



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE

West Coast Region

**777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731**

March 13, 2020

Refer to NMFS No: WCRO-2019-00419

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

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Los Gatos Creek Trail Reach 5B/5C Project in San Jose, California (File CML-5005[110])

Dear Mr. Holstein

Thank you for your letter of January 29, 2019, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Los Gatos Creek Trail (Reach 5B/5C) Project (herein referred to as "Project") in San Jose, California. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

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

The enclosed biological opinion is based on our review of the proposed Project and describes NMFS' analysis of the effects on threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) in accordance with section 7 of the ESA. The Project's action area is not located within designated critical habitat.

In the enclosed biological opinion, NMFS concludes the Project is not likely to jeopardize the continued existence of threatened CCC steelhead. However, NMFS anticipates take of CCC steelhead will occur during Project construction. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion.

We completed pre-dissemination review of this biological opinion using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through the NOAA Institutional Repository (<https://repository.library.noaa.gov/>), after approximately two weeks. A



complete record of this consultation is on file at the NMFS North-Central Coast Office in Santa Rosa, California.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Ale Van Atta", with a stylized flourish at the end.

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Keevan Harding, Caltrans, Oakland, CA
Copy to ARN File #151422WCR2019SR00004


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

Los Gatos Creek Trail Reach 5B/5C Project
NMFS Consultation Number: WCRO-2019-00419
Action Agency: California Department of Transportation

Table 1. Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Central California Coast steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	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 13, 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, as amended.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository (<https://repository.library.noaa.gov/>). A complete record of this consultation is on file at NMFS North-Central Coast Office in Santa Rosa, California (ARN #151422WCR2019SR00004).

1.2 Consultation History

By letter dated January 28, 2019, the California Department of Transportation (Caltrans) requested initiation of formal consultation with NMFS, North-Central Coast Office for the Los Gatos Creek Trail Reach 5B/5C Project (Project). On March 14, 2019, NMFS requested clarifying information via email from Caltrans regarding the project description. During a phone call on March 22, 2019 with Caltrans, NMFS requested information regarding the proposed instream complexity portions of the Project. NMFS was informed via email on April 3, 2019, that information requested by NMFS was not available because the City of San Jose's previous contract with an environmental consultant had expired and they were seeking a new consultant. On May 7, 2019, Caltrans responded with information regarding monitoring, log placement, and provided a revised project design that replaced the original design's vegetated crib walls. NMFS subsequently requested additional information regarding the design via letter dated July 12, 2019. Caltrans and NMFS held a call on August 2, 2019, to clarify the current proposed design plans. On August 27, 2019, Caltrans provided NMFS via email another set of updated plans and design schematics. The set of plans provided on August 27, 2019, served as the basis for this consultation and biological opinion.

Via email on January 31, 2020, NMFS asked for clarification regarding the Project's stream dewatering plan and bypass flow system. On February 5, 2020, via email message, Caltrans confirmed the pump intakes on the streamflow bypass pipe will conform to the NMFS screen guidelines for anadromous salmonids, as well as provided information regarding in-stream work timing. Caltrans also clarified the proposed relocation of an existing storm drain outfall.

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). Caltrans, acting as the designated federal representative, and the City of San Jose (City) propose to construct a 0.25 mile long multi-use

trail along the west side of Los Gatos Creek in downtown San Jose, California. The site of the proposed trail extends along an approximately 0.3-mile reach of Los Gatos Creek. The trail begins on the west side of the creek, downstream of Auzerais Avenue, adjacent to an existing residential development. The trail ramps down and enters the riparian corridor approximately 450 feet south of a railroad bridge, passes underneath the railroad bridge, and continues under the West San Carlos Street Bridge. The trail then ramps up to the top of bank through the adjacent existing San Jose Fire Department training facility and continues along Montgomery Street to Park Avenue.

Construction of the Reach 5B/5C trail includes retaining walls, trail signage, striping, lighting, storm drain outfall relocation, relocation of fire hydrants, upgrades to sidewalks and driveways, and replacement landscaping. In and adjacent to Los Gatos Creek, the Project proposes grading and excavating at the railroad bridge, West San Carlos Street bridge, and adjacent to a Pacific Gas & Electric utility tower. Existing rock slope protection (RSP) will be removed to install the new paved trail along the base of retaining walls. Large wood structures will also be installed in Los Gatos Creek to improve fish habitat complexity.

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

1.3.1 Dewatering and Fish Relocation Activities

In-channel construction work will be limited to the period between June 15 and October 15. Although construction would occur during summer low flow conditions, streamflow is often perennial in this reach of Los Gatos Creek and is likely to be present during construction. The Project proposes to avoid operating equipment within the live stream by constructing cofferdams and dewatering the site. The cofferdams and the associated flow bypass system will take approximately one to three days to install, and will be in place for approximately 45 days. The contractor will construct sandbag cofferdams filled with clean gravel and measuring approximately 4 feet high and 30 feet wide across the channel. Cofferdams will be constructed both upstream and downstream of the in-channel work area, and the dewatered area will be approximately 600 feet long. The streamflow of Los Gatos Creek will be diverted by pumping into an 18 to 24 inch flexible pipe which will be located down the center of the channel. A fish screen will be installed at the bypass pump intake. At the downstream end, the diversion pipeline would discharge back into the Los Gatos Creek channel using an energy-dissipation structure. Creek flows downstream of the diversion will not be diminished as 100 percent of the diverted flow will be returned to the creek. Construction activities in the dewatered reach of the Los Gatos Creek channel will take approximately 45 days.

Upon completion of cofferdam installation, a NMFS-approved biologist will initiate a program to capture and relocate native vertebrates to a suitable location downstream. Fish will be collected using seining, dip netting or electrofishing. The biologist will minimize handling of salmonids, and when handling is necessary the biologist will always wet hands or nets prior to touching fish. Captured fish will be held in a container with a lid that contains cool, shaded water that will be continuously aerated with a battery-powered external bubbler. Fish will not be subjected to jostling or excess noise and will not be overcrowded in the containers. Two holding containers will be available to segregate young-of-the-year fish from larger fish to avoid

predation. Fish are not expected to be abundant, but if they are, the biologist will periodically cease capture and relocate fish to the pre-selected release location. Fish will not be removed from the container until the time of release. Captured fish will be relocated to the nearest point immediately downstream of the dewatered area in a site with suitable habitat conditions. For all captured individuals the biologist will identify species, estimate year-classes, and record estimated numbers at the time of release. The fish will not be anesthetized or measured. A report summarizing the fish relocation activities will be submitted to NMFS on January 31 following the relocation effort.

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

1.3.2 Removal of RSP, Grading for Multi-use Trail, and Construction

The new trail will include retaining walls, trail signage, striping, lighting under the railroad bridge, lighting under the West San Carlos Street Bridge, storm drain outfall relocation, relocation of fire hydrants and facilities at the San Jose Fire Department training facility, fencing, upgrading the sidewalk and driveway along Montgomery Street, and replacement landscaping.

The new trail passes under the Joint Powers Board (JPB) Railroad Bridge along the west bank of Los Gatos Creek. The JPB Railroad Bridge Replacement Project removed a significant amount of material along the west bank to widen the creek and constructed a soldier pile retaining wall in 2017. The new trail will be constructed along the base of this retaining wall. The area where the trail will be installed is currently covered in RSP, composed of ½ ton rock. The RSP will be removed up to the existing retaining wall and additional concrete panels will be installed so that the wall is two feet below the finished grade of the trail profile.

Approximately 0.04 acres of Los Gatos Creek below ordinary high water would be temporarily impacted during construction due to site grading, removal of the RSP, and the installation of a paved trail. The trail will be contained within the prior footprint of the RSP. The removal of the RSP and replacement with the trail will allow for a wider channel during high flow events as the trail will be seasonally inundated. Construction access will be from the west bank. Construction activities below top of the creek bank will be restricted to the construction window of June 15 to October 15.

With the new trail alignment along the west side of Los Gatos Creek, construction activities occur primarily on the west bank of the stream. Work on the east bank of Los Gatos Creek consists of native planting, hydroseeding, and temporary erosion control best management practices (BMPs). There is no riparian vegetation immediately adjacent to the channel that will be affected by construction activities. However, at the top of the bank there will be some permanent loss of vegetation from the footprint of the new trail. A mitigation plan will be developed to address the loss of vegetation located in the trail footprint as a part of the final bid documents, and submitted for NMFS approval at least 30 days prior to construction. Mitigation plantings installed on the west bank by the JPB Railroad Bridge Replacement Project will be protected during construction of the trail. During high flow events, Los Gatos Creek experiences strong erosive and scour forces at this location and creek geometry may affect the survival of

riparian plantings. As such, the riparian replanting plan will include contingency measures to ensure successful revegetation of the site.

The Project proposes to modify the sidewalk and a driveway on Montgomery Street and relocate fire hydrants and other fire training facilities on City Property. Other upland Project activities include trail signage, striping, lighting under the railroad bridge, lighting under the West San Carlos Street Bridge, fencing, and replacement landscaping. These activities are above the top of bank and are not expected to affect the riparian zone or waters of Los Gatos Creek.

The City is considering relocation of a storm drain outfall south of the JPB Railroad Bridge. The outfall is currently positioned to drain onto the footprint of the new trail. To avoid runoff directly onto the future trail, the City may relocate this storm drain by excavating a trench up to 15 feet to place the outfall under the alignment of the new trail. The relocation will maintain existing drainage patterns. Alternatively, the City is considering closing the trail during the wet season to reduce sediment removal and trail maintenance activities. If the trail is closed on a seasonal basis when high creek flows occur at or above the ordinary high water, there will be no need to relocate the storm drain outfall.

The primary staging areas for construction of the trail will be located on the east side of Los Gatos Creek on the property formerly occupied by Orchard Supply Hardware, at the Dupont Street dead-end area below the West San Carlos Street Bridge, and on a portion of the San Jose Fire Department training facility. The bare areas remaining after construction will be restored and hydro-seeded with native species to establish a permanent vegetative cover.

In addition to the trail improvements, the City proposes to install wood structures in Los Gatos Creek to enhance fish habitat. Two in-stream habitat structures are proposed: one will include eight logs and boulders along the toe of slope on the west bank; and the other will include five logs, boulders, and root wads within the middle of the creek channel. The final location of the logs and boulders will be determined in consultation with NMFS, no less than 30 days prior to the initiation of construction of the trail. These logs will be anchored to the bottom of the channel (with duckbill anchors or equal) to a depth necessary to resist high scour velocities in the vicinity of the railroad bridge. The Project's Mitigation and Monitoring Plan will monitor the wood structures. Installation of the wood structures will occur in the dewatered portion of channel during the June 15 to October 15 construction period.

As discussed above, a revegetation plan will be developed and submitted to NMFS for review and approval at least 30 days prior to construction. The revegetation plan will include monitoring of plant survival and include contingency measures to ensure successful revegetation of the site.

Equipment anticipated for Project construction includes the following:

- Excavator,
- Loader,
- Compactor,
- Lo-drill,

- Crane,
- Concrete pump,
- Paving equipment.

All of the above equipment may be used for work within the dewatered area of the channel, with the exception of the paving equipment.

In addition to the June 15 through October 15 construction window, the City proposes the following minimization measures for construction activities:

- (1) Limiting the work areas to the smallest area necessary to complete the work and delineating work boundaries;
- (2) Construction area delineation of environmentally sensitive areas including willow riparian and open water habitats;
- (3) Education program for on-site personnel at the beginning of construction activities to provide information on the sensitive habitats and wildlife species that may be present within or adjacent to the Project site and the protective measures afforded to them;
- (4) Preparation of an Avoidance of Accidental Spills and Spills Response Plan prior to construction, including all fueling, and maintenance of vehicles and other equipment shall be restricted to a designated area at least 65 feet from the active low flow channel;
- (5) Implementation of BMPs to control erosion and sedimentation, including but not limited to silt fencing, fiber rolls, and restrictions on cleaning and fueling equipment in or near environmental sensitive areas;
- (6) Water quality monitoring downstream of the work site will measure turbidity levels; and
- (7) Fish screens will be installed on water pump intakes and will conform with NMFS screen guidelines for anadromous salmonids (National Marine Fisheries Service. 1996. Juvenile Fish Screen Criteria for Pump Intakes, NMFS Environmental & Technical Services Division, pp. 4.) See: https://archive.fisheries.noaa.gov/wcr/publications/hydropower/fish_screen_criteria_for_pumped_water_intakes.pdf.

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.

2.1 Analytical Approach

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

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

The designation of critical habitat for Central California Coast (CCC) steelhead uses the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a “destruction or adverse modification” analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this biological opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat. Los Gatos Creek and the action area of this project are not designated as critical habitat for CCC steelhead.

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

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

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

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

2.1.1 Use of Best Available Scientific and Commercial Information

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

Biological Assessment for Central Coast Steelhead and Essential Fish (EFH) Assessment for Chinook Salmon. Prepared for City of San Jose by Mathew Johnson, Senior Environmental Scientist, Denise Duffy and Associates, Inc. September, 2018.

For information that has been taken directly from published, citable documents, those citations have been reference in the text and listed at the end of this document. A complete record of this consultation is on file at NMFS North-Central Coast Office in Santa Rosa, California (ARN #151422WCR2019SR00004).

2.2 Rangewide Status of the Species and Critical Habitat

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

2.2.1 Listed Species

This biological opinion analyzes the effect of the proposed Los Gatos Creek Trail Reach 5B/5C Project in San Jose, California on CCC steelhead in Los Gatos Creek. CCC steelhead are listed as threatened under the ESA (71 FR 834, January 5, 2006). The CCC steelhead distinct population segment (DPS) includes steelhead in coastal California streams from the Russian River to Aptos Creek, and the drainages of Suisun Bay, San Pablo Bay, and San Francisco Bay.

2.2.2 Steelhead General Life History

Steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until

they become large enough to migrate to the ocean to finish rearing and maturing to adults. General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan 2001). Although variation occurs in coastal California, steelhead usually live in freshwater for 1 to 2 years in central California, then spend 2 or 3 years in the ocean before returning to their natal stream to spawn. Steelhead may spawn 1 to 4 times over their life. Adult steelhead returning from the ocean to the Guadalupe River watershed which includes Los Gatos Creek typically immigrate to freshwater between December and April, peaking in January and February, and juveniles migrate as smolts from the watershed to the ocean from January through June, with peak emigration occurring in April and May (Fukushima and Lesh 1998).

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

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

2.2.3 Status of CCC Steelhead

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

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

Historically, approximately 70 populations¹ of steelhead existed in the CCC steelhead DPS (Spence *et al.* 2008, Spence *et al.* 2012). Many of these populations (about 37) were independent, or potentially independent, meaning they had a high likelihood of surviving for 100 years absent anthropogenic impacts (Bjorkstedt *et al.* 2005). The remaining populations were dependent upon immigration from nearby CCC steelhead DPS populations to ensure their viability (McElhane *et al.* 2000, Bjorkstedt *et al.* 2005).

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

CCC steelhead abundance has declined significantly in recent decades, and long-term population trends suggest a negative growth rate. This indicates the DPS may not be viable in the long term. DPS populations that historically provided enough steelhead immigrants to support dependent populations may no longer be able to do so, placing dependent populations at increased risk of extirpation. However, because CCC steelhead have maintained a wide distribution throughout the DPS, roughly approximating the known historical distribution, CCC steelhead likely possess a resilience that will slow their decline relative to other salmonid DPSs or Evolutionary Significant Units in worse condition. On January 5, 2006, NMFS determined that the CCC steelhead DPS remained a threatened species, as previously listed (71 FR 834). A 2008 viability assessment of CCC steelhead concluded that populations in watersheds that drain to San Francisco Bay are highly unlikely to be viable, and that the limited information available did not indicate that any other CCC steelhead populations could be demonstrated to be viable (Spence *et al.* 2008). The most recent status review reaffirmed that steelhead in the CCC steelhead DPS remain “likely to become endangered in the foreseeable future” (Williams *et al.* 2011).

2.2.4 CCC Steelhead Critical Habitat Status

Critical habitat was designated for CCC steelhead on September 2, 2005 (70 FR 52488). In

¹ Population as defined by Bjorkstedt *et al.* 2005 and McElhane *et al.* 2000 as, in brief summary, a group of fish of the same species that spawns in a particular locality at a particular season and does not interbreed substantially with fish from any other group. Such fish groups may include more than one stream. These authors use this definition as a starting point from which they define four types of populations (not all of which are mentioned here).

designating critical habitat, NMFS considers, among other things, the essential PBFs within the designated area that are essential to the conservation of the species and that may require special management considerations or protection.

PBFs for CCC steelhead and their associated essential features within freshwater include:

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

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

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

2.2.5 Global Climate Change

One factor affecting the range-wide status of the CCC steelhead DPS, and aquatic habitat at large is climate change. Impacts from global climate change are already occurring in California. For example, average annual air temperatures, heat extremes, and sea level have all increased in California over the last century (Kadir *et al.* 2013). Snow melt from the Sierra Nevada has declined (Kadir *et al.* 2013). However, total annual precipitation amounts have shown no discernable change (Kadir *et al.* 2013). CCC steelhead may have already experienced some detrimental impacts from climate change. NMFS believes the impacts on listed salmonids to date are likely fairly minor because natural, and local climate factors likely still drive most of the climatic conditions steelhead experience, and many of these factors have much less influence on steelhead abundance and distribution than human disturbance across the landscape. In addition, CCC steelhead are not dependent on snowmelt driven streams and, thus, not affected by declining snow packs.

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

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

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

2.3 **Action Area**

“Action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for the Los Gatos Trail Reach 5B/5C Project consists of the streambed and banks of Los Gatos Creek for a

distance of approximately 1,750 linear feet. This channel reach contains the area of the cofferdams, streambed area to be dewatered, and the channel downstream to include the length of the waterway in which any temporary disruption to habitat (e.g., fine sediment plume) might be detectable. Additionally, the action area includes 1,000 feet downstream of the construction site where fish relocation activities may occur.

2.4 Environmental Baseline

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

2.4.1 Status of Steelhead in the Action Area

Upper Los Gatos Creek historically supported an anadromous run of steelhead and collections were made as early as 1895 by Snyder (Leidy *et al.* 2005). Today, steelhead only have access to the lower 5.3 miles of creek due to an impassable barrier just north of Camden Avenue. The lower 5.3 miles of Los Gatos Creek accessible to steelhead, in which the action area is located, were habitat surveyed in 2000 for SCVWD’s Fisheries Aquatic Habitat Collaborative Effort (Entrix 2000). The survey results indicated that Los Gatos Creek is dominated by pool habitat (57%) and runs (32%). Only 10% of the habitat was characterized as riffles. This low amount of riffle habitat combined with a lack of in-stream cover and poor substrate resulted in an overall rating of poor habitat conditions for steelhead in Los Gatos Creek (Entrix 2000). The channel is entrenched and streambanks are steep with little floodplain. Summer streamflow is typically low. Overall, habitat conditions in Los Gatos Creek are generally poor for steelhead spawning and rearing. Water conditions typically shallow and warm during the summer months. Consequently, steelhead numbers and densities in the action area are expected to be low during the Project’s proposed construction period between June 15 and October 15.

Some information regarding the status of the steelhead population in Los Gatos Creek is available from previous construction projects and their associated fish relocation. Fish relocation performed for the JPB Bridge Replacement Project overlapped with the action area of this project; however, no juvenile steelhead were found within the 600 linear feet of creek channel dewatered for construction purposes in 2017. Upstream of the action area, fish relocation for the construction of a bank stabilization structure at 101 Glen Eyrie Avenue in 2011 resulted in the collection of 7 juvenile steelhead over a distance of approximately 240 linear feet of Los Gatos Creek. A third construction project upstream of the action area occurred at an abandoned railroad trestle bridge near Coe Avenue where approximately 200 linear feet of channel was dewatered in 2019. Fish collection efforts did not encounter any steelhead during this effort at the railroad trestle bridge near Coe Avenue. Based on these three fish collection efforts in recent

years, the number of adult steelhead returning to Los Gatos Creek to spawn is likely very low and the number of juvenile steelhead rearing during summer months is also low. However, habitat conditions are sufficient to support small numbers of adult spawners and summer rearing of juveniles.

2.4.2 Factors Affecting the Species Environment in the Action Area

Los Gatos Creek is a tributary to the Guadalupe River in Santa Clara County, California. The watershed is located in a Mediterranean climatic region, with over 90 percent of annual precipitation occurring between November and April. Cool, moist coastal fog generally alternates with clear, warm weather during the months of May through September, and significant rainfall during that time is rare. Land use in the watershed varies. Residential and commercial development of moderate to high density predominate the banks along the creek's reaches available to anadromous salmonids.

Water development in the Los Gatos watershed has influenced flow conditions in this portion of Los Gatos Creek. Two on-channel reservoirs, Lexington and Vasona reservoirs, are operated by the Santa Clara Valley Water District (SCVWD) upstream of the Project site. Several additional small storage and diversion facilities are operated by the SCVWD and others upstream of the Project site. Water is stored within on-channel reservoirs during the winter and spring months for release during the dry season. Additional water supplies are imported to the watershed and released into the Los Gatos Creek channel for groundwater recharge. In general, the on-channel reservoirs and other water system facilities operated by the SCVWD have reduced peak winter flood events and increased summer base flow conditions in Los Gatos Creek, including the action area.

During construction of the JPB Bridge Replacement Project in 2017, instream habitat enhancement features were installed that improve habitat conditions for steelhead in the action area. The channel was widened and graded to more closely match the natural channel morphology. To increase habitat complexity and diversity for native fish, including steelhead, the project installed two rock weirs and two J-hooks weirs. Boulders and rootwads were spaced throughout the channel under the bridge and riparian vegetation planted on the bank. These features increased channel complexity, increased hydraulic diversity, and enhanced spawning and rearing habitat for salmonids in the action area.

2.4.3 Previous Section 7 Consultations Affecting the Action Area

Pursuant to section 7 of the ESA, NMFS has conducted five previous interagency consultations that affected the action area of this Project.

In July 2002, NMFS and the Corps completed a programmatic consultation for the Corps' proposed issuance of a 10-year permit to the SCVWD for stream maintenance activities during the period of 2002-2012 (ARN #151422SWR2001SR00408). The consultation addressed routine SCVWD maintenance activities including sediment removal, vegetation maintenance, bank stabilization, and facility maintenance in Santa Clara County streams, including Los Gatos Creek and the action area. NMFS concluded that this 10-year program of stream maintenance activities was not likely to jeopardize CCC steelhead or their critical habitat.

In June 2013, NMFS and the Corps completed consultation on one-year (i.e., 2013) of SCVWD stream maintenance activities (ARN #151422SWR2011SR00415). The 2013 consultation addressed proposed sediment and vegetation maintenance activities in Santa Clara County streams, including portions of Los Gatos Creek that encompass the action area. Activities within the action area of this project included selective removal of aquatic vegetation by hand labor or herbicide application within portions of 4 miles of Los Gatos Creek between San Fernando Street and Camden Avenue. This project limited vegetation maintenance activities to 5 percent or less of the riparian area within the four-mile reach between San Fernando Street and Camden Avenue. NMFS concluded that the SCVWD's 2013 stream maintenance activities were not likely to jeopardize CCC steelhead or their critical habitat.

In April 2014, NMFS and the Corps completed consultation on the second 10-year Corps permit for SCVWD's stream maintenance program (ARN# 151422SWR2011SR00415). The program included the same maintenance activities described above at streams, channels, gages, and flood management structures for the period of 2014-2023 in Santa Clara County streams, including Los Gatos Creek and the action area of this Project. NMFS concluded that the SCVWD 2014-2023 stream maintenance program was not likely to jeopardize CCC steelhead or their critical habitat.

In April 2015, NMFS and the Federal Transit Administration completed consultation for the JPB Los Gatos Creek Bridge Replacement Project on Los Gatos Creek, in which a two-track railroad bridge that crossed Los Gatos Creek was replaced (ARN #151422SWR2013SR00230). NMFS concluded that the bridge replacement was not likely to jeopardize CCC steelhead or their critical habitat.

In addition to the above consultations, stream restoration actions under programmatic consultations occur in the CCC steelhead DPS range and may take place in the action area. These programmatic consultations include the NOAA Restoration Center's restoration program and the Regional General Permit programmatic consultation with the California Department of Fish and Wildlife (CDFW). Both of these consultations resulted in non-jeopardy, non-adverse modification findings and authorize a limited amount of take for juvenile salmonids during instream work conducted in the summer months.

NMFS' Section 10(a)(1)(A) research and enhancement permits and section 4(d) limits or exceptions could potentially occur in the Los Gatos Creek watershed. Salmonid monitoring approved under these programs includes carcass surveys, smolt outmigration trapping, and juvenile density surveys. In general, these activities are closely monitored and require measures to minimize take during the research activities.

2.5 Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved

in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

2.5.1 Fish Relocation Activities

To facilitate construction, the Project proposes to dewater approximately 600 linear feet of the Los Gatos Creek stream channel along a portion of the new trail alignment. The Project proposes to collect and relocate fish in the work area prior to dewatering to avoid fish stranding and exposure to construction activities. Relocation activities would occur during the summer low-flow period after emigrating smolts have left and before adults have immigrated for spawning. Therefore, NMFS expects capture of listed steelhead for relocation would be limited to pre-smolting juveniles. Before and during dewatering of the construction site, juvenile steelhead and other fish would be captured by seining, dip netting and electrofishing. Collected fish would be relocated away from the work site to Los Gatos Creek downstream of the dewatered work area. Fish within the 600 linear feet of channel to be dewatered would be captured and then transported by a qualified fisheries biologist to an area outside the work site.

Data to precisely quantify the amount of steelhead that would be relocated by this Project are not available. Although fish collection and relocation were performed within the action area in 2017, habitat conditions within this reach of Los Gatos Creek have changed significantly since that time. Restoration actions by the JPB bridge project in 2017 included construction of weirs, installation of boulders and rootwads, channel widening and grading, and riparian plantings. These features have increased channel complexity, increased hydraulic diversity and enhanced habitat conditions for steelhead spawning and rearing. Therefore, NMFS expects a higher likelihood of steelhead being present under current conditions. In 2017, no steelhead were observed during fish collection and relocation efforts in the action area.

To estimate the number of juvenile steelhead likely to be present in the action area, NMFS used data from a construction-related fish relocation effort performed by D.W. Alley & Associates in Los Gatos Creek at 101 Glen Eyrie Avenue in 2011 (D W Alley & Associates 2012). The Glen Eyrie site is approximately 1.1 miles upstream of the action area and contains habitat conditions, including summer streamflows, similar to the proposed Project site. At the 101 Glen Eyrie Avenue site, a total of 7 steelhead were collected and relocated in August and October of 2011 (D W Alley & Associates 2012). The length of the dewatered reach associated with the Glen Eyrie fish relocation was approximately 240 feet resulting in a density of approximately 3 steelhead per 100 feet. Using a density estimate of 3 fish per 100 linear feet, 18 juvenile steelhead would be present in the 600-foot long dewatered reach of this Project when relocation activities occur. However inter-annual variation in juvenile fish abundance occurs in response to variations in cohort strength, spawning distribution, variations in precipitation and temperature, variations in predator or prey abundance, restoration actions, and other factors. The results of 10 years of sampling juvenile steelhead in another tributary to the Guadalupe River, Guadalupe Creek, has shown fish densities can vary widely (SCVWD 2014). At the most upstream sampling site in Guadalupe Creek, the SCVWD (2014) reports the 10-year average is 17 juvenile steelhead per 100 linear feet of stream during the late summer/fall period, while the lowest value of the 10-year period was zero and the highest was 31 juvenile steelhead per 100 feet of stream. In consideration of the potential variation for inter-annual fish productivity, NMFS will assume that, in some years, up to 50 percent more juvenile steelhead could occur in Los Gatos Creek

than observed in past years. Based on this information, NMFS expects the maximum number of steelhead that will be captured and relocated from the action area by this Project to be 27 pre-smolting juvenile steelhead.

Fish relocation activities pose a risk of injury or mortality to rearing juvenile salmonids. Any fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely, depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities would be conducted by qualified fisheries biologists, direct effects to, and mortality of juvenile salmonids during capture are expected to be minimized.

Although sites selected for relocating fish should have similar water temperature as the capture sites and are expected to have adequate habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may have to contend with other fish causing increased competition for available resources such as food and habitat area. Frequent responses to crowding by steelhead include emigration and reduced growth rates (Keeley 2003). Some of the fish released at the relocation sites may choose not to remain in these areas and move either upstream or downstream to areas that have more vacant habitat and a lower density of steelhead. As each fish moves, competition remains either localized to a small area or quickly diminishes as fish disperse. NMFS does not expect impacts from increased competition would be large enough to adversely affect the survival chances of individual steelhead, or cascade through the watershed population of these species based on the small area that would likely be affected and the small number of salmonids likely to be relocated. Sufficient habitat appears to be available in Los Gatos Creek downstream of the Project site to sustain fish relocated without crowding other juvenile steelhead.

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

2.5.2 Dewatering

The Project proposes to isolate the work with cofferdams and bypass streamflow around the construction area by diversion through an 18 to 24-inch flexible pipe. Dewatering of the channel would affect up to 600 linear feet of Los Gatos Creek. NMFS anticipates temporary changes to instream flow within and downstream of the Project site during the dewatering process prior to construction. These fluctuations in flow are anticipated to be small, gradual, and short-term. Once the cofferdams and pipeline bypass system is installed, streamflow above and below the work sites should be the same as free-flowing pre-project conditions except within the dewatered work area where streamflow is bypassed. The dewatering of 600 feet of channel is expected to cause a temporary reduction of aquatic habitat. Juvenile steelhead that avoid capture in the Project work area would likely die during dewatering activities due to desiccation, thermal stress, or crushed by heavy equipment during construction operations. However, due to the pre-dewatering fish relocation efforts to be performed by qualified biologists, NMFS expects that the

number of juvenile steelhead that would be killed as a result of stranding during dewatering activities would be less than one percent of the fish within the action area prior to dewatering.

The temporary cofferdams and water diversion structures in the stream are not expected to impact juvenile steelhead movements in Los Gatos Creek beyond typical summer low-flow conditions. The cofferdams and dewatered reach would restrict movement of juvenile steelhead in a manner similar to the normal seasonal reduction of flow that typically occurs during summer within portions of some streams throughout the range of CCC steelhead. Although steelhead do not experience intermittent flows in the action area in all summers, the limited duration of water diversion (up to 45 days) is unlikely to adversely affect individual steelhead rearing upstream or downstream of the dewatered reach. The Project's installation of a fish screen at the upstream water intake is expected to effectively prevent the entrainment and impingement of juvenile steelhead at the streamflow bypass system. By conforming to NMFS screen criteria (NMFS 1996), the screen's mesh size will prevent fish from passing into the pump and intake water velocities will be low enough to allow small steelhead life stages to swim away.

Benthic (*i.e.*, bottom dwelling) aquatic macroinvertebrates within the Project site may be killed or their abundance reduced when 600 linear feet of creek habitat is dewatered (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from stream dewatering would be temporary because construction activities would be relatively short-lived and the dewatered reach is relatively small. Rapid recolonization (typically one to two months) of disturbed areas by macroinvertebrates is expected following rewatering (Cushman 1985, Thomas 1985, Harvey 1986). In addition, the effect of macroinvertebrate loss on juvenile steelhead would likely be negligible because food from upstream sources (via drift) would be available downstream of the dewatered areas since streamflow would be bypassed around the Project work site. Food sources derived from the riparian zone would not be affected by the Project. Based on the foregoing, NMFS does not expect the loss of aquatic macroinvertebrates as a result of dewatering activities would adversely affect threatened CCC steelhead.

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

2.5.3 Increased Mobilization of Sediment in the Stream Channel and Water Quality

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

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

Although sediment and turbidity may affect listed salmonids as described above, sedimentation and turbidity levels associated with the proposed Project, including RSP removal, grading, and the trail construction, are not expected to rise to the levels discussed in the previous paragraph because the Project proposes several measures to prevent the mobilization of sediment during and after construction. During construction, NMFS expects sediment input to the creek would be minimal, because the Project proposes to control exposed soil by stabilizing slopes (*e.g.*, with erosion control blankets) and protecting channels (*e.g.*, using silt fences and straw wattles). Post-construction, the Project will stabilize the creek bank and areas adjacent to the trail using coir-wrapped netting and plantings to reduce the potential for future erosion. NMFS anticipates any resulting elevated turbidity levels would be small and only occur for a short time, well below levels and durations shown in scientific studies as causing injury or harm to salmonids (see for example Newcombe and Jensen 1996). NMFS expects any sediment or turbidity generated by the Project would not extend more than 100 feet downstream of the work site based on site conditions (low flows) and methods used to control sediment and turbidity. NMFS does not anticipate harm, injury, or behavioral impacts to CCC steelhead associated with exposure to elevated suspended sediment levels that would be generated by this Project.

2.5.4 Impacts to Channel Form and Function

By reducing the amount of RSP in the Project area and grading, flood water conveyance will be increased through the reach and the trail is designed to be seasonally inundated. Based on the Project design, NMFS does not anticipate streamflow constraints from constructed trail features. The Project will also install two habitat structures consisting of logs and boulders which are designed to increase instream habitat complexity for native fish. Instream habitat is expected to be enhanced for adult steelhead by providing holding areas and cover from predators. For juvenile steelhead, the habitat structures will likely increase the amount of riffle habitat, provide cover and low velocity refuge during high flow events. Overall, habitat conditions are anticipated to improve in the action area for juvenile steelhead rearing and adult spawning with the Project's installation of the habitat structures. Fish passage through the action area will remain unimpaired post-construction.

2.5.5 Toxic Chemicals

Oils and similar substances from construction equipment can contain a wide variety of polynuclear aromatic hydrocarbons (PAHs) and metals. Both can result in adverse impacts to salmonids. PAHs can alter salmonid egg hatching rates and reduce egg survival as well as harm the benthic organisms that are a salmonid food source (Eisler 2000). Some of the effects that

metals can have on salmonids are immobilization and impaired locomotion, reduced growth, reduced reproduction, genetic damage, tumors and lesions, developmental abnormalities, behavior changes (avoidance), and impairment of olfactory and brain functions (Eisler 2000).

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

2.6 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.

CCC steelhead are listed as threatened. Based on the extensive loss of historic habitat due to dams and the degraded condition of remaining spawning and rearing areas, CCC steelhead populations in watersheds that drain to San Francisco Bay, including Los Gatos Creek, have experienced severe declines. Due to an impassable barrier at creek mile 5.3, urbanization, and a highly altered streamflow regime, steelhead occur in Los Gatos Creek in densities and abundance lower than historic levels. Juvenile CCC steelhead are expected to be present within the 1,750-foot long action area during construction; however, the number of individuals that are present is expected to be low due to the small area of stream affected and low summer streamflows. Those present likely make up a very small proportion of steelhead in Los Gatos Creek. Due to the

timing of the proposed action, no adult steelhead or migrating steelhead smolts would be adversely affected by the Project.

As described in the *Effects of the Action* section above, NMFS identified dewatering and fish relocation as the adverse effects on CCC steelhead in the action area that would result from the proposed Project. Prior to dewatering 600 linear feet of creek for construction, fish would be collected and relocated from the work area. Fish that elude capture and remain in the Project area during construction activities would likely die due to desiccation or thermal stress, or be crushed by heavy equipment during construction operations. However, based on the low mortality rates for similar capture and relocation efforts, NMFS anticipates few juvenile steelhead would be injured or killed by fish relocation and construction activities during implementation of this Project. Anticipated mortality from capture and relocation is expected to be less than three percent of the fish relocated, and mortality expected from dewatering is expected to be less than one percent of the fish in the area prior to dewatering. Because no more than 27 juvenile steelhead are expected to be present, NMFS expects no more than two juvenile steelhead would be injured or killed by fish relocation and dewatering. Due to the relatively large number of juveniles produced by each spawning pair, steelhead spawning in the Los Gatos Creek watershed in future years are likely to produce enough juveniles to replace the few that may be lost at the Project site due to relocation and dewatering. It is unlikely that the small potential loss of juveniles by this Project would impact future adult returns. In addition, the Project would benefit steelhead and their habitat in the future by the addition of in-stream large wood and boulder structures that provide increased habitat complexity. The planting of native vegetation is expected to create shade, produce allochthonous food and shelter, and assist with stabilizing bank sediments.

Regarding future climate change effects in the action area, California could be subject to higher average summer air temperatures and lower total precipitation levels. Reductions in the amount of snowfall and rainfall would reduce streamflow levels in Northern and Central Coastal rivers. Estuaries may also experience changes in productivity due to changes in freshwater flows, nutrient cycling, and sediment amounts. For this Project, in-water activities will occur for approximately 45 days, and the above effects of climate change will not be detected within that time frame. If the effects of climate change are detected over the short term, they will likely materialize as moderate changes to the current climate conditions within the action area. These changes may place further stress on CCC steelhead populations. The effects of the proposed action combined with moderate climate change effects may result in conditions similar to those produced by natural ocean-atmospheric variations as described in the Environmental Baseline section of this opinion (Section 2.4) and annual variations. CCC steelhead are expected to persist throughout these phenomena, as they have in the past, even when concurrently exposed to the effects of similar projects.

2.8 Conclusion

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

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: NMFS anticipates that take of threatened CCC steelhead during construction of the Los Gatos Creek Trail Reach 5B/5C in San Jose, California will be associated with fish collection and relocation during stream dewatering.

The number of threatened steelhead that may be incidentally taken during Project activities is expected to be small, and limited to the pre-smolt juvenile life history stage. Take is anticipated to occur during fish relocation and dewatering in a 600-foot long reach at the Project site between June 15 and October 15. The number of juvenile steelhead relocated during Project construction is anticipated to be no more than 27, and no more than two juvenile steelhead are expected to be injured, or killed during fish relocation and dewatering activities.

If more than 27 juvenile steelhead are captured, or more than two juvenile steelhead are injured or killed, incidental take will have been exceeded.

2.9.2 Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species.

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

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

- (2) Undertake measures to minimize harm to CCC steelhead resulting during and from construction of the Project.
- (3) Undertake measures to monitor the performance of the Project's instream enhancement structures and the success of riparian vegetation plantings.
- (4) Prepare and submit reports which summarize the effects of construction, fish relocation, and dewatering activities, and post-construction site performance.

2.9.4 Terms and Conditions

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

1. The following terms and conditions implement reasonable and prudent measure 1:
 - a. At least 60 days prior to the initiation of construction, a stream dewatering plan and a fish relocation plan shall be provided to NMFS for review and approval.
 - b. Captured fish shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. To avoid predation, the biologist shall have at least two containers and segregate young-of-year fish from larger age classes and other potential aquatic predators. Captured salmonids will be relocated, as soon as possible, to a suitable instream location in which habitat condition are present to allow for adequate survival of transported fish and fish already present.
 - c. If any salmonids are found dead or injured, the biologist shall contact NMFS biologist Andrew Trent by phone immediately at (707) 578-8553 or the NMFS North-Central Coast Office at (707) 575-6050. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities shall be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location of collection, fork length measured, and frozen as soon as possible. Frozen samples shall be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS North-Central Coast Office without obtaining prior written approval from NMFS. Any such transfer will be subject to such conditions as NMFS deems appropriate.

2. The following terms and conditions implement reasonable and prudent measure 2:
 - a. Construction equipment used within the creek channel will be checked each day prior to work within the creek channel (top of bank to top of bank) and, if necessary, action will be taken to prevent fluid leaks. If leaks occur during work in the channel (top of bank to top of bank), Caltrans, the City, or their contractor will contain the spill and remove the affected sediment.
 - b. In areas where concrete is used, a dry work area must be maintained to prevent conveyance of runoff from curing concrete to the surface waters of the adjacent stream at all times. Water that inadvertently contacts uncured concrete must not be discharged into surface waters.
 - c. Once construction is completed, all Project-introduced material (pipe, cofferdam, *etc.*) must be removed. Excess materials will be disposed of at an appropriate disposal site. All cofferdams, pumps, pipes and other diversion materials will be removed from the stream upon work completion and no later than October 15.
3. The following terms and conditions implement reasonable and prudent measure 3:
 - a. At least 60 days prior to the initiation of construction, the City or Caltrans shall provide a plan to NMFS for review and approval regarding monitoring the success of the riparian vegetation plantings and the performance of the two instream large wood and boulder structures.
4. The following terms and conditions implement reasonable and prudent measure 4:
 - a. Caltrans or the City must provide a written report to NMFS by January 31 of the year following construction of the proposed action. The report must be provided to NMFS North-Central Coast Office, Attention: San Francisco Bay Branch Chief, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report must contain, at a minimum, the following information:
 - i. Construction Related Activities** – The report must include the dates construction began and was completed, a discussion of any unanticipated effects or unanticipated levels of effects on salmonids, a description of any and all measures taken to minimize those unanticipated effects and a statement as to whether or not the unanticipated effects had any effect on ESA-listed fish, the number of salmonids killed or injured during the Project action, and photographs taken before, during, and after the activity from photo reference points.
 - ii. Fish Relocation** – The report must include a description of the location from which fish were removed and the release site including photographs, the date and time of the relocation effort, a description of the equipment and methods used to collect, hold, and transport salmonids, the number of fish relocated by species, the number of fish injured or killed by species and a brief narrative of the

circumstances surrounding ESA-listed fish injuries or mortalities, and a description of any problems which may have arisen during the relocation activities and a statement as to whether or not the activities had any unforeseen effects.

2.10 Conservation Recommendations

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

2.11 Reinitiation of Consultation

This concludes formal consultation for Los Gatos Creek Trail (Reach5B/5C) Project on Los Gatos Creek in San Jose, California.

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 user of this opinion California Department of Transportation. Other interested users could include the City of San Jose, citizens of Santa Clara County and others interested in the conservation of threatened steelhead. 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, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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