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

August 24, 2020

Refer to NMFS No: WCRO-2020-00527

Crystal Huerta
Senior Project Manager
Department of the Army
Corps of Engineers, Los Angeles District
60 South California Street, Suite 201
Ventura, California 93001-2598

Re: Endangered Species Act Section 7(a)(2) Biological Opinion for the U.S. Army Corps of Engineers' Permitting of the Construction and Maintenance of the Randall Road Debris Basin on San Ysidro Creek, Santa Barbara County, California

Dear Ms. Huerta:

On February 27, 2020, NOAA's National Marine Fisheries Service (NMFS) received the U.S. Army Corps of Engineers' request for formal consultation under Section 7 of the U.S. Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.). This request concerns the authorization to construct the Randall Road Debris Basin in the community of Montecito, Santa Barbara County, California. The proposed action is within range of the endangered Southern California (SC) Distinct Population Segment of steelhead (*Oncorhynchus mykiss*) and designated critical habitat for the species. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR Part 402, as amended; 84 Fed. Reg. 44976, 45016 (August 27, 2019)).

The biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of the endangered SC steelhead, or destroy or adversely modify designated critical habitat for this species. Because the proposed action is likely to cause incidental take of endangered SC steelhead, the biological opinion includes an incidental take statement with reasonable and prudent measures and non-discretionary terms and conditions that are necessary and appropriate to minimize and monitor incidental take of endangered steelhead.

Please contact Rick Bush at rick.bush@noaa.gov if you have a question concerning this consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Maureen Spencer, Santa Barbara County Flood Control District, Santa Barbara
Chris Dellith, USFWS, Ventura
Mary Larson, CDFW, Los Alamitos
Copy to E-File: 151422SWR2010PR00221

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

Permitting Construction and Maintenance of the Randall Road Debris Basin on San Ysidro Creek, Santa Barbara County, California

NMFS Consultation Number: WCRO-2020-00527

Action Agency: U.S. Army Corps of Engineers

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely to Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely to Destroy or Adversely Modify Critical Habitat?
Southern California steelhead (*Oncorhynchus mykiss*)	Endangered	Yes	No	Yes	No

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

Issued By: 

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: August 24, 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 Part 402, as amended.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). A complete record of this consultation is on file at NMFS' California Coastal Area Office, Southern California Branch in Long Beach.

1.2 Consultation History

The consultation history herein pertains to the U.S. Army Corps of Engineers (Corps) potential approval of the Santa Barbara County Flood Control District's (District) request for a permit to construct and maintain the Randall Road Debris Basin on San Ysidro Creek, and potential effects on the endangered Southern California (SC) Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) and designated critical habitat for this species.

On April 10, 2019, we sent the District our comments on the Notice of Preparation of an Environmental Impact Report (EIR) for the construction of a new debris basin on San Ysidro Creek near Highway 192, including the initial proposed action. We advised the District that the DPS range for endangered SC steelhead included the action area for this project, and requested a description of the proposed operation and maintenance of the facility.

On February 27, 2020, the Corp's submitted a letter requesting consultation to NMFS along with a CD containing 30-percent design drawings, a biological assessment (BA), and 30-percent hydraulics and hydrology report.

On April 24, 2020, we sent the Corps a letter stating that the consultation request was insufficient and, therefore, formal consultation could not be initiated. Our letter identified numerous items that were not provided, but which were required to begin the formal consultation, including design plans advanced to the design phase where the Project is ready for construction (i.e., ≥90-percent design).

On May 26, 2020, following a number of information exchanges, we received a complete consultation package from the Corps. On May 27, 2020, we informed the Corps that a complete

consultation package was received and that we intended to provide a final biological opinion by September 30, 2020.

On June 9, 2020, the Corps emailed a letter to NMFS and provided a weblink to remotely access the District's revised design plans and a hydraulics and hydrology report (both 60-percent design phase) for the Randall Road Debris Basin and requested NMFS to review as part of the consultation package. On June 10, 2020, the Corps provided us the necessary information to access the documents remotely.

On July 28, 2020, we contacted the Corps via email and requested if the Corps would like us to consider information contained in the District's draft EIR to supplement the description of the proposed action, particularly regarding the duration and timing of construction and the proposed clear-water diversion, which the Corps affirmed on the same day.

1.3 Proposed Federal Action

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

The proposed action involves the construction and operation of a new debris-basin on San Ysidro Creek in the community of Montecito, Santa Barbara County, California. Section 404 of the Clean Water Act contains the construction authority for the proposed action. The goal of the District's proposed action is to achieve increased debris-holding capacity and reduce potential flooding and debris flow impacts at Highway 192 and downstream infrastructure and properties. The property at the project location is privately owned, and the owners of the eight parcels containing streamside homes that make up the action area have reportedly agreed to sell their land. The homes were severely flood-damaged during the debris flow on January 9, 2018, that occurred one month following the Thomas Fire. Federal Emergency Management Agency hazard mitigation funding is proposed to fund the purchase of the project property.

Debris-basin construction is planned for April through December 2021, and construction of the entire proposed action is anticipated to take about 5 months (Padre 2020). About 97,000 cubic yards (2,619,000 cubic foot) of sediment would be excavated to construct the debris-basin, and export of this sediment is expected to take 2 – 3 months during the dry season (USACE 2020a). The Randall Road debris-basin is proposed to be about 8 acres (USACE 2020b), and designed to allow San Ysidro Creek to maintain natural sediment transport and fish passage up to a 5-year flow event. Approximately 0.60 acres of waters of the U.S. occurs within the proposed project site and would be partially and permanently modified by the proposed project. Channel width is proposed to be widened in some parts on the reach where steep banks would be regraded to a lower slope, widening the jurisdictional portion of the creek. The general alignment and channel length of the creek would be similar to existing conditions. The final dimensions of waters of the U.S. would be enlarged up to 0.73 acres by reducing steep bank slopes, thereby widening the creek channel in some locations.

The proposed action would maintain the existing San Ysidro Creek in its natural condition up to approximately the 5-year storm event water surface elevation (WSE), which roughly correlates

to a channel depth of 2.4 – 5.5 feet (WRECO 2020). This is intended to avoid impacting the existing fish-passable conditions, up to a 5-year flow event. From that 5-year elevation, the "off channel" debris-basin would be graded as a large floodplain area within the extents of the acquired properties. The proposed basin floor slopes toward the channel at a 0.25 percent slope. The border of the basin would conform to existing ground using a 2:1 (Horizontal: Vertical) side-slope. The proposed action includes a basin-floor area of approximately 3.2 acres to the west of San Ysidro Creek and 0.67 acres to the east of San Ysidro Creek. The depth of the basin would range from 5 to 20 feet when compared to existing ground elevations.

In addition to the proposed debris-basin, the action includes reconstruction of the eastern bank of San Ysidro Creek to a 2H:1V slope above the 5-year WSE within the limits of the action area (the Action Area is described below). The existing bank slope currently ranges from 2H:1V to 1H:1V. Reducing the slope to a consistent feature of 2H:1V is intended to encourage stability and a suitable platform for revegetation.

The District proposes to remove up to 49 mature, native trees during construction activities. These trees include 30 coast live oak, 17 California sycamore and two California bay trees (Padre 2020). The proposed action includes a restoration plan that generally describes replanting all disturbed areas with appropriate vegetation types and replacement of mature, native trees at a minimum 3:1 ratio. Three distinct planting zones involve the embankment, creekside (i.e., channel margins beyond the bankfull width), and basin-slope areas (as shown in Figure 3-3, Padre 2020). The floor of the new debris basin where sediment will be routinely removed will not be revegetated. The District proposes to irrigate, monitor and maintain the vegetation during the initial plant-establishment period (3 to 5 years) using an existing on-site pipeline.

Randall Road would be gated to regulate access for debris-basin and utility maintenance. Two maintenance ramps into the western basin will allow access from the north and west. A maintenance ramp into the eastern basin will allow access from the south. Four debris racks are proposed within the basin to assist in the capture of large woody debris during large-storm events. An embankment on the southern end of the debris basin along East Valley Road is proposed to visually screen the basin from public view and to assist in containing debris flows.

During debris-basin construction, a temporary surface-water diversion within San Ysidro Creek is proposed to isolate the work area from flowing water. Constructing the proposed diversion involves excavating a small trench or use of a temporary pipe to transport surface water around the work area. The type of water diversion used would be determined by the contractor and field conditions (USACE 2020a). In either case, a temporary cofferdam would be constructed at the upstream end of the construction work area to divert surface water into the trench or pipe. According to the minimization measures proposed in the BA, erosion reduction and turbidity controls are proposed at the downstream end of the diversion, potentially including an energy dissipater, filter fabric, and hay bales as needed to ensure turbid water would not exit the work site.

Routine maintenance within the debris basin will follow the District's standard approach of material removal once the basin becomes approximately 25-percent full. The District proposes the basin will need to be desilted every 5 to 10 years, and may be less frequent since this debris-

basin design does not incorporate a dam and small outlet pipe. Desilting of the basin is not likely to extend into the creek channel unless there is a very large storm event. Under the proposed action, if sediment accumulation affects the creek itself, the material will be removed and the channel will be re-shaped to retain the Project design 5-year WSE. Native vegetation will be actively planted on the basin slopes surrounding the basin and this vegetation will remain during maintenance activities. Large-scale disturbance in the debris-basin and channel would occur after watershed-scale natural disturbances would have already occurred. Routine maintenance is proposed to occur between August and November.

1.3.1 Other Activities

We considered, under the ESA, whether or not the proposed action would cause any other activities that would have consequences on SC DPS steelhead or its critical habitat and determined that it would not. 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.

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 provide 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 an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "to engage in an action that reasonably 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 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.

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 44976, 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.

The primary documents that the Corps submitted for NMFS' consideration in the development of this biological opinion are the biological assessment (BA), 30 and 60% Hydrology and Hydraulics Reports (WRECO 2020), and 30 and 60% Design Plans. The BA provides a brief description of the proposed action, field survey results, potential effects of the action on steelhead and critical habitat for this species, and measures to minimize these effects. Per direction from the Corps, we also relied on elements of the Draft Environmental Impact Report (Padre 2020) for a supplemental understanding of the proposed action, including: (1) construction and dewatering; (2) planting restoration plan; and (3) a description of anticipated routine maintenance. Additional Project information that was provided to NMFS included District letters of May 1, 2020, and May 18, 2020. To further inform the assessment of potential effects on endangered steelhead and designated critical habitat, NMFS relied on relevant ecological literature, documented in the official record for the proposed action, and NMFS' own field observations during post-Thomas Fire habitat surveys in the vicinity of the action area.

Consistent with this analytical approach, we considered published, peer-reviewed ecological literature on the following topics as they relate to the nature of the proposed action: (1) natural flow regime within a river system; (2) volitional passage for steelhead; (3) disconnected

migratory corridors for steelhead; (4) migratory windows for steelhead; and (5) physiological effects on steelhead due to delay.

2.2 Rangewide Status of the Species and Critical Habitat

This opinion examines the status of endangered steelhead that would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' "reproduction, numbers, or distribution" 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 function of the PBFs that are essential for the conservation of the species.

2.2.1 Status of the Species

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

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

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

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

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

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

2.2.2 General Steelhead Life-History

The major freshwater life-history stages of steelhead involve spawning, incubation of embryos, freshwater rearing, emigration of juveniles, estuary rearing, smoltification, and upstream migration of adults. Steelhead juveniles typically rear in freshwater for 1 to 4 years before migrating to the ocean, usually in the spring, and spend 1 to 3 years in the marine environment before returning to rivers and streams to spawn. Steelhead grow and reach maturity at age 2 to 5 while in the ocean. This ocean-going life history pattern, known as anadromy, leads to more rapid growth than can be accomplished by non-anadromous individuals that spend their entire life in freshwater. The discussion of the steelhead life history below begins with the adult stage entering freshwater to spawn.

In southern California, adult steelhead typically immigrate to natal streams for spawning during December through May. Spawning adults enter freshwater during winter and spring freshets when streamflow is sufficient to breach sandbars that form at river mouths. Adults may migrate several to hundreds of miles in some watersheds to reach their spawning grounds. Although spawning may occur during December to June, the specific timing of spawning may vary a month or more among streams within a region. Steelhead exhibit an iteroparous life history type, unlike many of the other Pacific salmon (*Oncorhynchus spp*.), which means adult steelhead are capable of surviving after spawning and have the ability to migrate downstream as post-spawned adults (i.e., kelts) to the ocean and make subsequent spawning migrations.

Female steelhead select spawning sites based on a variety of factors, including substrate size, water velocity, depth, and temperature. Females dig their nests in the riffle crests that form at the tailouts of complex pools with suitable gravel-cobble substrate and adequate instream cover. Spawning involves courtship between the female constructing the redd and one or more suitable males. Egg pockets are excavated in gravel-cobble substrates at a mean depth of about 8 inches (Sheutt-Hames et al. 1996). When the depth of the redd and the coarseness of the gravel meet the

female's criteria, and she is courted by an acceptable male, she will release her eggs (Quinn 2005). Successful egg burial occurs immediately following fertilization by the male. In order to cover the embryos with a layer of clean gravel, the female digs a new egg pocket upstream of the pocket containing the fertilized eggs and the excavated, clean gravels and cobbles are swept downstream by the current to bury the embryos. Depending on the size of the female and the number of eggs deposited in each pocket, the spawning pair may continue to excavate new egg pockets in an upstream fashion enlarging the overall size of the redd. The developing embryos incubate in the substrate for a period of 3 to 8 weeks prior to hatching.

Streams are the initial rearing habitats for juvenile steelhead from the time they emerge from the gravel to the pre-smolt stage when juveniles have grown large enough to begin their seaward migration. Alevins, juveniles with an external yolk sac still attached, emerge from redds about 2 to 6 weeks after hatching in the gravel egg pocket. When the yolk sac is fully utilized, juvenile steelhead are classified as fry. Steelhead fry forage along low-velocity channel margins and utilize gravel-cobble substrate and instream vegetation for cover. Juveniles tend to congregate in schools, but as they grow these schools break up and the fish (now called parr) spread throughout the stream, selecting individual territories with access to adequate cover and food (Shapovalov and Taft 1954). Preferred territories are commonly associated with deep pools, instream large woody debris (LWD), boulder clusters, riparian and instream vegetation, undercut stream banks and deeper riffle/run feeding habitats. During the summer and fall low-flow season, parr make seasonal movements in search of perennial stream reaches with suitable water quality and food availability. Habitats formed by scour (i.e., pools) associated with boulders, LWD, and intact rootwads are the preferred areas where SC steelhead parr over-summer (Spina 2003, Spina et al. 2005, Boughton and Goslin 2006). During winter high-flow events, juveniles seek low velocity, off-channel habitats such as backwater pools, side channels, and inundated woody riparian vegetation that serve as refugia (Shapovalov and Taft 1954, Solazzi et al. 2000).

The physiology of salmonids (salmon and steelhead) prepares them for seaward migration and estuary rearing. Steelhead have the most flexible freshwater life history of any of the Pacific salmonids such that emigration instincts are not obligate. While most steelhead go to sea before maturing, some individuals of both sexes spawn (with anadromous or resident life forms) before going to sea, while others complete their life cycles without going to sea at all (McPhee et al. 2007, Christie et al. 2011). Transformation of steelhead parr into smolts (i.e., smoltification) is the physiological preparation for ocean residence and includes changes in shape and color, osmoregulation (salt balance) and energy storage (Quinn 2005). Larger individuals in good condition tend to migrate to sea in the spring, whereas smaller individuals are more likely to remain in freshwater or reside in estuarine habitats. Estuaries encompass a wide range of habitat types including riparian edge, brackish-freshwater ecotone, slough, and open water environments. Estuaries play an important role in steelhead life history prior to ocean entry, providing nutrient rich feeding areas, transition to seawater, and predator avoidance. Some steelhead populations rear in estuaries for months (Bond et al. 2008), but patterns of estuarine entry and use likely differ between regional watersheds based on estuary size, habitat complexity, smolt size, tidal influence, water quality and food availability.

2.2.3 Steelhead Habitat Requirements

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

2.2.4 Influence of a Changing Climate on the Species

One factor affecting the rangewide status of endangered steelhead, and aquatic habitat at large, is climate change. For the Southwest region (southern Rocky Mountains to the Pacific Coast), the average temperature has already increased roughly 1.5°F compared to a 1960 to 1979 baseline period (USGCRP 2009). High temperatures will become more common, indicating that SC steelhead may experience increased thermal stress even though this species has shown to endure higher than preferable body temperatures (Spina 2007).

Precipitation trends are also important to consider. The Southwest region, including California, showed a 16 percent increase in the number of days with heavy precipitation from 1958 to 2007 (USGCRP 2009). Potential impacts to SC steelhead in freshwater streams include damage to spawning redds and washing away of incubating eggs due to higher winter stream flow (USGCRP 2009), and poor freshwater survival due to longer and warmer periods of drought (Hanak et al. 2011, Mastrandrea and Luers 2012), which may lead to lower host resistance of steelhead to more virulent parasitic and bacterial diseases (McCullough 1999, Marcogliese 2001). Snyder and Sloan (2005) projected mean annual precipitation in southwestern California to decrease by 2.0 cm (four percent) by the end of the 21st century.

Wildfires periodically burn large areas of chaparral and adjacent woodlands in autumn and winter in southern California (Westerling et al. 2004). Increased wildfire activity over recent decades reflects sub-regional responses to changes in climate, specifically observations of warmer and earlier onset of spring along with longer summer-dry seasons (Westerling et al. 2004, Westerling and Bryant 2008). The effects of the 2017 Thomas Fire on designated critical habitat are discussed in the Environmental Baseline section (2.3.1) of this biological opinion.

Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia et al. 2002). Additionally, upper ocean temperature is the primary physical factor influencing the distribution of steelhead in the open ocean, and a warming climate may result in a northward shift in steelhead distribution (Myers and Mantua 2013). In summary, observed and predicted climate-change effects are generally detrimental to the species, given the unprecedented rate of change and uncertainty about the ability to adapt, so unless offset by improvements in other factors, status of the species and critical habitat is likely to decline over time. The climate change projections referenced above cover the time period between the present and approximately 2100. In general, climate change projections cannot be distinguished from annual and decadal climate variability for approximately the first 10 years of the projection period (see Cox and Stephenson 2007). While there is uncertainty associated with projections beyond 10 years, which increases over time, the direction of change is relatively certain (McClure et al. 2003).

2.2.5 Designated Critical Habitat

Critical habitat for the SC DPS of steelhead was designated on September 2, 2005, and consists of the stream channels listed in (70 FR 52488). Critical habitat has a lateral extent defined as the width of the channel delineated by the ordinary high-water line as defined by the Corps in 33 CFR 329.11, or by its bankfull elevation, which is the discharge level on the streambank that has a recurrence interval of approximately 2 years (September 2, 2005, 70 FR 52522). PBFs are components of stream habitat that have been determined to be essential for the conservation of the SC DPS of steelhead, and are specific habitat components that support one or more steelhead life stages and in turn contain PBFs essential to steelhead survival, growth, and reproduction, and conservation (Table 2).

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

Streams with high conservation value have most or all of the PBFs of critical habitat and extensive areas that are suitable for steelhead spawning, rearing, and migration (NMFS 2012). Streams with medium or low conservation value are less suitable for steelhead in terms of spawning, rearing, and migration, and have less of the PBFs necessary for steelhead survival growth and reproduction, generally due to anthropogenic factors. Both the Ventura River and Santa Clara River watersheds have been found to have high conservation value for the survival and recovery of the SC DPS of steelhead. While many streams in the DPS have been found to have high conservation value for survival and recovery of the species, the spawning, rearing, and

Table 2. Physical or biological features which are critical to the conservation of sites determined essential to support one or more life stages of steelhead (NMFS 2005).

Physical or Biological Features	Primary Characteristics	Essential to Conservation
Freshwater spawning sites	Water quantity and quality conditions and substrate supporting spawning, incubation, and larval development.	Without these features the species cannot successfully spawn and produce offspring.
Freshwater rearing sites	Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.	Without these features juveniles cannot access and use the areas needed to forage, grow, and develop behaviors (e.g., predator avoidance, competition) that help ensure their survival.
Freshwater migration corridors	Free of obstruction 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.	Without these features juveniles cannot use the variety of habitats that allow them to avoid high flows or predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner; allow fasting steelhead adults to successfully swim upstream, avoid predators, and reach spawning areas on limited energy stores.
Estuarine sites	Free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.	Without these features juveniles cannot reach the ocean in a timely manner and use the variety of habitats that allow them to avoid predators, compete successfully, and complete the behavioral and physiological changes needed for life in the ocean; they provide a final source of abundant forage for adult steelhead that will provide the energy stores needed to make the physiological transition to fresh water, migrate upstream, avoid predators, and develop to maturity upon reaching spawning areas.
Nearshore marine areas	Free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.	Without these features juveniles cannot successfully transition from natal streams to offshore marine areas.
Offshore marine areas	With water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.	Without them juveniles cannot forage and grow to adulthood.

migratory habitat within the DPS are heavily impacted by dams, diversions, and human development. As a result, much of the available habitat has become severely degraded, and habitat degradation has been a main contributing factor to the current endangered status of the DPS (Good et al. 2005). The most recent status reviews found that these threats have remained essentially unchanged (Williams et al. 2011, NMFS 2016, Williams et al. 2016).

2.2.5.1 Status of Critical Habitat

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

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

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

Climate-driven changes to stream and estuarine environments have the potential to significantly impact critical habitat for steelhead populations. Coupled with naturally stressful environments at the southern limit of the species distribution, multiple stressors are likely to be amplified by ongoing increases in temperature, changes in precipitation patterns, and decreases in snowpack

(Mote et al. 2003, Hayhoe et al. 2004). Research suggests that a change in climate would be expected to shift species distributions as they expand in newly favorable areas and decline in marginal habitats (Kelly and Goulden 2008). When climate interacts with other stressors such as habitat fragmentation, additional threats to natural resources will likely emerge (McCarty 2001), including threats to the viability of steelhead populations. In particular, seasonal access to perennial, cool water habitats, especially smaller streams at higher elevations, will likely become more important to endangered salmonids seeking refuge from unsuitable temperature and streamflow (Crozier et al. 2008).

While continued changes in climate are highly likely, estimating the magnitude of the change is more difficult the further into the future one must go. For example, increases in air temperatures globally are more certain than increases in air temperature in a particular watershed in California. Increases in global air temperatures may shift wind patterns, and these changes, in combination with regional topography, may affect how air temperatures in a particular watershed change in relation to changes in global air temperatures.

Environmental monitoring data in the southwestern United States indicate changes in climatic trends that have the potential to affect steelhead critical habitat. Southern California is also experiencing an increasing trend in droughts, measured by the Palmer Drought Severity Index from 1958 to 2007 (USGCRP 2009). Snyder and Sloan (2005) project mean annual precipitation in central western California will decrease by about 3-percent by the end of the century. Small thermal increases in summer water temperatures have resulted in suboptimal or lethal habitat conditions and consequent reductions in *O. mykiss* distribution and abundance in the northwestern United States (Ebersole et al. 2001). Thus, climate variability is an important factor in evaluating how the status of the species and critical habitat is influenced by changing climate.

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 proposed action that is the basis of this biological opinion is approximately the lower 1.5 miles of San Ysidro Creek, extending from the upstream debris-basin construction access ramp, downstream to the Pacific Ocean. The creek corridor downstream of the debris-basin site is included in the action area because the proposed removal of sediment and large woody debris from the stream channel has the potential to affect steelhead habitat. The District estimates the proposed action will result in temporary impacts to 970-linear feet (0.60 acre) of stream channel within the action area. The scope of analysis for the proposed action includes approximately 0.60 acre of non-wetland waters of the U.S. inclusive of a 10-foot buffer on each side of San Ysidro Creek.

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 Aquatic Habitat in the Action Area

San Ysidro Creek through the action area is a perennial stream. Aquatic habitat within the action area consists mainly of an entrenched channel with little mature riparian vegetation as a result of the 2017 Thomas Fire. Less than a month after the Thomas Fire, there was a rain-induced debris flow on January 9, 2018, that scoured the streambed several feet deep and severely damaged eight private residences bordering the action area. Much of the native vegetation and instream habitat features (e.g., pools, LWD) along San Ysidro Creek within the action area were scoured by the debris flows or buried due to channel aggradation. Recovery of riparian vegetation (i.e., California sycamore, coast live oak, blue gum eucalyptus, California bay laurel) is ongoing, but is limited to a patchy distribution of stands. Many of the Coast live oaks on the home sites have died as a result of the Thomas Fire or debris flow. There is no apparent impediment to passage of steelhead within the action area.

The Thomas Fire destroyed riparian corridors and upland vegetation over a widespread area, which in turn created unstable slopes and increased sediment loading. Continued sediment transport will likely produce a shifting mosaic of suitable and unsuitable habitat patches for steelhead (Keller et al. 1997, Boughton et al. 2006). Based on the extent of direct and indirect effects of the fire in the San Ysidro Watershed, NMFS anticipates a measurable decrease in large wood over the long term, benthic organic matter, and insects and detectable changes in macroinvertebrate drift and steelhead diet over the next ten years (Cover et al. 2010, Rosenberger et al. 2011). NMFS also anticipates that increased sediment loading will likely create a potential benefit to steelhead habitat by increasing the abundance of spawning-sized substrates in the stream channel (Florsheim et al. 1991, Keller et al. 1997).

2.4.2 Status of Steelhead in the Action Area

Many years before the Thomas Fire, juvenile steelhead and excellent quality pool habitat were documented in San Ysidro Creek upstream of the action area (Stoecker 2002). At that time there were numerous sightings of steelhead within close vicinity to the action area as described below. For instance, California Department of Fish and Wildlife (CDFW) has observed steelhead in the vicinity of East Mountain Drive Bridge in 2014 and 2016, approximately 0.25 miles and 1.0 miles upstream of the action area (personal communication, Ben Lakish, 2014 and 2016). The California Department of Fish and Wildlife (CDFW) surveyed upper San Ysidro Creek in 2014 to locate suitable relocation habitat and observed numerous steelhead in pool habitats ranging in size from 3 – 8 inches suggesting multiple year-classes (CDFW 2014).

Following the Thomas Fire, the current status of steelhead habitat in the San Ysidro Creek action area is degraded due to the entrenched stream channel, loss of riparian habitat and general lack of habitat complexity. Pool habitat and LWD which increase juvenile steelhead rearing habitat quality are lacking in the action area.

Based on the habitat conditions within the action area and steelhead observations in San Ysidro Creek, NMFS estimates that up to 30 juvenile steelhead may be present in the work area to be dewatered during the construction season (2021), depending on flow conditions and overall production within the watershed during a given year. Adult steelhead are not expected to be present within the action area during the dry season construction activities.

2.4.3 Factors Affecting Species Environment in the Action Area and Vicinity

Road Encroachment and Urban Development

San Ysidro Creek within the action area flows through the community of Montecito, neighboring the City of Santa Barbara. Urban development often increases impervious surfaces and input of pollutants to surface water (Spence et al. 1996). Residential developments and Randall Road exist along the adjacent stream banks within the action area. Highway 192 and its bridge over the creek form the southern border of the action area, and U.S. Highway 101 is located approximately 1.2 miles downstream. Increased runoff may not be confined to the wet season, but may extend into the dry season due to the washing of streets, parking lots, vehicles, and other elements of the urban environment. Once in surface water, pollutants of sufficient concentration may impair water quality and alter the characteristics of the channel bed. Long-term urbanization effects have been associated with lower fish species diversity and abundance (Weaver and Garman 1994). Road and residential development located along the creek within the action area have contributed to the confinement of the stream channel and its associated floodplain and diminished riparian corridor. Consequently, the proliferation of urban areas within the San Ysidro Creek watershed is of concern.

Channelization and Flood-Control Maintenance

Flood-control activities in lower San Ysidro Creek (including the action area) have confined the natural floodplain and limited opportunities for riparian communities to become established (Stoecker 2002). Modification of the stream channel in the lower watershed has affected the amount of available steelhead habitat and the processes that develop and maintain preferred habitat by eliminating floodplain connectivity, limiting instream habitat complexity, and reducing riparian vegetation. Flood-control practices in the vicinity of the action area have disrupted stream sinuosity and inhibited the creeks ability to meander.

Approximately 0.5 miles upstream of the action area is the San Ysidro Creek Debris-Basin where routine and long-term maintenance periodically remove extensive amounts of sediment from the watershed. Although this basin is upstream of the action area, the operation and maintenance affects habitat for steelhead in the action area (NMFS 2014). The habitat impacts in the action area can translate into negative effects to juvenile steelhead growth and survival.

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 Effects of the Action on Designated Critical Habitat for SC Steelhead

2.5.1.1 Alteration Due to Dewatering a Portion of Designated Critical Habitat During Construction

Dewatering about 970-linear feet of San Ysidro Creek to allow construction in the dry is expected to cause temporary loss of a freshwater rearing site, as well as loss of invertebrate forage for steelhead within the dewatered work area.

The temporary loss of habitat due to dewatering activities represents an adverse effect to habitat for steelhead, for at least a few reasons. First, the loss of habitat translates into a loss of a freshwater rearing area, which is essential for the growth and survival of juvenile steelhead (the life stage expected to be present at the time the proposed action is implemented). Without freshwater rearing areas, the habitat cannot fulfill the intended conservation role for the species. Second, the quality and availability of habitat in the action area has already been diminished and reduced due to anthropogenic factors and the Thomas Fire. Therefore, the loss of habitat due to dewatering represents further loss of habitat. However, the area impacted by the diversion is relatively small compared to the amount and extent of habitat available elsewhere in San Ysidro Creek and, perhaps more importantly, the diversion will be removed following completion of the proposed action. Freshwater rearing habitats upstream and downstream of the action area will be unaffected by the proposed action and, therefore, continue providing the intended conservation role for the species. Overall, the loss of aquatic habitat associated with the water diversion will be temporary, and no long-term diminishment is anticipated from the proposed action in the physical capacity of the habitat to serve the intended functional role for steelhead.

However, the District proposed debris-basin construction schedule of April – December 2021 does not eliminate the risk of disturbing available living space for steelhead. The effect of having a water diversion installed as early as April would constitute an adverse effect to a juvenile steelhead migration corridor, and has the potential to negatively impact an adult migration corridor in December. Further, when dewatering activities are proposed during the transition periods from the wet to the dry season (i.e., May and November) there is an increased likelihood for precipitation and increased streamflow as compared to the traditional dry season construction period (i.e., June 1 – Oct 31).

Although aquatic macroinvertebrate forage will be temporarily lost within the action area due to isolating the workspace from flowing water, the loss is expected to be short lived because

construction activities will be temporary, and rapid recolonization (about one to two months) of the restored channel area by macroinvertebrates is expected following re-watering (Thomas 1985, Harvey 1986).

Ultimately, creek flows between the upstream and downstream reaches will be restored after the water diversion is removed, and no long-term degradation is expected in the physical capacity of the habitat to serve the intended functional role for steelhead.

2.5.1.2 Alteration of Channel Banks and Channel Bed to Construct the Basin

The bioengineered design of the proposed action is expected to minimize the magnitude and effects of increased water-velocity on the function of the action area as a freshwater migration corridor and freshwater rearing area. For instance, we don't anticipate potential changes to the channel bed and fluvial geomorphic processes that would accelerate water velocity through the action area because the work areas will be re-graded to elevations and contours similar to those present prior to construction and consist entirely of native material from the channel's banks and channel bed. The rock-slope protection embankments are proposed to be designed to contain a 5-year flow event and exhibit a 2H:1V slope to create a stable stream bank that will allow planting. Revegetation of the riparian corridor including the channel margins outside the bankfull width would consist of native riparian trees (e.g., arroyo willow, western sycamore, cottonwood) to provide additional bank stabilization and reduce water-column velocity that exceed the bankfull channel. As such, the channel is expected to retain the same basic geomorphic shape and sediment composition once construction is complete and streamflow returns through the entire action area. Further, the proposed engineered streambed material (ESM), which includes incorporation of D-84 or larger rock buried in the channel bed in groups (i.e., lifts) with a 1/3 of the rock exposed above the bed, is expected to increase channel roughness and slow water-column velocity.

Although the rock-slope protection is homogeneous and will limit lateral-channel migration, the potential loss of habitat complexity is expected to be minimized by: (1) designing the channel to contain a 5-year flow event; (2) removing streamside flood-damaged homes and relaxing of the stream banks to a 2H:1V slope to improve stability and revegetation success; (3) incorporating D-84 in ESM with 1/3 rock height exposed; and (4) extensive planting through the action area with native riparian vegetation (i.e. trees and shrubs) that are expected to provide cover and slow water-velocity. These foregoing elements of the proposed action are expected to promote natural-like characteristics and condition along the channel banks in the work area, which favor the development and maintenance of living space for steelhead.

Overall, we do not expect the proposed action would cause the sorts of channel changes and conditions that can affect the quality or availability of the migration corridor or greatly reduce habitat complexity in the action area. Therefore, the anticipated alteration of the channel banks or channel bed with the proposed action, specifically the rock slope protection, is not expected to appreciably reduce the functional value of the action area as migration corridor or rearing habitat.

2.5.1.3 Alteration of Water Quality due to Basin Construction

We expect that increases in sedimentation and turbidity concentration levels resulting from construction activities would be minimal and temporary, for at least a few reasons. First, the proposed action includes a number of sediment and erosion-control measures to reduce the likelihood that sediment would be introduced to the wetted area. Second, the activities occurring in the wetted area are expected to be confined to seining and installing and then removing the temporary dam, within localized areas, and short lived. Third, the dewatering activities include precautions for returning clean water to the creek channel, isolating work areas from water prior to the beginning of construction activities, and removal of the diversion as soon as construction is complete.

2.5.1.4 Disturbance to Riparian Vegetation during Construction of the Basin

Removing up to 49 trees has the potential to cause increased water temperatures (Mitchell 1999, Opperman and Merenlender 2006) and decrease water quality (Lowrance et al. 1985, Welsch 1991) in the action area. In terms of specific impacts, the description of the proposed action indicates the loss of vegetation will be confined to discrete locations throughout the 8 acre debris-basin site; about 30-percent of the trees proposed for removal are located in the riparian action area and these particular trees do not contribute measurable amounts of shade to portions of the creek that support rearing habitat.

The proposed action includes a general revegetation plan[1] that has the potential to minimize effects of the vegetation loss. For instance, the proposal involves planting of the entire riparian corridor replacing removed trees at a 3:1 ratio using native riparian tree species. Additionally, the proposal includes planting upland vegetation types on the debris-basin embankment and slopes on both sides of the channel throughout the action area, which is expected to reduce the input of fine sediments and pollutants into San Ysidro Creek. The relatively high volume of proposed post-construction planting is expected to increase shade and cover along this section of San Ysidro Creek over the long term. Lastly, the proposed action involves monitoring for three to five years following completion of the debris-basin, to assess the recovery of replanted areas within the action area.

Notwithstanding these foregoing expectations, the proposed revegetation plan lacks the details and assurances that would indicate a reasonable likelihood for minimizing the effects due to the loss of riparian vegetation. For example, the proposed revegetation plan lacks a reporting requirement, which is necessary to verify implementation and specific details of the revegetation effort. Also, while the restoration plan referenced in the description of the proposed action indicates extensive replanting of the action area with native vegetation, the proposal lacks specificity. Because the restoration plan is still under development and subject to change, no specific monitoring elements are described in the proposed plan to describe how revegetation success of the different planting areas will be evaluated. Additionally, the proposed plan does

[1] Unless indicated otherwise, this biological opinion uses the phrases “revegetation plan” and “restoration plan” interchangeably.

not propose any photo monitoring or metrics to assess for determining when the site is fully restored.

2.5.1.5 Alteration of Downstream Sediment and LWD Transport due to Operating and Maintaining the New Basin

While the proposed operation and related maintenance of the Randall Road Debris-Basin has the potential to alter the downstream movement of sediment and large wood, the proposed action possesses certain features that are expected to minimize the effects on the function of downstream critical habitat.

First, the debris-basin is deliberately designed to be constructed and operated outside of the active creek channel. In this regard, the debris-basin would only receive flows (i.e., sediment and debris) once the designed channel capacity is exceeded in a 5-year storm flow event. Water flows of equal or lesser intensity than a 5-year event would remain in the creek channel to facilitate sediment and wood transport. Flows greater than a 5-year event would exceed the channel capacity and the sediment-laden water would leave the channel and expand into the debris basin.

Second, instead of installing a concrete and grouted rock dam across the stream channel that intercepts all streamflows and its respective debris load, the off-channel debris-basin design utilizes the adjacent floodplain to store the excess sediment and debris during large storm events. Streamflows exceeding the 5-year threshold would continue downstream in the creek channel along with any mobilized sediment and wood.

Third, the installation of the debris racks in the Randall Road debris-basin will occur outside the active channel (i.e., on the floodplain) eliminating the possibility that LWD will be removed and prevented from potentially creating habitat for steelhead.

Fourth, because the off-channel design does not force streamflow through a narrow culvert, the debris-basin is not prone to plugging failure, which results in all sediment and debris being retained in the basin unless the storm magnitude is sufficient to overtop the debris-basin dam with enough depth to pass the debris.

2.5.1.6 Effects Due to Lack of Monitoring and Remediation

Although the proposed action includes some level of monitoring, a complete and reliable method for meaningfully tracking and reconciling any effects appears to be lacking. As an example, the proposed action lacks habitat-performance measures or methodologies to assist in monitoring the effectiveness of proposed minimization and restoration measures and systematically track and report habitat effects due to ongoing maintenance in designated critical habitat. See also our comments above regarding the proposed revegetation plan.

In reality, the proposed action only involves collecting a portion of the information described above, and it is unclear how the information will be summarized and reported. More importantly, NMFS could find nothing in the description of the proposed action regarding how

the monitoring information would be evaluated or used to ensure that the operation and maintenance of the new basin does not preclude maintenance of essential habitat functions for endangered steelhead over time and space within the action area. Without a clear plan to collect and respond to monitoring data that reveals deviations from habitat performance measures, proposed post-construction monitoring efforts have the potential to be insufficient to ensure adverse effects are truly minimized.

2.5.2 **Effects on SC Steelhead**

2.5.2.1 Capture and Relocation during Construction of the Basin

Work areas will be isolated and dewatered increasing the potential for relocating juvenile steelhead that may be present during the dewatering process. Although there is risk of harm and mortality to steelhead inherent with handling and relocating these individuals, overall these dewatering and steelhead-relocation efforts, generally, are expected to greatly reduce impacts to juvenile steelhead.

The proposed action stipulates that aquatic wildlife will be relocated out of the work area prior to construction. However, the project description contained in the consultation package lacks specificity regarding the proposed procedures to reduce the likelihood of harm and mortality to juvenile steelhead relocated from the area to be dewatered. Biologists typically capture and relocate steelhead to the nearest suitable habitat within the creek, though suitable habitat is not described by the District. In the event one or more steelhead are missed by the District biologists and stranded in the diversion area, steelhead mortality may be observed. The District does not propose that biologists will be empowered to halt construction activities for the benefit of reducing harm or mortality of steelhead. The District does not specify the number, qualifications or expertise of the biologists. Furthermore, the District does not propose to notify NMFS of the number of steelhead that may be harmed or injured as a result of construction activities, including dewatering, and the actual plan for reporting the number and disposition of steelhead that are relocated lacks important details, including a schedule.

Capture activities necessitate that neighboring suitable relocation habitat be available. In this regard, the proposed action does not include sufficient detail regarding the criteria the District would apply for selecting relocation sites for juvenile steelhead. Sites selected for relocating juvenile steelhead should have ample habitat, but relocated fish may compete with other fish, potentially increasing competition for available food and habitat. Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas is expected to be temporary, because when the proposed action is finished steelhead will be able to redistribute in the action area. Once the proposed action is completed and the water diversion is removed, living space for juvenile steelhead will return to the dewatered action area.

Based on steelhead surveys, observations of juvenile steelhead near the action area on San Ysidro Creek, and effects related to the 2017 Thomas Fire, NMFS expects no more than 30 juvenile steelhead will need to be relocated from the dewatered area. NMFS expects no more than two juvenile steelhead may be injured or killed as a result of the proposed debris-basin construction. This estimated mortality is based on NMFS' experience and knowledge gained on

similar projects in Santa Barbara County during the past decade. Based on NMFS' general familiarity of steelhead abundance in southern California in general, and Santa Barbara County streams in particular, the anticipated number of juvenile steelhead that may be injured or killed as a result of the proposed action is likely to represent a small fraction of the overall watershed-specific populations and the entire SC DPS of endangered steelhead. Therefore, the effects of the relocation on steelhead are not expected to give rise to population-level effects.

2.5.2.2 Temporary Reduction in the Availability of Forage Species, Living Space, and Cover due to Construction Activities

Although the proposed action is expected to reduce macroinvertebrate forage, living space, and cover available to juvenile steelhead in the short-term during construction and over the long-term when construction is complete, a number of factors lead us to believe that the reductions would have short lived and minimal adverse effects.

For instance, the effects from reduced macroinvertebrate forage is expected to be temporary and minimal because the work area is relatively small compared to the remaining comparable stream habitat available for steelhead foraging. Second, the work areas will only be dewatered for a short duration during the dry season when habitat (especially pools) are limited. Third, rapid macroinvertebrate recolonization of work areas is anticipated when re-watering occurs (Thomas 1985, Harvey 1986).

The effects on juvenile steelhead owing to the loss of living space are also expected to be temporary and minimal. Generally, steelhead numbers in this portion of San Ysidro are expected to be relatively low owing to habitat loss due to the 2017 Thomas Fire. Further, the living space that will be temporarily lost while work areas are dewatered is relatively small compared to the remaining comparable stream habitat available to steelhead. Therefore, the loss of living space is not expected to noticeably increase steelhead density or competition for food. Finally, work areas will be accessible to steelhead once re-watered and construction is complete.

The measures incorporated in bioengineered design of the proposed action are expected to minimize or eliminate post-construction effects on the availability of cover. The primary minimization measures of the bioengineered design involve: (1) constructing a channel bed that consists entirely of native material that includes buried boulder lifts/clusters that protrude 1/3 rock diameter above the bed to increase channel roughness and create refugia; (2) laying back the rock-slope protection to create a 2H:1V slope to create a more stable bank that can be planted; (3) backfilling the top of the banks with native soil; and (4) planting both sides of the creek channel in the action area with native riparian trees at a 3:1 replacement ratio that will shade the creek and contribute LWD to the creek channel in the long-term. These foregoing elements of the proposed action are expected to promote natural-like characteristics and condition along the creek in the work area, which favor the development and maintenance of living space, and by extension, cover for steelhead. Further, the extent of the proposed plantings has the potential to increase food production for steelhead once the plants and trees mature.

2.5.2.3 Steelhead Movement and Migration

Steelhead movement is not expected to be substantially restricted through the action area over the long-term after work activities are complete. Although steelhead will be temporarily excluded from dewatered work areas during construction, the work area represents a small portion of habitat available in San Ysidro Creek. In the long-term, the post-construction re-grading of the channel is expected to retain the pre-project geomorphic characteristics and condition. The HEC-RAS modeling indicates that the average channel velocities modeled through San Ysidro Creek will remain within the ranges seen during existing conditions (WRECO 2020). Additionally, characteristics and condition of the action area are expected to remain within the passage requirements of steelhead, owing to the natural habitat characteristics expected to form following extensive planting of vegetation on the stream bank and channel construction using an ESM that contains large, native boulders. Because the proposed ESM is as coarse or coarser than the existing material and the largest particles are expected to be exposed above the channel grade at least 1/3 of their height, NMFS anticipates this approach will provide roughness and potential resting areas for steelhead. Such a geomorphic-based approach (keeping the existing channel cross-section shapes and longitudinal slope for flows less than the 5-year event) combined with an ESM that is as coarse as the existing bed material, are anticipated to provide passage conditions similar to those that naturally exist during fish passage flows at this location.

However, the District proposed debris-basin construction schedule of April through December 2021 does not eliminate the risk of disturbing steelhead movement and migration. The effect of having a water diversion installed as early as April has the potential to disrupt the downstream movement of juvenile steelhead (i.e., smolts), and upstream movement of adult steelhead in April, May and December. While the consultation documents indicate that the diversion will be installed during the dry season, the specific timing for installing the diversion is not clearly described in the proposed action.

2.5.2.4 Altered Water Quality

The anticipated changes in water quality are not expected to translate into acute or chronic adverse effects on steelhead. Highly turbid water can result in decreased feeding and growth of juvenile steelhead (Sigler et al. 1984) which, in turn, can decrease juvenile steelhead survival (Thompson and Beauchamp 2016). Although certain activities associated with work area isolation, dewatering, and re-watering (i.e., seining, bladder dam installation, dam removal) may increase turbidity, any increase is expected to be localized and last only a few hours or less. Further, installing sediment and erosion-control devices (e.g., use of straw-fiber rolls, silt-fencing, hay bales, settling basins) and isolating work areas from water prior to the beginning of construction activities is expected to reduce the likelihood of water quality changes and the magnitude should a change be observed. Therefore, effects on steelhead associated with increases in sedimentation and turbidity resulting from the proposed action are expected to be minimal and temporary.

2.5.2.5 Altered Channel Shading

The proposed removal of up to 49 trees (of which about 30-percent are riparian) in the 8 acre debris basin site is expected to result in loss of shade and overhead cover available to steelhead in the action area; however, it is not expected to influence steelhead behavior in a meaningful way for a variety of reasons.

Under the proposed action, the District proposes extensive planting of the entire riparian corridor replacing removed trees at a 3:1 ratio using native riparian tree species. The proposal includes planting upland vegetation types on the debris-basin embankment and slopes on both sides of the channel throughout the action area, which is expected to reduce the input of fine sediments and pollutants into San Ysidro Creek. The relatively high volume of proposed post-construction planting is expected to increase shade and cover along this section of San Ysidro Creek over the long term and increase the potential for steelhead rearing in this area. Also the proposal involves some level of monitoring for three to five years following completion of the debris-basin, to assess recovery of replanted areas within the action area.

However, the proposed revegetation plan lacks a number of details. For example, our review indicates the proposed revegetation plan lacks a reporting requirement, and specific details regarding the methods and criteria for monitoring and assessing performance or success of the plantings.

2.5.2.6 Off-channel Stranding Owing to Debris Basin Operation

Juvenile steelhead are at risk of accidental stranding in the new debris basin during operation. Although acknowledged in the BA, this risk is discounted without substantive basis or corroborating analysis.

The potential for incidental capture or collection exists because the proposed action (i.e., operation of the debris-basin) lacks a physical device excluding steelhead from the creek discharge passing through the basin. The debris basin would operate during periods of elevated winter and spring discharge; the same elevated discharges that coincide with the migration of this species.

Typically, when streamflow is diverted from a steelhead stream or river the diverted flow is screened to prevent entrainment of individuals. For example, the Robles Diversion Facility on the Ventura River is outfitted with wedge-wire screens to prevent entrainment of juvenile steelhead into Lake Casitas via the 500-cubic foot per second diversion canal (NMFS 2003). However, the proposed operation of the Randall Road Debris-basin differs from a typical diversion facility in that streamflow and debris are expected to spill over the stream channel as sheet flow in an uncontrolled manner when a 5-year flow event is exceeded.

Yet there is no control in place to prevent steelhead from being transported out of the stream channel into the debris basin. If steelhead become entrained in the basin, then the proposed action does not include one or more measures to ensure steelhead are not stranded, including surveying the 8-acre debris-basin following inundation of the off-channel habitat. With regard to

stranding, the adverse effects include potential injury or mortality when the new basin drains. Additionally, annual reporting regarding the drainage characteristics and potential for ponding water (i.e., creation of nuisance habitat) is not described in the proposed action which would serve to validate that the basin is operating as intended.

We anticipate that the ultimate fate of a juvenile steelhead stranded in the basin is death. We do not anticipate adult steelhead will become stranded in the debris-basin owing to their stronger swimming ability and due to their avoidance of shallow water areas that are likely to form in the debris-basin as the flood waters recede. This expectation is based on the fact that the proposed action lacks precautions to guard against collection or capture and to ensure individual steelhead are quickly detected and rescued. Also, the proposed action lacks one or more measures that would be reasonably expected to detect and reconcile a steelhead capture or collection if one were to occur. Based on NMFS' experience and familiarity with steelhead in southern California, up to two juveniles could be stranded in the debris basin annually resulting in death.

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).

NMFS is generally familiar with activities occurring in the action area, and at this time is unaware of such actions that would be reasonably certain to occur. Consequently, no cumulative effect is likely, beyond the continuing effects of present land uses that are reasonably certain to occur into the future (see 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 diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

Juvenile steelhead are expected to be present in the action area during the time the proposed action will be implemented and, therefore, will be affected by the proposed action. A risk to individual steelhead during construction involves effects due to capture and relocation, temporary loss of living space, and alteration, including reduction, in the quality and availability of spawning and rearing habitat within San Ysidro Creek. With regard to the capture and relocation, the adverse effects include potential injury or mortality during dewatering activities, but some precautions are in place to minimize, if not eliminate, the risk of injury and mortality, and upstream San Ysidro Creek habitat is expected to suitably harbor the relocated steelhead. The proposed dewatering overlaps with key life-history events of steelhead, and therefore does not eliminate the risk of disturbing steelhead movement and migration. The proposed action also includes measures (e.g., installation of boulder lifts/clusters, extensive native riparian vegetation planting) that are expected to minimize the potential adverse effects on steelhead associated with alteration of spawning and rearing habitat through maintaining habitat complexity after construction is complete.

A risk to individual juvenile steelhead after construction during operation of the debris-basin involves stranding in the off-channel Basin. The proposed action does not include one or more measures to ensure steelhead are not stranded, including surveying the 8-acre debris-basin following inundation of the off-channel habitat. With regard to stranding, the adverse effects include potential injury or mortality when the new basin drains. Additionally, annual reporting regarding the drainage characteristics and potential for ponding water (i.e., creation of nuisance habitat) is not described in the proposed action which would serve to validate that the Basin is operating as intended.

Another risk to steelhead designated critical habitat is the proposed removal of mature riparian vegetation and the loss of channel shading and contribution of woody debris. The removal of the mature riparian vegetation is discounted in the project description because the proposed action includes implementation of a restoration plan. However, with the exception of the 3:1 replanting ratio and monitoring that will occur for 3 to 5 years, the Plan lacks specificity. Neither annual reporting nor a planting schedule are identified in the proposed action, which would reasonably indicate a likelihood that the proposed plan would successfully revegetate the action area in a timely fashion.

Based on the steelhead surveys described in the Status of Steelhead in the Action Area section (2.4.2), NMFS concludes non-lethal take of no more than 30 juvenile steelhead that may be captured and relocated as a result of dewatering within the action area during the construction activity, with a potential lethal take of no more than 2 out of the 30, thus the risk of mortality is low. Juvenile steelhead in the action area comprise a small proportion of the SC DPS of steelhead. Therefore, the effects of the proposed action on steelhead are not expected to give rise to population-level effects.

Overall, the impacts to critical habitat and the species have the potential to be temporary.

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 the endangered SC DPS of steelhead and or destroy or adversely modify its designated critical habitat.

2.9 Incidental Take Statement

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

2.9.1 Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows: All steelhead in the action area, expected to be no more than 30 juveniles that are captured or harassed during implementation of the proposed construction activity. No more than 2 juvenile steelhead are expected to be injured or killed as a result of dewatering the action area and relocating the species. Additionally, during project operation no more than 2 juvenile steelhead may become stranded in and relocated from the debris-basin annually. No lethal take is expected during Project operation. Take will be exceeded if: 1) more than 30 juvenile steelhead are captured or harassed during the construction activity; 2) more than 2 juvenile steelhead are injured or killed during dewatering or relocation; or 3) more than 2 juvenile steelhead are stranded or relocated annually during Project operation. No other incidental take is anticipated as a result of the proposed action.

2.9.2 Effect of the Take

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

2.9.3 Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02). NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize and monitor incidental take of steelhead. The results of the effect analysis provide the basis for the following reasonable and prudent measures:

1. Implement stranding monitoring, operations reporting and restoration activities to minimize observed effects on endangered steelhead and designated critical habitat for this species.

2. Employ a minimum of two fisheries biologists at project construction site to: (1) monitor activities and work areas while a water diversion is operating, and (2) reconcile any condition that could harm or injure steelhead during the dewatering process.

2.9.4 Terms and Conditions

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

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

    A. The District shall develop and then implement a Stranding Avoidance Plan (Plan) for the operation of the Randall Road Debris Basin (Basin) to guard against steelhead stranding in the Basin. The District shall submit the draft Plan to NMFS (rick.bush@noaa.gov) within 90 days of the date of this final biological opinion for review and comment. Within 90 days of receiving NMFS' comments on the draft Plan, the District shall revise the draft Plan in response to said comments to produce and provide the final Plan to NMFS.

    The content of the Plan shall include: (1) the requirement to identify any areas of ponding water in the Basin and propose an approach to eliminate off-channel habitat areas that may attract steelhead; (2) the timing, schedule and methods for inspecting the Basin for steelhead; (3) reporting requirements for notifying NMFS of the Basin-inspection results, including detection of steelhead in the Basin, and information about the size or life stage of the stranded individual(s); (4) a notification requirement that if steelhead are observed, NMFS (rick.bush@noaa.gov) should be notified within 24-hours to develop a relocation plan (potential relocation sites should be visited on the same day as the stranding inspection to determine suitability); and (5) a contingency relocation element to guide rescue of steelhead that are stranded in the Basin. The annual report summarizing the stranding survey results shall be submitted to NMFS, 501 W. Ocean Blvd, Long Beach, California 90802 and the Corps point of contact by December 31st of each year.

B. The District shall implement an assessment and develop a findings report that documents whether the Basin is operating as intended. The report should include photographs of streamflow draining from the basin, or ponded water if it is observed. The reports should also include a general discussion on Basin drainage, flow measurements from the nearest stream gage that correspond to when water flows into the Basin and duration that the Basin retained surface water (including residual pools). The District shall provide findings report results to the Corps (with copies sent to NMFS, rick.bush@noaa.gov) within 15-days of San Ysidro Creek storm events that inundate the Basin. When the findings report demonstrates that the Basin operates as designed (i.e., Basin inundation at 5-year threshold and low stranding potential) this monitoring element will be complete.

C. Develop and implement a detailed Restoration Plan (Plan). The District shall submit the draft Plan to NMFS (rick.bush@noaag.gov) within 90 days of the date of this final biological opinion for review and comment. Within 90 days of receiving NMFS' comments on the draft Plan, the District shall revise the draft Plan in response to said comments to produce and provide the final Plan to NMFS. The content of the Plan shall include: (1) the requirement to submit an annual report by December 31st each year; (2) the timing and schedule for planting the three areas; (3) an irrigation plan; (4) photo monitoring; (5) metrics that will be measured to evaluate long-term tree survival; and (6) a contingency plan if any of the restoration planting areas do not meet success criteria.

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

A. To reduce impacts to the juvenile steelhead, all construction activities that require water diversion and dewatering of stream reaches shall only be conducted between June 1 and October 31. The dewatered portion of the stream shall not exceed the defined action area.

B. The District shall retain a minimum of two qualified fisheries biologists on-site the day the project site is dewatered for relocation of any steelhead, and to monitor the upstream and downstream block nets. Block netting shall have a mesh size of 0.25-inches or less. Steelhead shall be captured using seines or dip nets. Electrofishing is prohibited. Block nets shall be removed after the water diversion infrastructure is in place. For the remainder of the instream work period requiring stream diversion, one qualified biologist shall be on-site each day the diversion is in place to check the upstream and downstream block nets at a minimum of 2 times per day (before and after construction has ended for the day). If any fish become entangled in the nets, then this shall be reported to NMFS biologist Rick Bush (562-980-3562) for the purpose of developing a plan to further minimize harm to steelhead.

C. The Districts' biologists shall identify and evaluate the suitability of downstream and upstream steelhead relocation habitat(s) prior to undertaking the dewatering activities that are required to isolate the work area from flowing water. The biologists shall evaluate potential relocation sites based on attributes such as adequate water quality (a minimum dissolved oxygen level of 5 mg/L and suitable water temperature), cover (instream and over-hanging vegetation or woody debris), and living space. Multiple relocation habitats

may be necessary to prevent overcrowding of a single habitat depending on the number of steelhead captured, current number of steelhead already occupying the relocation habitat(s), and the size of the receiving habitat(s).

D. The District's biologists (in accordance with Term and Condition 2B) shall provide a written steelhead-relocation report to NMFS within 30 working days following completion of the proposed action. The report shall include: 1) the number and size of all steelhead relocated during the proposed action; 2) the date and time of the collection and relocation; 3) a description of any problems encountered during the project or when implementing terms and conditions; and, 4) any effect of the proposed action on steelhead that was not previously considered. The report shall be sent to Rick Bush, NMFS, 501 West Ocean Blvd., Suite 4200, Long Beach, California 90802-4213, and electronic copy to rick.bush@noaa.gov.

E. The District's biologist shall contact NMFS (Rick Bush, 562-980-3562) immediately if one or more steelhead are found dead or injured. The purpose of the contact shall be to review the activities resulting in take and to determine if additional protective measures are required. All steelhead mortalities shall be retained, frozen as soon as practical, and placed in an appropriate-sized sealable bag that is labeled with the date and location of the collection and fork length and weight of the specimen(s). Frozen samples shall be retained by the biologist until additional instructions are provided by NMFS. Subsequent notification must also be made in writing to Rick Bush, NMFS, 501 West Ocean Blvd, Suite 4200, Long Beach, California 9082-4213, and electronically to rick.bush@noaa.gov within five days of noting dead or injured steelhead. The written notification shall include: 1) the date, time, and location of the carcass or injured specimen; 2) a color photograph of the steelhead; 3) cause of injury or death; and 4) name and affiliation of the person who found the specimen.

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).

1. The Corps should coordinate with the District to stockpile and utilize any key pieces of LWD caught on the debris-basin debris racks for habitat restoration activities (i.e., LWD structure installation) in the San Ysidro watershed, or other nearby Santa Barbara County streams. As the Corps may recall, the District is required to install a minimum of 5 LWD habitat features each year in one of 10 different County watersheds containing a debris-basin per the requirements of NMFS' 2014 biological opinion to the Corps. Since the proposed action will add another debris-basin to the Santa Barbara County maintenance area, this recommendation is for the District to add 1 additional LWD habitat feature annually from wood collected and removed from the stream at the Randall Road

Debris-basin.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendations.

2.11 Reinitiation of Consultation

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

3. Data Quality Act Documentation and Pre-Dissemination Review

The Data Quality Act (DQA) specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

3.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are the Corps and the District. Other interested users could include California Department of Fish and Wildlife and U.S. Fish and Wildlife Service. Individual copies of this opinion were provided to the Corps. The document will be available within two weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). The format and naming adheres to conventional standards for style.

3.2 Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

3.3 Objectivity

Information Product Category: Natural Resource Plan

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

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

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

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

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