turbidity are expected to occur as a result of the cofferdam construction and removal. Caltrans will construct the cofferdams without the use of heavy equipment in the live stream. Fish capture and relocation will occur prior to (and after) the construction of the cofferdams. This will remove most, if not all, fish from the areas where the cofferdams will be constructed. Juvenile salmonids that avoid capture prior to the implementation of site dewatering will die if not captured while the dewatering is underway. Caltrans or its contractors will continue fish capture and relocation during the dewatering process. NMFS expects the number of juvenile steelhead that will be killed as a result of stranding during dewatering activities will be one percent or less of the fish within the action area prior to dewatering, or no more than one steelhead. During the dewatering process, the biologist on site will make every effort to collect and relocate fish that avoided capture prior to the beginning of the dewatering process.

Another manner by which juvenile steelhead may be harmed or killed during dewatering activities is to be entrained into the pumps or discharge line. To eliminate this risk, the applicant will screen all pumps according to NMFS criteria (0.2 inches), to ensure juvenile steelhead will not be harmed by the pumps during dewatering events.

Juvenile steelhead rearing downstream of the action area may be inadvertently affected by the loss of benthic (*i.e.*, bottom dwelling) aquatic macroinvertebrate production within the dewatered area (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from dewatering will be temporary because construction activities will be relatively short-lived, drift from upstream will continue through the pipe, and rapid re-colonization (about two to three months) of disturbed areas by macroinvertebrates is expected following construction (Cushman 1985, Thomas 1985, Harvey 1986).

C. Turbidity

NMFS anticipates only short-term increases in turbidity will occur during the construction and removal of cofferdams. Suspended sediment may affect salmonid feeding behavior and efficiency, resulting in reduced growth rates (Sigler *et al.* 1984, Newcomb and Jensen 1996). Also, because of turbidity, salmonids disperse from established territories, which can temporarily displace fish into less suitable habitats and which can lead to reduced growth rates (Sigler *et al.* 1984).

Much of the research discussed in the paragraph above focused on turbidity levels higher than those expected to occur during implementation of the proposed activities. As described above in

the Environmental Baseline, substrate throughout the action area consists of a mixture of gravel and fine sediments (Joel Casagrande, NMFS, personal observations). NMFS expects the increase in turbidity to be relatively minor and temporary during the proposed activities. Still, the effects of elevated turbidity may extend downstream approximately 1,000 feet, beyond which, much if not all of the suspended material would settle in the stream channel. Observations of turbidity response during removal of dewatering facilities in neighboring Uvas Creek, where substrate quality was similar and stream flows were greater, indicated a majority of the suspended material had settled in the first 300 to 400 feet from the source (Joel Casagrande, NMFS, personal observation, October 2010). Based on these observations, NMFS thinks it unlikely that suspended material would travel farther than approximately 1,000 feet given similar or lower flow volumes than those in Uvas Creek.

Monitoring of newly replaced culverts within Humboldt County indicated temporary increases in turbidity following winter storm events in which the measured turbidity was generally less than the turbidity threshold commonly cited as beginning to cause minor behavioral changes (Humboldt County 2002, 2003, and 2004), and always less than turbidity levels necessary to injure or kill salmonids. Impacts associated with degraded water quality will likely be limited to behavioral effects, such as temporarily vacating preferred habitat or temporarily reduced feeding efficiency. These temporary changes in behavior may slightly reduce growth rates, but are not likely to reduce the survival chances of individual juvenile salmonids. Caltrans has included BMPs to reduce the likelihood of sediments from entering the stream. NMFS's familiarity with the results of similar BMPs indicates these actions will, if implemented appropriately, be effective at reducing sedimentation rates. Any increases in turbidity due to the construction of coffer dams and during the initial re-wetting of the reconfigured channel will likely be minimal and temporary due the incorporation of BMPs, the low stream flows present during summer, and the adherence to the listed terms and conditions in this biological opinion. Therefore, any short-term impact associated with turbidity during implementation of this project is expected to be insignificant.

D. Habitat Loss

Impacts on riparian and aquatic habitat will occur as a result of the temporary loss of vegetation within the footprint of the proposed project channel access and RSP placement. Riparian zones serve important functions in stream ecosystems by providing shade, sediment storage, nutrient inputs, channel and stream bank stability, habitat diversity, and cover and shelter for fish (Murphy and Meehan 1991). Small streams are especially sensitive to loss of riparian habitat and shade, which moderates stream temperatures by insulating the stream from solar radiation and reducing heat exchange with the surrounding air.

To minimize the temporal loss of riparian vegetation and the potential for incremental effects on stream temperatures, Caltrans proposes to limit the amount of vegetation removed to the least amount possible. Existing vegetation will be preserved to the extent possible by pruning or, if necessary, cutting individual plants to within a few inches of the ground to allow natural

regeneration to occur following construction. As described above, multiple trees of various species may need to be removed in order to obtain access to the creek channel. The trees will range in size from 1-24" DBH, with a majority being less than 12" DBH. A re-vegetation and monitoring plan has been developed and submitted to NMFS (WRA Environmental Consultants 2011) that adheres to both local county and state requirements for tree re-placement (described above) and vegetation monitoring. Because of the small area affected, the rapid re-growth of willows, and the implementation of a re-vegetation and monitoring plan, NMFS does not expect the effects of the small number of trees and understory species removed or trimmed along the bank of Llagas Creek at Bowden Court will result in appreciable impacts to listed critical habitat or S-CCC steelhead.

The placement of the rock below grade and relocating the channel's existing thalweg away from pier 2 for a length of 12 feet is unlikely to result in long-term detrimental impacts to the quality of critical habitat in the action area. Even if partially exposed in the future, the interstitial spaces in the one quarter-ton rock could provide escape cover for younger juvenile steelhead which is an improvement to the smooth concrete wall of the pier that the creek flows along currently. The depth of the new thalweg segment will be constructed to match the existing thalweg depth. Also, the riffle/run leading into the deeper pool beneath the bridge will not be changed, and therefore, the existing complex, transitional habitat will be preserved.

VII. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. 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. Caltrans is not aware of any additional actions that would cause cumulative effects beyond those that are ongoing and have been analyzed in the environmental baseline of this biological opinion (Caltrans 2011). In the long term, NMFS expects global climate change is likely to produce temperature and precipitation changes. These changes may adversely affect listed salmonids in the action area.

VIII. INTEGRATION AND SYNTHESIS

The S-CCC steelhead DPS is listed as threatened. Throughout the S-CCC steelhead DPS and the greater Pajaro River Watershed, stream and estuary habitats have been significantly impacted by multiple anthropogenic activities (*i.e.*, logging, urban development, agriculture, dams, stream channelization, and poor lagoon management). These have contributed to substantial declines in the abundance of S-CCC steelhead in many of the watersheds in this region (Good *et al.* 2005, Boughton *et al.* 2007). Habitat conditions in the action area, based on observations by NMFS staff in fall of 2011 and previous years, are suitable for juvenile steelhead rearing and three *O.*

mykiss were captured in the immediate vicinity of the bridge during sampling in fall 2011 (Casagrande 2012). Data on juvenile steelhead abundance during the dry season (June – October) indicate that steelhead are typically not observed in or near the action area (Smith 2007 and Casagrande 2012), and if present, abundances are extremely low. Based on current habitat conditions and recent steelhead abundances, NMFS expects that juvenile steelhead may be present in very low densities prior to dewatering the project action area.

During dewatering of the work site, fish rescue and relocation efforts will take place. Only juvenile steelhead are likely to be present at the time of construction. If present, NMFS anticipates no more than 10 juvenile steelhead may be adversely affected by the project, and no more than 2 juvenile steelhead will die as a result of the proposed activities. The action area is located at the downstream extent of the watershed's summer rearing habitat and is a very small portion of the total amount of potential rearing habitat available to steelhead in Llagas Creek. Therefore a substantial amount of the watershed's rearing habitat, and presumably the steelhead utilizing these areas, will not be affected by the proposed project. The maximum number of juvenile steelhead that could be present (10 fish) in the action area during the proposed project are likely to represent a relatively moderate proportion of the overall abundance in Llagas Creek, however, they will represent a fraction of the total Pajaro River Watershed population (or S-CCC steelhead DPS) abundances. It is unlikely the small potential loss of no more than two juvenile steelhead as a result of the project will impact future adult returns to the Pajaro River Watershed, due to the relatively large number of juveniles produced by each spawning pair, the plasticity of the steelhead life-history, and the larger amount of rearing habitat in the watershed that will be unaffected. Therefore, NMFS does not believe the project will appreciably diminish the abundance, productivity, diversity, or spatial structure of the Pajaro River Watershed population of the S-CCC steelhead DPS.

As discussed above, the placement of rock in the channel and relocation of a small portion of the channel's existing thalweg is unlikely to result in long-term, detrimental impacts to the quality of critical habitat in the action area because the existing channel dimensions will be recreated and the existing complex habitat will be preserved. Riparian vegetation clearing to access the channel for rock placement will result in temporary impacts to stream shading and potential a loss of woody debris recruitment to the channel. However, Caltrans and CSCRA have proposed a re-vegetation plan (WRA Environmental Consultants 2011), which will ultimately lead to a greater number of trees along the creek. Short term effects related to turbidity during the construction and removal of stream flow diversion facilities and creek channel access are expected to be minor and temporary, and NMFS anticipates the proposed BMPs will control erosion/turbidity sufficiently to avoid significant adverse effects to steelhead. No permanent adverse changes in stream flow are anticipated. Therefore, NMFS believes the effects of RSP placement, minor vegetation removal, and the temporary increases in turbidity from the project's activities will not have any long-term impacts to the PCEs of S-CCC steelhead critical habitat. The value of critical habitat in the action area for species conservation is not likely to be appreciably reduced by the activities proposed.

IX. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion Caltrans' proposed scour protection project at the Bowden Court Bridge over Llagas Creek, in Santa Clara County, California is not likely to jeopardize the continued existence of S-CCC steelhead.

After reviewing the best available scientific and commercial information, the current status of the critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion Caltrans' proposed scour protection project at the Bowden Court Bridge over Llagas Creek, in Santa Clara County, California is not likely result in the destruction or adverse modification of critical habitat designated for S-CCC steelhead.

X. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without 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 NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by Caltrans, for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans, or its contractors (1) fail to assume and implement the terms and conditions or (2) fail to require its designees to adhere to the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

As described above in the accompanying biological opinion, the number of threatened S-CCC

steelhead that may be incidentally taken by capture and relocation during project activities is expected to be no more than 10 individuals. NMFS anticipates no more than two juvenile steelhead present in the area will be killed during capture and relocation and channel dewatering activities.

The anticipated take will have been exceeded if more than 10 juvenile steelhead are captured or if more than two juvenile steelhead are killed during capture/relocation and channel dewatering activities.

B. Effect of the Take

In the accompanying opinion, NMFS determined this level of anticipated take is not likely to result in jeopardy to S-CCC steelhead.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of S-CCC steelhead:

1. Undertake measures to ensure harm and mortality to S-CCC steelhead resulting from fish relocation is low;

2. Undertake measures to maintain water quality conditions and riparian habitat conditions at pre-construction levels to avoid or minimize harm to S-CCC steelhead;

3. Prepare and submit plans and reports that describe specific methods and practices prior to their implementation (plans) and document (reports) the effects of the project. Notify NMFS when project activities are scheduled to begin.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, Caltrans, and their designees/contractors must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement Reasonable and Prudent Measure 1.

    a. Caltrans will provide a list of all BMPs and the Terms and Conditions of this biological opinion to their contractors and ensure they are followed for the length of the project.

b. The project biologist will notify NMFS biologist Joel Casagrande at (707) 575-6016 or Joel.Casagrande@noaa.gov no later than one week prior to relocation activities in order to provide an opportunity for NMFS staff to observe the activities.

c. The applicant and its contractors will follow NMFS' Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act (NMFS 2000). All live steelhead will be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish will be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish will not be removed from this water except when released. If necessary, the biologist will have at least two containers and segregate young-of-year salmonids from older salmonids and other potential aquatic predators in order to avoid predation affects. Captured salmonids will be relocated as soon as possible and will be given highest priority over other non-listed fish species. Juvenile steelhead will be released upstream of the project construction area.

d. The biologist will note the number of each species collected/observed in the affected area, the number of fish relocated, and the date and time of collection and relocation. If any dead or fatally wounded fish are observed, they will be collected and placed in an appropriately sized whirl-pack or zip-lock bag, labeled with the date and time of collection, fork length, and location of capture, and frozen as soon as possible. If any fish are fatally wounded, Caltrans will then notify the NMFS biologist, listed below, no later than two days from the occurrence for further instruction on disposition of the dead steelhead.

2. The following terms and conditions implement Reasonable and Prudent Measure 2.

e. Caltrans, or its contractors, shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could result in take of listed salmonids. More specifically, Caltrans, or its contractors, will measure turbidity immediately upstream and downstream of the action area hourly, or during any significant spikes in turbidity levels, throughout the construction and removal of creek diversion facilities and for one day following both the construction and removal of the diversion facilities using either a turbidity meter or a transparency tube. The results of this monitoring will be used to confirm NMFS' assumption that increases in turbidity from background levels (*i.e.,* those entering the action area) within and downstream of the action area will be temporary (*i.e.,* increases in turbidity from the construction and removal of the diversion facilities will be limited to one day or less).

f. Caltrans, or its contractor, shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to access the work area during the construction period for the purpose of observing monitoring activities, evaluating fish and stream conditions,

monitoring performance of BMPs, monitoring water quality, collecting fish samples, or perform other monitoring/studies. NMFS will notify the Caltrans Resident Engineer 48 hours prior to planning a site visit and will contact Caltrans personnel prior to entering the construction site.

3. The following terms and conditions implement Reasonable and Prudent Measure 3.

g. Caltrans will provide NMFS with a final Fish Capture and Relocation Plan for review prior to the start of fish collection and relocation activities. The plan must be submitted no less than 30 days prior to the beginning of fish capture and relocation activities (*i.e.,* on or before May 15 of the year to be implemented if beginning on June 15). The plan will outline all confirmed fish relocation methods, including the location and a description of the habitat where steelhead are to be relocated. The plan will be submitted to NMFS' North Central Coast Office (see address below).

h. Caltrans shall provide NMFS with a summary report by January 15 of the year following the completion of fish capture and relocation efforts. The report shall include the methods used during the fish capture and relocation, the location, number and species captured, number of mortalities by species, and other pertinent information (*i.e.,* water temperature) related to the fish capture and relocation activities. Reports shall be submitted to NMFS North Central Coast Office (see address below).

i. Caltrans shall provide NMFS with a summary turbidity monitoring report by January 15 of the year following the completion of the project (removal of dewatering facilities). The report will include turbidity monitoring data collected throughout the construction and removal of the dewatering facilities as described above. The report shall be submitted to NMFS North Central Coast Office (see address below).

j. All interim and final reports describing the implementation of re-vegetation activities and annual survivorship monitoring shall be submitted to NMFS at the address below by January 15 of the year following the end of each monitoring period, including the final assessment.

k. All reports required for the above terms and conditions shall be sent to the NMFS North Central Coast Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California 95404.

XI. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to

minimize or avoid adverse effects of a proposed action on listed species or critical habitat, or to develop information.

Caltrans, in coordination with NMFS, should identify and prioritize any maintenance and construction projects which, if implemented, can improve ESA-listed salmonid migration or in-stream environmental conditions throughout the South-Central California Coast Recovery Domain.

XII. REINITIATION NOTICE

This concludes formal consultation for Caltrans' proposed scour protection project at the Bowden Court Bridge over Llagas Creek in Santa Clara County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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XV. PERSONAL COMMUNICATIONS AND OBSERVATIONS

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