UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

January 18, 2024 **Refer to NMFS No:** WCRO-2023-00561

James Mazza
Chief, Regulatory Division
U.S. Department of the Army
San Francisco District, U.S. Army Corps of Engineers
450 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Santa Clara Valley Water District's Stream Maintenance Program 2024 to 2026 (Corps File Number SPN-1996-225250)

Dear Mr. Mazza:

Thank you for your letter of May 3, 2023, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the 3-year extension of Santa Clara Valley Water District's (Valley Water) Stream Maintenance Program (SMP-2) from January 1, 2024 to December 31, 2026.

The enclosed biological opinion is based on our review of the information provided by Valley Water for SMP-2 activities and describes our analysis of potential effects on threatened Central California Coast steelhead (*Oncorhynchus mykiss*), threatened South-Central California steelhead (*O. mykiss*), and their designated critical habitats in accordance with section 7 of the ESA. In this biological opinion, NMFS concludes the proposed 3-year extension of SMP-2 activities is not likely to jeopardize the continued existence of these ESA-listed steelhead, nor is it likely to adversely modify their critical habitat. However, NMFS anticipates take of these species will occur during the SMP-2 activities and an incidental take statement is included with the enclosed biological opinion.

NMFS has also concurred with the U.S. Corps of Engineers' (Corps) determination that the proposed SMP-2 may affect, but is not likely to adversely affect threatened Southern Distinct Population Segment of North American green sturgeon (*Acipenser medirostris*) and their designated critical habitat in accordance with section 7 of the ESA.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act [16 U.S.C. 1855(b)] for this action. Based on NMFS' review, we concluded that the action would adversely affect EFH for species managed under the Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Coast Salmon Fishery Management Plans (FMP). Therefore, we

have included the results of that review in Section 3 of the enclosed document. The proposed action includes measures to avoid or minimize potential adverse effects to EFH. Thus, no additional EFH conservation recommendations are provided.

Please contact Page Vick, North Central Coast Office in Santa Cruz at 916-594-4406 or page.vick@noaa.gov if you have any questions concerning this consultation, or if you require additional information.

Sincerely,

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure

cc: Sarah Firestone, U.S. Army Corps of Engineers (Sarah.M.Firestone@usace.army.mil)
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e-file FRN 151422WCR2023SR00100

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

Santa Clara Valley Water District's Stream Maintenance Program 2024 to 2026
NMFS Consultation Number: WCRO-2023-00561
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?
Central California Coast Steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	Yes	No
South-Central California Coast steelhead DPS (*O. mykiss*)	Threatened	Yes	No	Yes	No
Southern DPS of North American Green Sturgeon (*Acipenser medirostris)*	Threatened	No	NA	No	NA

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	No
Pacific Coast Groundfish	Yes	No
Coastal Pelagic Species	Yes	No

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

Issued By:

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Date: January 18, 2024

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 U.S.C. 1531 et seq.), as amended, and implementing regulations at 50 CFR part 402.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR part 600.

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

1.2. Consultation History

From January 2023 until May 2023, NMFS provided technical assistance to Santa Clara Valley Water District's (Valley Water) regarding their request to the Corps for the SMP-2 permit extension. On May 3, 2023, the Corps requested reinitiation of consultation with NMFS for SMP-2; however, the information needed to reinitiate consultation, including an Addendum to the Biological Assessment (BA), was not provided. On May 5, 2023, NMFS requested that the Addendum to the BA be provided to complete the consultation package. On May 17, 2023, Valley Water provided an updated draft Addendum to the BA to NMFS. NMFS provided comments on the Addendum to the BA to Valley Water on May 30, 2023. On August 3, 2023, the Corps provided the Addendum to the BA and the consultation was reinitiated.

NMFS and the Corps previously consulted under Section 7 of the ESA on this project starting in 2001. NMFS produced a biological opinion on April 8, 2014, that assessed the impacts of SMP-2 activities on listed species and critical habitat from 2014 to 2023 (NMFS 2014). A revised Incidental Take Statement (ITS) was issued by NMFS on February 19, 2016 to address two modifications of the Stream Management Program requirements pertaining to application of herbicides. Reasonable and Prudent Measure 5 of the revised 2016 ITS incorporated these modifications (NMFS 2016d). Since the NMFS 2014 Opinion, the Corps renewed the

authorization under Regional General Permit 17 (RGP 17) for an additional five years[1], 2019 to 2023. During the SMP-2 five-year renewal period, Valley Water revised the SMP Manual (2019-2023). The Corps' authorization of the existing SMP-2 under the Corps' RGP 17 expires on December 31, 2023.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the biological opinion and incidental take statement would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

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 (see 50 CFR 402.02). Under the MSA, "Federal action" means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal agency (see 50 CFR 600.910).

The Corps proposes to extend authorization of RGP 17 for Valley Water's Stream Maintenance Program (SMP-2) for three years, from January 1, 2024 to December 31, 2026. The Corps authorization of RGP 17 is pursuant to Section 404 of the Clean Water Act of 1972, as amended (33 U.S. Code [USC] Section 1344) and Section 10 of the Rivers and Harbors Act of 1899 as amended (33 USC Section 403), in accordance with provisions of "Regulatory Programs of the Corps of Engineers," 33 CFR Section 323.2(h) for activities that are substantially similar in nature and cause only minimal individual and cumulative environmental impacts. The RGP will be valid for 3 years from the date of issuance. SMP-2 includes routine and channel maintenance activities within the Santa Clara and Pajaro watersheds in Santa Clara County, California.

The goals of the SMP-2 are: (1) maintain the flow conveyance capacity of Valley Water channels and facilities; and (2) maintain the structural and functional integrity of Valley Water facilities. Sediment removal and vegetation maintenance are proposed to maintain the flow conveyance capacity of a channel or flood management facility to the designed conveyance capacity of the channel or facility. Bank stabilization is proposed to protect existing infrastructure, maintain public safety, reduce sediment loading, protect water quality, and protect habitat values. Minor maintenance is proposed at stream gages, maintenance roads, bridges, and levees. With the exception of some vegetation management activities, SMP-2 activities within streams supporting threatened Central California Coast (CCC) steelhead, South-Central

[1] One five-year permit renewal was considered in the NMFS 2014 biological opinion. The original Corps permit expired in 2019.

California Coast steelhead (SCCC) steelhead, and the southern Distinct Population Segment (DPS) of green sturgeon would be limited to the period between June 15 and October 31 of each year.

The SMP-2 consists of five primary maintenance activities: sediment removal; bank stabilization; vegetation management; management of animal conflicts; and minor maintenance. The SMP-2 also includes habitat protection, enhancement, and mitigation elements that consist of invasive plant management, a riparian planting program, an instream habitat complexity program, Large Woody Debris (LWD) management, gravel augmentation, and land preservation. Routine maintenance activities would be performed in channels where Valley Water has fee title or easements, or where Valley Water has received specific direction from the Valley Water's Board or a regulatory agency. The project description presented below reflects the five categories of SMP-2 activities that would be performed in or near channels with anadromous salmonids, including non-listed Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*), threatened CCC steelhead, threatened SCCC steelhead, threatened southern DPS green sturgeon, and their designated critical habitat.

For a full summary description of the proposed action, please see pages 4 to 20 in NMFS 2014 Opinion. The types of activities described will be the same for the 3-year extension. However, there were a few updates to the proposed action with the 2019-2023 SMP Manual (Valley Water 2019). The updates include following the work windows described in Chapter 3 of the 2019-2023 SMP Manual. Adherence to the work windows described in Table 3-1 of the revised SMP Manual is specific to below ordinary high-water work in creeks that support sensitive fish species. Valley Water also worked with NMFS to refine the process for how LWD is managed. This includes further refinement of the tiered approach by which Valley Water manages LWD under SMP-2, resulting in five tiers rather than the four described in the initial 2013 Biological Assessment. This also established a process whereby mitigation requirements are increased in reaches of creeks that are considered high-quality habitat for steelhead. These changes are reflected in Chapter 9 of the 2019-2023 SMP Manual. As part of the SMP-2 renewal process, Valley Water refined the set of Best Management Practices (BMPs) that guide routine stream maintenance work. This included revisions such as requirements for biologists to conduct pre-activity surveys within seven days prior to the initiation of work that occurs within the wetted channel of streams that support anadromous salmonids outside of the in-stream work window season, and to have a qualified biologist on site to monitor any such work that occurs. The refinements to BMPs are reflected in Attachment A of the revised SMP-2 Manual.

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

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

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which they depend. As required by section 7(a)(2) of the ESA, each Federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species or to 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 reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

The Corps determined the proposed action is not likely to adversely affect the southern DPS of North American green sturgeon (*Acipenser medirostris*) or its critical habitat. Our concurrence is documented in the "Not Likely to Adversely Affect" Determinations section (Section 2.13).

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 also relies on the regulatory 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 designations of critical habitat for CCC steelhead and SCCC steelhead use the term primary constituent element (PCE) or essential features. The 2016 final rule (81 FR 7414; February 11, 2016) that revised the critical habitat regulations (50 CFR part 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 ESA Section 7 implementing regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the final rule revising the definition and adding this term (84 FR 44976, 44977; August 27, 2019), that revision 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 critical 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.

To conduct this assessment, NMFS examined an extensive amount of information from a variety of sources. Detailed background information on the biology and status of the listed species and critical habitat has been published in a number of documents including peer-reviewed scientific journals, primary reference materials, and governmental and non-governmental reports. Additional information regarding the effects of SMP-2's actions on the listed species, their anticipated response to these actions, and the environmental consequences of the actions as a whole were formulated from the aforementioned resources, and the following biological assessments and the Stream Maintenance Program Manual:

- Santa Clara Valley Water District. 2012. Biological Assessment/Essential Fish Habitat Assessment – Santa Clara Valley Water District Stream Maintenance Program. January 6, 2012.

- Santa Clara Valley Water District. 2019. Stream Maintenance Program Manuel 2019-2023.

- Santa Clara Valley Water District. 2023. Biological Assessment and Essential Fish Habitat Assessment – Valley Water Stream Maintenance Program (SMP-2) 2023 Addendum. May 2023.

Information taken directly from published, citable documents are referenced in the text and listed at the end of this document. A complete record of this consultation is on file at NMFS North-Central Coast Office in Santa Rosa, California (FRN 151422WCR2023SR00100).

2.2. Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species that is likely to 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" for the jeopardy analysis. 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.

This biological opinion analyzes the effect of the proposed SMP-2 activities in Santa Clara County on the following Federally-listed species (DPS) and designated critical habitats:

Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) DPS
Threatened (71 FR 834; January 5, 2006)
Critical habitat (70 FR 52488; September 2, 2005);

South-Central California Coast (SCCC) steelhead (*O. mykiss*) DPS
Threatened (71 FR 834; January 5, 2006)
Critical habitat (70 FR 52488; September 2, 2005).

2.2.1 CCC Steelhead and SCCC Steelhead

Steelhead are anadromous forms of *Oncorhynchus mykiss*, spending some time in both freshwater and saltwater. Steelhead are iteroparous, or capable of spawning more than once before death (Busby et al. 1996). Although one-time spawners are the great majority, Shapovalov and Taft (1954) reported that repeat spawners are relatively numerous (17.2 percent) in California streams. Steelhead young usually rear in freshwater for 1 to 3 years before migrating to the ocean as smolts, but rearing periods of up to 7 years have been reported. Migration to the ocean usually occurs in the spring. Steelhead may remain in the ocean for 1 to 5 years (2 to 3 years is most common) before returning to their natal streams to spawn (Busby et al. 1996).

Adult steelhead typically migrate from the ocean to freshwater between December and April, peaking in January and February (Fukushima and Lesh 1998). Adults returning to spawn may migrate several miles, hundreds of miles in some watersheds, to reach their natal streams. Although spawning typically occurs between January and May, the specific timing of spawning may vary a month or more among streams within a region, and within streams interannually. Spawning and smolt emigration may continue through June (Busby et al. 1996). Female steelhead dig a nest in the stream and then deposit their eggs. After fertilization by the male, the female covers the nest with a layer of gravel. Steelhead do not necessarily die after spawning and may return to the ocean, sometimes repeating their spawning migration one or more years. The embryos incubate within the nest. Hatching time varies from about three weeks to two months depending on water temperature. The young fish emerge from the nest about two to six weeks after hatching.

Steelhead fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Rearing steelhead juveniles prefer water temperatures of 7.2 to 14.4 degrees Celsius (°C) and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). However, they can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply.

Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby et al. 1996). Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows, to the ocean to continue rearing to maturity.

The distribution of steelhead in the ocean is not well known. Interannual variations in climate, abundance of key prey items (e.g. squid), and density dependent interactions with other salmonid species are key drivers of steelhead distribution and productivity in the marine environment (Atcheson et al. 2012; Atcheson et al. 2013). Available information indicates that steelhead originating from central California use a cool, stable, thermal habitat window (ranging between 8-14 degrees Celsius [°C]) in the marine environment characteristic of conditions in northern waters above the 40th parallel to the southern boundary of the Bering Sea (Hayes et al. 2012).

2.2.1.1 Status of CCC Steelhead

CCC steelhead was listed as federally threatened in 1997 (62 FR 43937) and the listing was updated in 2006 (71 FR 834). This DPS includes all naturally spawned steelhead from the Russian River in Sonoma County to Aptos Creek in Santa Cruz County as well as the drainages of San Francisco, Suisun, and San Pablo Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin rivers. The DPS also includes two artificial propagation programs, the Don Clausen Fish Hatchery and the Kingfisher Flat Hatchery/Scott Creek (Monterey Bay Salmon and Trout Project) steelhead hatchery programs.

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

While historical and present data on abundance are limited, CCC steelhead numbers are substantially reduced from historical levels. A total of 94,000 adult steelhead were estimated to spawn in the rivers of this DPS in the mid-1960s, including 50,000 fish in the Russian River, which is considered the largest population within the DPS (Busby et al. 1996). Recent estimates for the Russian River are on the order of 7,000 adult fish returning to spawn (NMFS 2016a), however abundance estimates for smaller coastal streams in the DPS indicate low but stable levels with recent estimates for several streams (Lagunitas, Waddell, Scott, San Vicente, Pudding, and Caspar creeks) of individual run sizes of 500 fish or less (62 FR 43937). Some loss of genetic diversity has been documented and attributed to previous among-basin transfers of stock and local hatchery production in interior populations in the Russian River (Bjorkstedt et al. 2005). In San Francisco Bay streams, reduced population sizes and fragmented habitat condition has likely also depressed genetic diversity in these populations. Similar losses in genetic diversity in the Napa River may have resulted from out-of-basin and out-of-DPS releases of steelhead in the Napa basin in the 1970s and 1980s. These transfers included fish from the South Fork Eel River, San Lorenzo River, Mad River, Russian River, and the Sacramento River.

The scarcity of information on CCC steelhead abundance continues to make it difficult to assess whether conditions have changed appreciably since the previous status review assessment (Williams et al. 2016). The most recent status update concludes that steelhead in the CCC DPS remain "likely to become endangered in the foreseeable future", as new and additional information does not appear to suggest a change in extinction risk (NMFS 2016a). NMFS concluded that the CCC steelhead DPS shall remain listed as threatened (81 FR 33468; May 26, 2016).

Recent monitoring efforts indicate steelhead still occur in all diversity strata of the DPS. However, hatchery-origin fish remain more prevalent than natural-origin fish in the Russian River, and an overall downward abundance trend was observed in one of the more robust populations, Scott Creek. Small-scale fish passage improvement and habitat restoration projects have improved habitat conditions locally; however, the DPS still faces threats throughout the region from both legacy habitat degradation and modification, as well as new urban growth, continued water diversions, and dams.

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

In 2022, the Southwest Fisheries Science Center completed a viability assessment for Pacific Salmonids, including CCC steelhead. Since the previous assessment in 2016, new monitoring efforts have been initiated. In the Guadalupe River, juvenile surveys have been conducted since 2015, which have documented the occurrence of juvenile *O. mykiss* in several tributaries. Additionally, in 2018 and 2019, a VAKI camera was operated at the Alamitos fish ladder to detect migrating salmonids. Several large *O. mykiss* (>500 mm) were observed in the 2018, indicating the presence of steelhead; however, none were observed in 2019 (SWFSC 2022). Juvenile surveys have also been conducted in Stevens Creek since 2013. These surveys have documented the continued presence of juvenile *O. mykiss* in the creek, though again there is no recent direct evidence of anadromous adults returning to this watershed. Collectively, while useful for confirming the continued presence of *O. mykiss* in these watersheds and supporting management actions in these watersheds, these new surveys do not provide the level of information needed to evaluate whether there has been any change in viability across the stratum. The report found that although data availability for this DPS remains generally poor, the new information for CCC steelhead available since the previous viability assessment (Spence 2016) indicates that overall extinction risk is moderate and has not changed appreciably since the prior assessment (SWFSC 2022).

2.2.1.2 Status of SCCC Steelhead

Boughton et al. (2007) determined the SCCC steelhead DPS consists of 12 discrete subpopulations which represent localized groups of interbreeding individuals. Steelhead

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

Populations of SCCC steelhead throughout the DPS have exhibited a long-term negative trend since the mid-1960s. In the mid-1960s, total spawning populations were estimated at 17,750 individuals (Good et al. 2005). Available information shows the SCCC steelhead population continued to decline from the 1970s to the 1990s (Busby et al. 1996) and more recent data indicate this trend continues (Good et al. 2005). Current SCCC steelhead run-sizes in the five largest systems in the DPS (Pajaro River, Salinas River, Carmel River, Little Sur River, and Big Sur River) are likely reduced from 4,750 adults in 1965 (CDFG 1965) to less than 500 returning adult fish in 1996. More recent estimates for total run-size do not exist for the SCCC steelhead DPS (Good et al. 2005).

Data on current adult abundances and low-flow fish densities both indicate that the recent drought had very large negative impacts on the DPS, with generally negative trends observed in all indicators, most with statistical significance. However, since the end of the drought in 2017 all indicators have ticked upward), suggesting that *O. mykiss* populations have persisted in drought refugia (e.g., lower Pajaro River tributaries, the upper Carmel River, the Big Sur Coast) and are now recovering from the drought; see, for example, Podlech (2019). Yet the size of steelhead runs is extremely low, and the mean fish densities for the past four years are still below the provisional viability criterion of 0.3 fish/m^2.

On January 5, 2006, NMFS confirmed the listing of SCCC steelhead as threatened under the ESA (71 FR 834). In the most recent 5-year status update (SWFSC 2022, NMFS 2023a), NMFS concluded there was no evidence to suggest the status of the SCCC steelhead DPS has changed appreciably since the publication of previous status review (NMFS 2016c, Williams et al. 2016). Therefore, SCCC steelhead remain listed as threatened (79 FR 20802).

2.2.1.3 Status of CCC Steelhead and SCCC Steelhead Critical Habitat

Critical habitat was designated for CCC steelhead on September 2, 2005 (70 FR 52488) and includes the following CALWATER Hydrologic Units: Russian River, Bodega, Marin Coastal, San Mateo Coastal, Bay Bridge, Santa Clara, San Pablo, and Big Basin. Critical habitat was designated for SCCC steelhead on September 2, 2005 (70 FR 52488). The PBFs for CCC and SCCC steelhead critical habitat include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, and estuarine areas.

Within the action area, San Francisquito Creek, Stevens Creek, Coyote Creek, and Upper Penitencia Creek are designated as critical habitat for CCC steelhead. In the Guadalupe River

watershed, only the lowermost 6 miles of the Guadalupe River is designated as critical habitat. The Guadalupe River tributaries of Alamitos Creek, Los Gatos Creek, Calero Creek, and Guadalupe Creek are not designated as critical habitat for CCC steelhead. San Francisquito Creek, Stevens Creek, and Coyote Creek in the action area are important to the overall critical habitat designation for CCC steelhead because they represent a unique area within the range of the DPS. These streams represent three of the five streams[2] tributary to South San Francisco Bay with remnant runs of steelhead. Furthermore, South San Francisco Bay represents a significant portion of the range of CCC steelhead and its location is relatively isolated from other CCC steelhead streams in the DPS.

Within the action area, Uvas Creek and Llagas Creek are designated as critical habitat for SCCC steelhead. Uvas Creek is of particular importance to the critical habitat designation for SCCC steelhead, because it is one of a few streams in the Pajaro River Watershed that provides effective summer rearing habitat for juveniles. However, both Uvas and Llagas are important to the overall SCCC steelhead critical habitat designation because they are tributary to the Pajaro River which maintains one of the two deep interior populations in the DPS (Boughton et al. 2007; NMFS 2016b.

The condition of CCC and SCCC steelhead critical habitat, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined that present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat: logging; agricultural and mining activities; urbanization; stream channelization; dams; wetland loss; and water withdrawals, including unscreened diversions for irrigation. Impacts of concern include alteration of streambank and channel morphology, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased streambank erosion, loss of shade (higher water temperatures) and loss of nutrient inputs (Busby et al. 1996, NMFS 2016b). Land development has led to channelization of streams and placement of developed areas close to waterways. Input from urbanized areas and roadways can degrade water quality and injure and kill steelhead. For example, recent publications have identified a degradation product of tires (6PPD-quinone) as the causal factor in salmonid mortality at concentrations of less than one part per billion (Tian et al. 2022, Brinkmann et al. 2022, Tian et al. 2020; Peter et al. 2018).

Water development has drastically altered natural hydrologic conditions in many of the streams in the CCC steelhead and SCCC steelhead DPSs. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids. Some of these anthropogenic impacts have been reduced or eliminated, and more recently, multiple restoration actions aimed at improving critical habitat quality and access have been implemented that are intended enhance CCC and SCCC steelhead abundances in the future. These include the modification or removal of numerous other fish passage impediments throughout the CCC and SCCC steelhead DPSs;

[2] San Mateo Creek is the only steelhead stream tributary to South San Francisco Bay not included in the Valley Water's 2023-2026 SMP.

installation of a fish passage facility at Los Padres Dam on the Carmel River; continued efforts toward removal of San Clemente Dam on the Carmel River; and revised reservoir release schedules at Uvas Reservoir on Uvas Creek, Crystal Springs Reservoir on San Mateo Creek, Calaveras Reservoir in the Alameda Creek watershed, Lake Sonoma on Dry Creek (Russian River), Lake Mendocino on the Russian River, and at several water diversion intakes in the San Francisquito Creek watershed. Still, the overall current condition of CCC and SCCC steelhead critical habitat throughout the DPSs remains degraded, and may not provide the full extent of conservation value necessary for the recovery of the species.

2.2.2 Additional Threats to Listed Species and Habitat

2.2.2.1 Global Climate Change

Another factor affecting the range wide status of CCC steelhead, SCCC steelhead, and aquatic habitat at large is climate change. Recent work by the NMFS Science Centers ranked the relative vulnerability of west-coast salmon and steelhead to climate change. In California, listed coho and Chinook salmon are generally at greater risk (high to very high risk) than listed steelhead (moderate to high risk) (Crozier et al. 2019).

Impacts from global climate change are already occurring in California. For example, average annual air temperatures, heat extremes, and sea level increased in California over the last century (Kadir et al. 2013). Snowmelt from the Sierra Nevada has declined (Kadir et al. 2013). Listed steelhead have likely already experienced some detrimental impacts from climate change through lower and more variable stream flows, warmer stream temperatures, and changes in ocean conditions. California experienced well below average precipitation during the 2012-2016 drought, as well as record high surface air temperatures in 2014 and 2015, and record low snowpack in 2015 (Williams et al. 2016). Paleoclimate reconstructions suggest the 2012-2016 drought was the most extreme in the past 500 to 1000 years (Williams et al. 2016, Williams et al. 2020, Williams et al. 2022). Anomalously high surface temperatures substantially amplified annual water deficits during 2012-2016. California entered another period of drought in 2020. These drought periods are now likely part of a larger drought event (Williams et al. 2022). This recent long-term drought, as well as the increased incidence and magnitude of wildfires in California, have likely been exacerbated by climate change (Williams et al. 2022, Diffenbaugh et al. 2015, Williams et al. 2019).

The threat to CCC and SCCC steelhead from global climate change is expected to increase in the future. Modeling of climate change impacts in California suggests that average summer air temperatures are expected to continue to increase (Lindley et al. 2007; Moser et al. 2012). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe et al. 2004; Moser et al. 2012; Kadir et al. 2013). Total precipitation in California may decline and the magnitude and frequency of dry years may increase (Lindley et al. 2007; Schneider 2007; Moser et al. 2012). Similarly, wildfires are expected to increase in frequency and magnitude (Westerling et al. 2011; Moser et al. 2012). Increases in wide year-to- year variation in precipitation amounts (droughts and floods) are projected to occur (Swain et al. 2018). Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia et al. 2002; Ruggiero et al. 2010).

In marine environments, ecosystems and habitats important to juvenile and adult salmonids are likely to experience changes in temperatures, circulation, water chemistry, and food supplies (Feely 2004; Brewer and Barry 2008; Osgood 2008; Turley 2008; Abdul-Aziz et al. 2011; Doney et al. 2012). Some of these changes, including an increased incidence of marine heat waves, are likely already occurring, and are expected to increase (Frolicher, et al. 2018). In fall 2014, and again in 2019, a marine heatwave, known as "The Blob", formed throughout the northeast Pacific Ocean, which greatly affected water temperature and upwelling from the Bering Sea off Alaska, south to the coastline of Mexico. The marine waters in this region of the ocean are utilized by salmonids for foraging as they mature (Beamish 2018). Although the implications of these events on salmonid populations are not fully understood, they are having considerable adverse consequences to the productivity of these ecosystems and presumably contributing to poor marine survival of salmonids.

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 is defined as all areas affected directly or indirectly by the Federal action (50 CFR 402.02). The action area for the 2024-2026 SMP-2 is located within six watersheds: San Francisquito Creek, Stevens Creek, Guadalupe River, Coyote Creek, Uvas Creek, and Llagas Creek in Santa Clara County, California. In northern Santa Clara County, the action area includes the following streams: San Francisquito Creek, Stevens Creek, Los Gatos Creek, Alamitos Creek, Calero Creek, Guadalupe Creek, Guadalupe River, Coyote Creek, and Upper Penitencia Creek. In southern Santa Clara County, the action area includes Uvas Creek and Llagas Creek. All 2024-2026 SMP-2 projects would occur in the stream areas below the 1000-foot elevation contour, and only in sections of creeks where the Valley Water has fee title or maintenance easements, or where the Valley Water Board has provided specific direction.

For the purpose of this consultation, the action area includes the identified stream reaches and their adjacent riparian corridors in the above named six watersheds and eleven streams. Stream reaches with SMP-2 activities are categorized as Modified, Modified with Ecological Values, or Unmodified channels (see Figures 1-2, 1-3, 1-4, 1-5,1-6, 1-7, 1-8, and 1-9 in 2019-2023 SMP Manual [Valley Water 2019]). In the watersheds of San Francisquito Creek, Stevens Creek, Guadalupe River and Coyote Creek, the action area consists of SMP-2 project sites on the stream bed, stream banks, upper bank areas adjacent to these sites, and downstream in-channel areas to San Francisco Bay where water quality, gravel/cobble removal, and LWD removal may be affected by SMP-2 work activities. In the watersheds of Uvas Creek and Llagas Creek, the action area includes SMP-2 project sites on the stream bed, stream banks, upper bank areas adjacent to these sites, and downstream in-channel areas to the confluence with the Pajaro River where water quality, gravel/cobble removal, and LWD removal may be affected by SMP-2 work activities.

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).

Freshwater streams in action area drain to either San Francisco Bay or drain directly to the Pacific Ocean. The watersheds that drain to San Francisco Bay contain highly developed urban areas. Dams in upper watershed areas have been constructed for water development. Lower bayside reaches are typically characterized by hardened channels that have been re-aligned for flood control as they pass through heavily urbanized areas. However, some upper watershed areas remain relatively undeveloped and are protected in regional and State parks.

Profound alterations to the streams of Santa Clara County began in the early 1900's. Agricultural and urban development in the action area triggered dam construction, water diversion, mining, and the diking and filling of tidal marshes. Valley Water's operation of Uvas Reservoir (Uvas Creek), Chesbro Reservoir (Llagas Creek), Anderson Reservoir (Coyote Creek), Almaden Reservoir (Alamitos Creek), Guadalupe Reservoir (Guadalupe Creek), Calero Reservoir (Calero Creek), Lexington Reservoir (Los Gatos Creek), and Stevens Creek Reservoir (Stevens Creek) regulate stream flow downstream of their respective dams. In general, winter runoff is stored for release during the dry season to facilitate groundwater recharge. Stream reaches immediately below these dams are typically perennial due to water releases from the reservoirs. General land use types surrounding the action area include urban and residential development, rural development, and agriculture.

Land use practices throughout Santa Clara County are dominated by urban and residential development. Impervious surfaces have affected stream hydrology and development has significantly encroached into riparian areas. Flood control has resulted in engineered channel reaches with hardscape banks and beds. The effects of this development on critical habitat include accelerated erosion rates, hardened stream banks, channel incision, introduction of toxins, reduced riparian vegetation, low stream sinuosity, and reduced instream habitat complexity.

The estuarine portion of the action area lies within San Francisco Baylands. In these areas, flood control, water development, and urban development have resulted in the loss of habitat, changes in vegetation, and changes to prey communities. Tidally-influenced reaches of streams in the action area have been dredged and channelized for navigation and flood control. Tidal marsh areas have been isolated from stream channels by levees. The tidal marshes of San Francisco Bay historically provided a highly productive estuarine environment for juvenile steelhead and green sturgeon.

The climate in the action area is Mediterranean; most precipitation falls in winter and spring as rain. The freshwater outflow pattern is seasonal; highest outflow occurs in winter and spring. Santa Clara County streams and San Francisco Bay also receive input from stormwater runoff, and wastewater from municipal and industrial sources that vary in volume depending on the location and seasonal weather patterns. Climate change impacts (e.g., reduced streamflows, increased water temperature, increased frequency and magnitude of drought, increased frequency and magnitude of wildfires) in the action area are likely to be similar to those occurring across the range of the affected species. Since 2013, California has endured some of the worst periods of drought on record. From 2012 through 2016 California had an extended period of drought, and 2013 through 2015 was the driest three-year period on record through that time. Shortly after this, California endured another drought. The period from 2020 through 2022 was the driest three-year period in over 100 years of records. As noted above, this extended period of drought was likely exacerbated by climate change. The resulting state of emergency was only recently lifted after heavy rains during the 2023 winter brought most of the state out of drought conditions (Valley Water 2023).

Since 2013, there has been a dramatic increase in the population of unhoused encampments along the streams throughout Santa Clara County. Unhoused encampments are typically in very close proximity to stream channels and the increase in the unhoused population has resulted in increases in the amount of garbage, toxic materials, and human waste entering streams. The encampments further degrade habitat quality through unpermitted activities such as excavation of banks, ignition of wildfires, and removal of riparian vegetation (Valley Water 2023). From 2013 to 2022, Valley Water removed more than 112,000 cubic yards of trash from Santa Clara County streams.

During SMP-2 activities from 2014 to 2023, a total of 32 CCC steelhead were relocated as part of dewatering in preparation for construction projects in 2015 and 2017. In 2019 and 2020, a total of 29 CCC steelhead were collected during mitigation monitoring. In 2022, only one SCCC steelhead was relocated as part of dewatering in preparation for construction projects. No steelhead injuries or mortalities were observed during dewatering or relocation.

From 2014 to 2023, mitigation was provided for impacts caused by SMP-2 activities through installation of LWD, increased habitat complexity, and adding spawning gravel within the same watershed where impacts occurred. Since 2014, SMP-2 projects have removed in total 51.77 cubic yards of LWD and 597 square feet of instream complexity in Lower Peninsula, Guadalupe, and Coyote watersheds. Through compensatory mitigation for CCC steelhead, SMP-2 has installed in total 105.7 cubic yards of LWD, 5,922 square feet of instream complexity, and 640 cubic yards of coarse sediment in Lower Peninsula, Guadalupe, and Coyote watersheds. SMP-2 projects have not removed LWD, instream complexity, or coarse sediment in the Pajaro watershed. SMP-2 has installed in total 45 cubic yards of LWD and 17,424 square feet of instream complexity for SCCC steelhead in the Pajaro watershed since 2014. For details on individual mitigation projects, see Valley Water (2023). Many mitigation projects may not produce the same quality of habitat compared to what has been lost. However, NMFS is familiar with the success rate of the types of projects completed under this proposed action. NMFS has reviewed the compensatory mitigation projects and concludes that both their number and

locations have likely improved habitat conditions in the action area despite the removal of LWD, sediment, and trees from the action area for flood control purposes.

2.4.1 Previous Section 7 Consultations in the Action Area

Pursuant to section 7 of the ESA, NMFS has completed numerous consultations with the Corps for a wide range of projects that affected the action area. Formal consultation pursuant to section 7 of the ESA with the Corps was completed by NMFS in 2002 for Valley Water's first 10-year permit for stream maintenance (i.e., 2002-2012). In 2013, NMFS and the Corps completed formal consultation, and a biological opinion was issued June 11, 2013, for Valley Water's 2013 SMP-2 projects. In 2014, NMFS and the Corps completed formal consultation for Valley Water's second 10-year permit for stream maintenance (i.e., 2014-2023).

Consultations have been completed with the Corps and CalTrans on new bridge construction, bridge repairs, and bridge replacement projects in the action area, as well as for bank stabilization, utility line repair projects, and habitat restoration projects. For most consultations, NMFS concurred with Federal Action Agencies that the proposed actions were not likely to adversely affect listed steelhead, green sturgeon, or their critical habitats. However, formal consultations were also completed if there was a need to relocate juvenile steelhead for construction purposes, or to assess other adverse impacts. NMFS determined that these consultations were unlikely to jeopardize listed salmonids and green sturgeon, and were unlikely to adversely modify their critical habitat.

In addition to the above consultations, NMFS has provided authorization for steelhead research pursuant to Section 10(a)(1)(A) research and enhancement permits, and pursuant to the Section 4(d) limits on streams in action area. Salmonid monitoring approved under these programs includes carcass surveys, smolt outmigration trapping, juvenile density surveys, and non-lethal tissue sampling. In general, these activities are closely monitored and require measures to minimize take during the research activities. NMFS has analyzed these activities and determined that they are not likely to jeopardize CCC steelhead, SCCC steelhead, southern DPS green sturgeon nor adversely modify their critical habitat.

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 (see 50 CFR 402.02). 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 the factors set forth in 50 CFR 402.17(a) and (b).

We expect the temporary and long-term effects of the proposed action to be similar to those described in the NMFS 2014 Opinion. The effects are expected to result from: dewatering streams and relocation of fish, disruption of fluvial processes with bank stabilization and sediment removal, vegetation removal, heavy equipment operation, exposure to toxic materials and herbicides, and site/habitat restoration. SMP-2 proposed activities are routine maintenance

actions common in the action area and elsewhere in California streams; thus, and these activities have predictable effects regardless of where in the action area they are implemented. The effects occur through the following pathways:

- dewatering, and fish collection and relocation;
- impaired water quality (elevated suspended sediment, small spills and leaks, and herbicide use adjacent to streams);
- habitat alterations (riparian and streambank disturbance, changes in stream form and function); and
- temporary reduction in aquatic invertebrate prey in dewatered isolation areas.

Habitat mitigation projects, implemented consistently with other SMP-2 activities, are also expected to have long-term beneficial effects to steelhead and their habitat. These beneficial effects may improve the viability of the steelhead population in Santa Clara County through increased population viability parameters of abundance, productivity, and spatial structure. Habitat improvement projects carried out in critical habitat will are likely to improve the conservation value of the essential and biological features of habitat at the project site, and potentially extend to reaches above and below project sites.

Construction activities at all 2023-2026 SMP-2 work sites in streams with anadromous salmonids are scheduled to occur between June 15 and October 31. Only juvenile steelhead are expected to be in the action areas during this period. Post-construction, some 2023-2026 SMP-2 projects are expected to adversely affect steelhead habitat by removing course substrate (i.e., gravel and cobble) from the stream system, removing riparian vegetation, and removing LWD. Mitigation in the form of riparian plantings and construction of salmonid habitat enhancement/restoration projects are proposed to compensate for the habitat impacts of SMP-2 activities in anadromous salmonid streams.

2.5.1 Dewatering and Fish Relocation

If a SMP-2 work site is wetted and the area must be dry to perform the proposed maintenance activity (e.g., sediment removal, bank stabilization), Valley Water will relocate steelhead from the project reach and install barriers to exclude fish from the area during channel maintenance work. Before and during project site dewatering, qualified biologists will capture fish and relocate them away from the work area to avoid direct mortality and minimize possible impacts during project construction. Fish in the immediate project area will be captured by seine, dip net and/or electrofisher, and then transported and released to a suitable location upstream or downstream of the work site.

SMP-2 work sites are located within the range of CCC or SCCC steelhead, but data to precisely quantify the number of CCC and SCCC steelhead that will be relocated prior to construction activities is limited. Based on the proposed timing of project construction, NMFS can narrow the life stage to which effects are anticipated. Steelhead relocation activities will occur during the summer and early fall low-flow period after emigrating smolts have left and before adults have immigrated to freshwater. Therefore, the CCC and SCCC steelhead that will be captured during relocation activities will be limited to pre-smolting juveniles.

Temporarily dewatering stream reaches and capturing and relocating fish may be necessary during the implementation of some SMP-2 proposed activities. Whether or not an individual project requires dewatering (and therefore fish collection and relocation) depends on the location, timing, and type of proposed project. In instances where dewatering is necessary, streamflow will be diverted around the project site and fish will be captured and relocated to a stream reach outside of the work area.

For Valley Water's 2003-2013 SMP projects, annual reports were prepared for all sites dewatered in steelhead streams. The number of juvenile steelhead encountered and relocated over a period of 11 years by SMP projects is presented in Table 4 of the NMFS 2014 Opinion. The highest number of CCC steelhead collected in a single year was 207 juveniles (2007) and the highest number of SCCC steelhead collected in one year was 13 juveniles (2012). During SMP-2 dewatering work that occurred from 2014 to 2022, a total of 3 juvenile CCC steelhead were relocated (Valley Water 2023). From 2014 to 2022, only 1 juvenile SCCC steelhead was relocated during SMP-2 dewatering work (Valley Water 2023). All relocations occurred at instream complexity mitigation project sites. In consideration of the potential variation for inter-annual fish productivity, differences in habitat quality between sites, and range in number of SMP-2 projects performed in one season, NMFS will assume that, in some years, up to 50 percent more juvenile steelhead than observed in the past may be present in SMP-2 project sites to be dewatered. Based on this information, it is estimated that up to 310 juvenile CCC steelhead may be collected and relocated annually by 2023-2026 SMP-2 projects during the dewatering of work sites. For SCCC steelhead, there was only one SMP dewatering event during the period between 2003 and 2013 that resulted in collection of juvenile steelhead (i.e., 13 juvenile steelhead in 2012). This single event does not likely provide an adequate representation of the potential to encounter SCCC steelhead during SMP-2 2014-2023 activities, because multiple project sites may need to be dewatered during a single SMP-2 work season. The concurrent dewatering of multiple sites in Uvas and Llagas creeks could result in the collection and relocation of juvenile SCCC steelhead numbers in excess of that encountered in previous years. To address the potential concurrent dewatering of three to four work sites in a single season in the Pajaro Basin, NMFS estimates that up to 80 juvenile SCCC steelhead may be collected and relocated annually by 2023-2026 SMP-2 project activities.

Fish collection and relocation activities pose a risk of injury or mortality to rearing juvenile salmonids. Any fish collecting gear, whether passive (Hubert 1996) or active (Hayes et al. 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The effects of seining and dip-netting on juvenile fish include stress, scale loss, physical damage, suffocation, and desiccation. Electrofishing can kill juvenile fish, and researchers have found serious sub-lethal effects including spinal injuries (Nielsen 1998, Nordwall 1999).

The primary contributing factors to stress and death from handling are differences in water temperatures (between the river and wherever the fish are held), dissolved oxygen conditions, the amount of time that fish are held out of the water, and physical trauma. Stress on salmonids increases rapidly from handling if the water temperature exceeds 18ºC (64ºF) or dissolved oxygen is below saturation. Fish that are transferred to holding tanks can experience trauma if care is not taken in the transfer process, and fish can experience stress and injury from

overcrowding in holding facilities, if the tanks are not emptied on a regular basis. Although sites selected for relocating fish will likely have similar water temperature as the capture site and should have ample habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other native and non-native fishes for available resources such as food and habitat. Some of the fish at the relocation sites may move and reside in areas that have more suitable habitat and lower fish densities. As each fish moves, competition is expected to remain localized to a small area or quickly diminish as fish disperse. Capturing and handling all fish causes them stress, though they typically recover fairly rapidly from the process and therefore the overall effects of the procedure are generally short-lived. Juvenile fish that avoid capture in the project work area will likely die during dewatering activities due to desiccation or thermal stress. Once work is completed and the construction areas re-watered, juvenile steelhead rearing space will return to the SMP-2 project sites.

Stress to juvenile steelhead caused by dewatering and handling is not likely to be sufficient to reduce their individual fitness or performance. Restricting the work window to June 15 through October 31 will limit the effects to stream rearing juvenile steelhead. Sites selected for relocation should have similar water temperatures as the capture sites and should have adequate habitat to allow for survival of transported fish. NMFS cannot accurately estimate the number of fish that may be affected by competition, but based on the small areas to be affected and the relatively small number of steelhead to be relocated we do not expect this short-term stress to reduce the individual performance of juvenile steelhead, or cascade through watershed populations of these species. The BMPs proposed for fish capture and release, use of pump-intake screens during the dewatering phase, and fish passage around the isolation area are based on standard NMFS guidance to reduce the adverse effects of these activities (NMFS 1996, 2023b, 2023c). Key conservation measures in the guidance such as avoiding work during times of high stream temperatures significantly reduces mortality that can occur during work area isolation. Use of properly sized screens during water withdrawal will reduce or nearly eliminate injury or death of fish caused by entrainment.

Given the variable densities of steelhead throughout the permit area, the number of steelhead encountered and estimates of mortality will vary with project location, timing, and magnitude. Fish relocation activities will occur during the summer low-flow period after emigrating smolts have left the proposed project sites and before adult fish travel upstream in the winter. Therefore, steelhead that may be captured will be juveniles, generally young-of-the-year and one-year age classes. Since fish relocation activities will be conducted by qualified fisheries biologists, injury and mortality of juvenile salmonids during capture and relocation will be minimized. The guidelines provided by NMFS and applicable BMPs are expected to be effective at removing steelhead from work sites and therefore we anticipate that that less than one percent of steelhead in an area will remain in a project site following dewatering. Any fish that remain would likely die during dewatering. Data on fish relocation efforts between 2002 and 2009 show mortality rates from fish capture and relocation are approximately two percent for steelhead (Collins 2004; CDFW 2005, 2006, 2007, 2008, 2009, 2010). Therefore, unintentional mortality of juvenile steelhead expected from dewatering, capture, and handling procedures is not likely to exceed three percent.

Although dewatering of project sites will result in temporary adverse effects to CCC and SCCC steelhead rearing and migration habitat, the effects to steelhead will be short-term and minimal as steelhead will be removed from work areas prior to dewatering and relocated to areas that possess adequate habitat. Diminishment of PBFs of critical habitat due to the dewatering of the project sites are anticipated to be temporary and minimal.

2.5.2 Water Quality

We expect the effects of construction activities on water quality to be similar to the NMFS 2014 Opinion. Sediment removal may cause temporary increases in turbidity and sediment. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency, reduce growth rates, and increase plasma cortisol levels. High turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality. Even small pulses of turbid water will cause salmonids to disperse from established territories, which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juvenile steelhead. As described in the NMFS 2014 Opinion, sedimentation and turbidity levels are not expected to rise to the levels discussed above with SMP-2 activities from 2023-2026. Impacts on PBFs of critical habitat in the action area will be minor and temporary.

2.5.2.1 Contaminants

We expect the effects of contaminants to be similar to the NMFS 2014 Opinion. Equipment refueling, fluid leakage, equipment maintenance, and road grading activities near the stream channel pose some risk of contamination of aquatic habitat and subsequent injury or death to steelhead. With the implementation of BMPs, NMFS does not anticipate any localized or appreciable water quality degradation from toxic chemicals or adverse effects to steelhead, or PBFs of designated critical habitat associated with implementation of 2023-2026 SMP-2 projects.

2.5.3 Sediment Removal

We expect the effects of sediment removal activities performed from 2023 to 2025 to be similar to the NMFS 2014 Opinion. Gravel and cobble are important physical building blocks for the channel and habitat features as well as important for macroinvertebrate and fish productivity. The anticipated effects of gravel removal at 2023-2026 SMP-2 sites vary widely due to the location within the watershed, site-specific habitat conditions, type of substrate expected to be removed, and quantity of sediment to be removed. The construction-related effects of channel dewatering associated with sediment removal activities are discussed in Section 2.5.1.

Many sediment removal sites for 2023-2026 activities would be located under existing bridges. The loss of material is expected to include an unknown portion of cobble and gravel that benefit CCC and SCCC steelhead spawning, rearing, cover, and macroinvertebrate productivity. The loss of cobble and gravel and degrades rearing and spawning habitat PBFs of designated critical habitat for CCC and SCCC steelhead. The SMP-2 coarse sediment/habitat complexity mitigation program is anticipated to compensate for this loss of gravel and cobble because coarse sediment

losses would be quantified by pre-project assessments and gravel augmentation projects implemented as stand-alone mitigation or combined with other SMP-2 mitigation obligations for LWD and instream habitat complexity.

Sediment removal at culverts and outfalls, sediment deposition removal channels, and fish ladders and fish screens will improve fish passage. Sediment removal sites also include areas within and downstream of existing culverts and outfalls for 2023-2026 SMP-2 activities. The amount of material removed from a single location typically ranges from 0.5 to 100 cubic yards of sediment (NMFS 2014 Opinion). Many of these sites have concrete aprons and/or located on the stream bank. Because habitat conditions have been degraded by the presence of the culvert operation of the outfall, the sediment at these locations is contributing little to macroinvertebrate and fish productivity. Sediment removal at these sites is not expected so significantly diminish the amount of beneficial substrate in the action area. The majority of sediment removal will occur at sediment deposition removal channels, which would occur in the lower Guadalupe River on the inboard levee toe and the natural stream channel. Sediment at this area do not contribute to macroinvertebrate productivity, fish productive, or instream habitat features for steelhead. Sediment removal from sediment deposition removal channels is not expected to diminish conditions for listed fish.

Sediment removal would occur at Valley Water fish ladder and fish screens to restore the functionality of the facility. Fish passage is critical in all creeks throughout the action area, because suitable steelhead spawning and rearing habitat for CCC and SCCC steelhead is primarily located in the most upstream reaches accessible to anadromy. Fish screens prevent the loss of juvenile steelhead and smolts to entrainment at water diversions. Although some beneficial gravel and cobble may be removed from the watersheds due to sediment removal at fish ladders and fish screens, most facilities are located low in the watershed and little to no spawning by steelhead occurs at these downstream locations. Sediment removal at fish ladders and screens is not expected to diminish CCC and SCCC steelhead PBFs of spawning habitat, but these activities may diminish the amount of cobble and gravel downstream for PBFs of juvenile rearing habitat and macroinvertebrate productivity.

The SMP-2 will limit sediment removal activities to two to eight sediment removal projects in Modified and Modified with Ecological Value Channels annually to restore flood flow conveyance capacities. Within Modified Channels with Ecological Values and Unmodified Channels, sediment removal projects would not exceed channel lengths of 300 linear feet and project sites would always be associated with a manmade feature such as a bridge, culvert, stream gauge, fish ladder, etc. Therefore, channel reaches with fish habitat undisturbed by manmade structures would not be subjected to SMP-2 sediment removal activities. Most SMP-2 sediment removal projects would be performed in Modified Channels with poor existing baseline habitat conditions due to engineered earthen and concrete channels. As described above, SMP-2 sediment removal projects for flood flow conveyance are expected to result in the loss of gravel and cobble which provides value to PBFs of steelhead rearing and spawning habitat in the action area. Mitigation for impacts associated with sediment removal projects would be performed by the SMP-2's coarse sediment/habitat complexity mitigation program. Based on results of the SMP-2's mitigation during the last ten years, NMFS expects most of these losses will be offset, leaving only negligible loss of PBFs remaining.

2.5.4 Bank Stabilization

We expect the effects of bank stabilization on CCC and SCCC steelhead to be mostly similar to those analyzed in the NMFS 2014 Opinion. However, we have updated our bank stabilization analysis below with additional information about the impacts of stream channelization. All bank stabilization structures will be constructed during the period between June 15 and October 31. During this work window, many channel reaches will be seasonally dry and no dewatering will be required for construction purposes. Some bank stabilization structures will be constructed adjacent to flowing stream reaches, but work activities will be performed on the bank and outside the wetted perimeter of the channel. These bank stabilization projects constructed at dry work sites are anticipated to have no direct constructed-related impacts on CCC and SCCC steelhead, because proposed BMPs will avoid impacts to the live stream. For work sites that require dewatering for construction of bank stabilization structures, the construction-related effects on water quality and impacts associated with fish relocation.

Although steelhead may be present in Modified Channels, these channel reaches are primarily migration corridors and generally offer poor habitat conditions for juvenile steelhead rearing. Fish relocation efforts by past SMP-2 activities in Modified Channel reaches confirm that most areas do not support juvenile steelhead or support a very small number of juvenile steelhead. These engineered reaches are characterized by hardened banks, low sinuosity, low instream complexity, and limited riparian vegetation. Channelization and bank hardening in Modified Channels has disrupted salmonid habitat forming processes. The SMP's proposed approach for using softscape or hybrid bank stabilization designs where feasible has the potential to improve conditions for steelhead migration and rearing in Modified Channel reaches by increasing channel complexity. Improved instream cover, providing areas with low velocity refugia, and increased shading by riparian vegetation may occur if softscape or hybrid bank stabilization designs are utilized in Modified Channel reaches.

There is no limit to the total number of bank stabilization projects that may occur in a single year. The annual bank stabilization limit is one linear mile (5,280 feet) of channel. Hardscape areas being replaced with softscape or hybrid methods may exceed the per-project limits for maximum length and will not be counted toward the annual maximum length of one mile. Bank stabilization projects require a separation of 500 feet between bank stabilization repair sites. Where possible and feasible, additional wood features are included in projects located in salmonid channels, thereby mitigating for the removal of LWD associated with other items.

Bank stabilization conducted under the SMP-2 may result in permanent alteration of benthic and riparian habitats. Urban development along steelhead streams in the action area has constrained the lateral movement of channels and led to incision, which ultimately results in erosion and bank instability that threatens structures along the top of bank. Projects utilizing riprap to stabilize banks and channelize streams create deep, homogenous channels with limited macroinvertebrate production and poor habitat quality for rearing and spawning salmonids (Sudduth and Meyer 2006; Hellmair et al. 2018). Within these reaches, juvenile salmonid habitat use is low and potential for predation by invasive fish such as smallmouth bass (*Micropterus dolomieu*) is high relative to other habitat types (Hellmair et al. 2018). Projects using bioengineered elements, such as rootwads, large wood, boulders, and submerged vegetation, can

increase the diversity and abundance of benthic macroinvertebrates available for forage as well as increase habitat heterogeneity for rearing salmonids (Sudduth and Meyer 2006; Hellmair *et al.* 2018). Although habitat use by rearing salmonids is consistently higher in unmodified streams, habitat use in modified reaches with bioengineered elements is consistently higher than in homogenous reaches of rock riprap (Hellmair et al. 2018).

Constructing and removing dewatering berms, as well as any streambed disturbance resulting from bio-engineered bank stabilization work, will likely disturb the existing streambed and streambank. These impacts can dislodge and mobilize previously armored and sequestered streambed and streambank sediment, creating turbid water quality when the action area re-waters the following fall. Studies of sediment effects from culvert construction determined that the level of sediment accumulation within the streambed returned to control levels between 358 to 1,442 meters downstream of the culvert (LaChance et al. 2008). Considering the results of LaChance et al. (2008) and the 500 feet required separation between projects in a given season, sediment impacts from individual projects are not expected to combine. These turbidity impacts are not expected to affect the individual fitness of any listed fish given the low amounts and short duration of any turbidity events resulting from projects implemented under this program.

The long-term impacts from channelization likely portend a long-term continuation of impaired juvenile steelhead abundance at the bank stabilization sites over successive generations, relative to what would be expected under natural stream conditions and channel function. The dynamic through which these effects occur is reasonably straightforward. Some individual fish likely grow slower due to less food supplied by the channelized stream, as compared to a natural stream bank. If these smaller fish are unable to move to areas with better resources for growth, they likely experience lower survival upon ocean entry (Holtby et al. 1990), especially if unfavorable ocean conditions exist. As a result, these smaller fish are less likely to return and spawn.

However, the proposed bio-engineered approach (e.g*.,* riparian planting and instream wood placement that create natural cover elements) will improve habitat conditions relative to what currently exists within the channelized action area (Zika and Peter 2002). We expect substantially more juvenile fish will be able to successfully rear in these areas after bio-engineering bank stabilization improves habitat conditions. Successful rearing includes a likelihood of returning to spawn relatively similar to fish rearing in other areas of the watersheds where these bank stabilization projects occur. This improvement does not fully counter-balance the ongoing impact on habitat function and future juvenile population growth caused by extending channelization into the foreseeable future, but instead compensates for it to a fair degree at the site level. Translating this remaining impact into actual injury/death at the individual fish level, is inherently difficult, given the indeterminate nature of future programmatic actions (e.g*.,* project location, project technique, current onsite habitat quality, current population dynamics of impacted fish, etc.), necessitating the use of a habitat-based proxy.

The habitat proxy we chose to estimate the extent of fish loss is the bank stabilization limit of 5,280 linear feet (1-linear mile) per year, and the separation of 500 feet between individual projects. Because these sites are very small relative to the stream area available to rearing

juveniles throughout the action area, and because of the compensation noted above, NMFS expects overall reductions in juvenile fish numbers to be minimal.

Sediment removal, erosion protection, and bank stabilization activities implemented under the SMP-2 have the potential to impair stream form and function by removing sediment substrate that is integral to channel processes, altering instream structure, and preventing lateral migration that is necessary for the maintenance of channel processes. These impairments to instream form and function have the potential to affect all habitat attributes described above by impacting the physical habitat in two general ways: 1) by changing a dynamic, unrestrained stream that constantly evolves via hydrologic and geomorphic processes into a fixed, simplified channel; and 2) by altering the physical land/water interface (i.e., streambank) that provides shelter, food, and other ecosystem benefits to aquatic species, including steelhead. For sediment and debris removal, these impairments may be relatively temporary as vegetation will regrow and sediments and debris will be routinely replenished by downstream transport. For erosion protection, bank stabilization, drainage structure repair and maintenance, and unpaved road maintenance actions, impairments will be essentially permanent. For habitat protection and enhancement actions, permanent benefits to instream form and function are expected. These impacts will be distributed throughout the action area and are expected to be confined to relatively small areas.

2.5.5 Vegetation Management

We expect the effects of vegetation management on CCC and SCCC steelhead to be similar to NMFS 2014 Opinion. Vegetation management with the application of herbicides has the potential to directly affect steelhead from exposure and affect critical habitat from changes in primary and secondary productivity within the action area. To minimize potential adverse effects due to exposure and changes in aquatic productivity, the SMP-2 proposes to only use herbicide formulations in stream channels that are approved for aquatic environments and adhere to all state and federal regulations concerning herbicide use. Herbicides will only be applied in-channel to dry work sites, when no rain is forecasted to occur within 48 hours, and when wind conditions will not result in drift. No surfactants may be added to herbicides used within 20 feet of a wetted channel. Application methods will be limited to hose, hand gun or backpack unit. Based on application methods and other BMPs proposed by the SMP-2 for in-channel vegetation management, the risk of herbicides entering the wetted areas of the creek with steelhead is low. Further, exposure levels expected under application by the SMP-2 are unlikely to be sufficient to cause adverse effects to steelhead or their designated critical habitat because herbicide concentrations used are small and directly applied to target invasive vegetation.

Large wood in the channel is an integral part of freshwater salmonid habitat. Within streams in the action area, LWD is generally lacking and contributes to low habitat complexity. SMP-2's hazard tree removal has the potential to further degrade habitat conditions for steelhead by removal of LWD from streams in the action area. To avoid and minimize the impacts of removing LWD, SMP-2 has a five-tiered protocol for returning as much woody debris to the channel as possible (see Chapter 9 of the 2019-2023 SMP Manual [Valley Water 2019]). If a portion or all of the LWD is cut or removed from the channel, that amount of LWD is quantified and mitigated through SMP's LWD program. From 2014 to 2022, a total of 51.77 cubic yards of LWD was cut or removed from the action area for SMP-2 activities, and SMP-2 mitigated this loss with the installation of LWD, which totaled 105.7 cubic yards. Removal of riparian

vegetation and LWD reduces habitat complexity, removes shading and instream cover for fish, and may contribute to increases in stream temperature. The loss of organic matter in the riparian area may influence the aquatic productivity of the stream, fish prey organisms, and PBFs of CCC and SCCC steelhead. Proposed vegetation management activities could provide some benefit to steelhead and aquatic productivity in the action area by thinning vegetation in areas that are currently occupied by overly dense stand of vegetation. Because wood removal and replacement will only occur at a limited number of sites during one year, the overall impacts in each watershed would likely be small.

2.5.6 Minor Maintenance

We expect the effects of Minor Maintenance projects to the similar to the NMFS 2014 Opinion. The majority of SMP's Minor Maintenance activities are limited to Valley Water facilities in upland areas. These projects may be performed at any time of year and typically have no effect on in-channel areas with steelhead and designated critical habitat. Minor Maintenance activities conducted in-channel must comply with the SMP-2 work windows (i.e., June 15 to October 31) and all other relevant BMPs described in Attachment A of the 2019-2023 SMP Manual (Valley Water 2019). Minor Maintenance projects are typically completed within one to two days. Valley Water limits the area of annual Minor Maintenance activities to less than 0.2 acre of wetland or riparian vegetation impacts per year, and this combined total would include sites outside of streams with anadromous fish. Therefore, the extent of Minor Maintenance activities occurring in channels with steelhead is expected to be very small.

2.5.7 Management of Animal Conflicts

We expect effects from Management of Animal Conflicts to be the similar to the NMFS 2014 Opinion. Management of animal conflicts activities would primarily consist of controlling animals that cause damage by burrowing and foraging along levees and other structures within the SMP-2 area. With implementation of the SMP's impact avoidance measures and BMPs for management of animal conflicts, no in-channel vegetation removal or sediment mobilization into streams would be anticipated during such activities. Therefore, activities associated with management of animal conflicts are not likely to adversely affect steelhead or designated critical habitat.

2.5.8 Effects of Mitigation for LWD, Coarse Sediment, and Habitat Complexity

We expect the effects of mitigation for LWD, coarse sediment, and habitat complexity to be similar to the NMFS 2014 Opinion. The SMP-2 proposes a mitigation program to account for impacts to coarse sediment, instream habitat complexity, and LWD in anadromous salmonid streams. Salmonid enhancement/restoration projects will be constructed by the SMP-2 over the 3-year extension of the program for the purpose of compensating for impacts to the habitat of anadromous salmonids. Construction of these projects will likely require dewatering and the impacts described above for dewatering and fish relocation at SMP-2 project sites would occur (see Section 2.5.1 of this Opinion). The effects of work site dewatering and fish relocation for the construction of SMP-2 salmonid mitigation projects are not expected to exceed those presented in Section 2.5.1. From 2014 to 2022, four juvenile steelhead have been captured and

relocated during dewatering activities for the installation of habitat complexity projects. In 2015, 650 feet of channel was dewatered in Stevens Creek, and three CCC steelhead were captured and relocated. In 2022, 750 feet of channel in Uvas Creek was dewatered, and one SCCC steelhead was captured and relocated. However, additional juvenile steelhead collections may occur during the evaluation phase of SMP-2 salmonid habitat mitigation projects. Monitoring of juvenile salmonids at SMP-2 salmonid mitigation sites may include electrofishing, seine or dip net collections. From 2014 to 2022, Valley Water conducted mitigation monitoring, and they collected and CCC steelhead at three instream complexity mitigation sites. In 2019, 29 CCC steelhead were captured and released on Stevens Creek. In 2020, seven CCC steelhead were captured and released on Stevens Creek; and three CCC steelhead were captured and released on Alamitos Creek (Valley Water 2023).

Although the exact locations and number of SMP-2 mitigation projects for salmonid enhancement and restoration are unknown, sampling would be limited to the non-migration season when only juvenile rearing steelhead are present. Based on the habitat conditions within the action area, and providing for the evaluation of up to 20 mitigation projects in northern Santa Clara County and five mitigation projects in southern Santa Clara County, NMFS anticipates up to 500 juvenile CCC steelhead and 100 juvenile SCCC steelhead may be collected annually by electrofishing during evaluation of SMP-2 mitigation projects between 2023 and 2026. As described in the Section 2.5.1 of this Opinion, NMFS anticipates no more than three percent of the juvenile CCC and SCCC steelhead collected by electrofishing will be harmed or killed. Thus, it is estimated that up to 15 juvenile CCC steelhead and three juvenile SCCC steelhead may be harmed or killed by electrofishing during evaluation of SMP-2 salmonid habitat mitigation projects.

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 earlier in the discussion of environmental baseline (Section 2.4).

Potential non-Federal actions affecting the action area in the future could include State angling regulation changes, voluntary or State-sponsored upslope habitat restoration activities, discharge of stormwater and agricultural runoff, and continued development, including building of private roads, wells, and land use change. Urban development, including rural residential and agricultural development, is likely to continue throughout Santa Clara County. NMFS assumes the rate of such development would be similar to that observed in the last decade. New regulations and increased awareness of the effects of urban and agricultural development

associated with adoption of the Santa Clara Valley Habitat Conservation Plan are expected to reduce the magnitude of effects on streams and water quality with steelhead and their critical habitat in the future.

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step in assessing the risk that the proposed action poses to species and critical habitat. 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.

Steelhead populations throughout northern and central California have also shown a decrease in abundance, but are still widely distributed throughout most of the DPS. Although CCC and SCCC steelhead have experienced significant declines in abundance, and long-term population trends suggest a negative growth rate, they have maintained a better distribution overall. This suggests that, while there are significant threats to the population, they possess a resilience (based in part, on a more flexible life history) that likely slows their decline. However, the poor condition of their habitat in many areas and the compromised genetic integrity of some stocks pose a risk to the survival and recovery of these steelhead DPSs. Based on the above information, recent status reviews and available information indicate CCC and SCCC steelhead are likely to become endangered in the foreseeable future.

As described in the Effects of the Action (Section 2.5), several proposed activities of SMP-2 are expected to adversely affect listed CCC steelhead and SCCC steelhead, and their critical habitat. Specifically, NMFS anticipates fish relocation activities will result in a small number of juvenile steelhead being injured or killed. The number of affected fish will likely be small, considering few salmonids are expected within the action area due to the currently degraded rearing habitat conditions and a construction schedule that avoids adult and smolt migration periods. Therefore, NMFS expects few salmonids are likely to be encountered during implementation of the Project's activities. Furthermore, mortality rates during relocation and dewatering activities are likely below three percent, so the risk of mortality to any encountered salmonid is low. In addition, permanent changes to stream beds and banks via bank stabilization is likely to harm juvenile steelhead trying to rear in these areas. As described above in Section 2.5.4, the number of listed steelhead likely lost over time will be small, and many of these sites, though remaining degraded, will provide additional rearing opportunities by improving habitat conditions.

Turbidity impacts will likely be temporary. Where turbidity effects exist, they will be minimized by fish relocation activities and specific Project design considerations, such as construction site dewatering and BMP implementation. The Project will temporarily isolate and degrade CCC and SCCC steelhead critical habitat during the work window, specifically impacting the juvenile steelhead rearing habitat PBF. Impacts from other SMP-2 activities on PBFs of steelhead critical habitat are anticipated to be minor or negligible, as described above in Section 2.5. The Project

will ultimately improve critical habitat conditions within the action area by installing habitat complexity as compensatory mitigation.

Climate change is likely to be expressed in California with warmer air temperatures and changes in precipitation patterns. Aquatic habitats across the landscape are anticipated to be affected through increased water temperatures and reduced stream flows during the dry season, including an increase in drought years. Increased water temperatures reduced the fitness of steelhead, making them more inclined to disease and predation. Warmer water temperatures support invasive predatory fish such as largemouth bass and striped bass.

As noted above, few salmonids are expected within the action area. Any salmonids present in the action area during the construction window likely make up a small portion of the CCC steelhead and SCCC steelhead populations in Santa Clara County watersheds. It is unlikely that the small potential loss of juveniles from 2024 to 2026 will impact future adult returns, due to the relatively large number of juveniles produced by each spawning pair. Furthermore, the improved migratory habitat resulting from the Project (i.e., sediment removal to improve fish passage at fish ladders and fish screens, compensatory mitigation such as coarse gravel, LWD, and habitat complexity) will likely result in a greater number of fish spawning in the watershed in future years, which should help increase the steelhead populations in Santa Clara County watersheds and help improve resilience to climate change impacts.

Therefore, due to anticipated small number of CCC steelhead and SCCC steelhead likely affected by the three-year extension of SMP-2, as well as the minor or temporary impacts to critical habitat within stream reaches, NMFS does not expect that the Project will appreciably diminish the abundance, productivity, diversity, or spatial structure of the populations of CCC steelhead and SCCC steelhead in Santa Clara County watersheds. Conversely, the three-year extension of SMP-2 is likely to improve habitat condition for these species, which in turn may improve population viability in the future.

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 the cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of CCC steelhead and SCCC steelhead, or destroy or adversely modify their 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). "Harass" is further defined by interim guidance as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly

disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." "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:

A small number of fish are likely to be harmed or killed during relocation efforts at dewatered construction sites. A few fish may avoid relocation efforts and be killed when the work area is dewatered. Given the habitat condition of stream within the action area, up to 310 CCC steelhead and 80 juvenile SCCC steelhead are likely to be collected and relocated annually from SMP-2 work sites between 2024 and 2026. As described in the NMFS 2014 Opinion and 2016 revised ITS, NMFS anticipates no more than three percent of the juvenile CCC and SCCC steelhead present in the areas to be dewatered will be harmed or killed during relocation and dewatering efforts.

As noted above in the Opinion, the habitat proxy we chose to estimate the extent of fish loss is the length of streambanks affected by bank stabilization per year 5,280 linear feet (1-linear mile), and 500 feet of separation between individual projects. If more than 1 linear mile of steelhead habitat is affected by bank stabilization per year or any projects are closer than 500 feet during any one year, incidental take would likely be exceeded.

2.9.2. Effect of the Take

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

2.9.3. Reasonable and Prudent Measures

"Reasonable and prudent measures" are measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02) of CCC steelhead and SCCC steelhead.

NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of listed fish:

1. Undertake measures to ensure harm and mortality to steelhead resulting from fish relocation and dewatering activities are low.
2. Conduct annual inspections and perform required maintenance at Valley Water fish ladders and fish screens to ensure these facilities are properly functioning for steelhead passage.

3. Ensure SMP-2 impacts to steelhead are adequately determined and impacted fully mitigated per the 2019-2023 SMP Manual (Valley Water 2019).
4. Ensure SMP-2 mitigation activities for LWD (Tier 3 and 4), coarse sediment, and habitat complexity are adequately evaluated and monitored for their benefits to steelhead.
5. Undertake measures to ensure in-channel application of herbicides in streams with anadromous fish minimize the risk of steelhead exposure.
6. Prepare and submit annual reports regarding SMP-2 activities conducted during the previous work season and completed mitigation actions.

2.9.4. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Federal action agency must comply (or must ensure that any applicant complies) with the following terms and conditions. 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) Valley Water must retain qualified biologists[3] with expertise in the area of anadromous salmonid biology, including handling, collecting, and relocating salmonids, for the collection of fish during project site dewaterings. Valley Water must ensure that all biologists collecting and handling steelhead are qualified to conduct fish collections in a manner that minimizes potential risks.
   b) A qualified biologist must monitor SMP-2 work sites during placement and removal of stream flow diversion and cofferdams to ensure any adverse effects to salmonids are avoided or minimized. The biologist must be on site during all dewatering events to ensure all ESA-listed salmonids are captured, handled, and relocated safely.
   c) Before fish relocation begins, a qualified biologist must identify the most appropriate release location(s). Release locations must have water temperatures within 1°C of the capture locations. Release locations must offer ample habitat for released fish, avoid possibility of re-entry to the work area, and avoid areas where individual fish could become impinged on the exclusion net or screen.
   d) Steelhead must be handled with extreme care and kept in water to the maximum extent possible during relation activities. All captured fish must be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream and fish must not be removed from this water except when released. To avoid predation, the biologist must have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids

[3] A qualified biologist (including those specializing in botany, wildlife, and fisheries) is determined by a combination of academic training and professional experience in biological sciences and related resource management activities. Valley Water may also utilize appropriately experienced and/or trained environmental staff. Resumes of qualified biologists shall be made available to NMFS upon request.

will be relocated, as soon as possible, to suitable instream location in which habitat conditions allow for adequate survival of transported fish and fish already present at the release site.

e) If any steelhead are found dead or injured, the biologist must contact NMFS by phone immediately at the NMFS North Central Coast Office at (707) 575-6050. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All steelhead mortalities must be retained, placed in appropriately-sized plastic bag, labeled with the date and location of collection, fork length measured, and be frozen as soon as possible. Frozen samples must be retained by the biologist until specific instruction are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS North Central Coast Office, Supervisor. Any such transfer will be the subject to such conditions as NMFS deems appropriate.

f) Valley Water must allow any NMFS employee(s), or any other person(s) designated by NMFS, to accompany field personnel to visit SMP-2 work sites during activities described in this Opinion.

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

a) Valley Water must annually inspect fish ladders and fish screens during the period between March 1 and April 30 to determine the condition and required maintenance at the following facilities:

> Fish Ladders: Coyote Percolation Ponds/Steel Dam (Coyote Creek); Mabury Diversion (Upper Penitencia Creek); Noble Avenue Diversion (Upper Penitencia Creek); Masson Diversion (Guadalupe Creek); Alamitos Diversion (Guadalupe River); Moffett Boulevard (Stevens Creek); Evelyn Avenue (Stevens Creek); Central Avenue (Stevens Creek); Fremont Avenue (Stevens Creek); and 14 drop structures (Llagas Creek).
>
> Fish Screens: Coyote Canal Diversion (Coyote Creek); Mabury Diversion (Upper Penitencia Creek); Noble Avenue Diversion (Upper Penitencia Creek); Masson Diversion (Guadalupe Creek); Alamitos Diversion (Guadalupe River); and Church Avenue Diversion (Llagas Creek).

b) The following components, where applicable, of each facility must be inspected: (1) upstream access and channels; (2) downstream access and channels; (3) culverts; (4) baffles/pools; (5) pool/chute structures; (6) entry and terminal pools; (7) weirs; (8) bypass channels; (9) gates; (10) debris racks; (11) control systems; (12) screen faces; and (13) screen cleaning systems. Inspections must determine if sediment, debris, or algal growth are impairing the functionality of the facility. Inspections must also determine if any components of the facility are loose, broken, missing, or present sharp edges. For fish screens, inspections must determine if screens are firmly attached and no gaps, tears, rips, or holes are present.

c) The results of inspections at each facility must be presented annually in the SMP-2 Notice of Proposed Work (NPW). Inspection results must include a narrative description of the condition of the facility, photographs, water depth and velocity measurements (where applicable), and maintenance needs. Maintenance proposed for the upcoming SMP-2 work season must be specified. The inspection reports must also present any other condition that is or could be in the future compromising the functionality of the fish ladder or screen. Maintenance must be performed during the subsequent SMP-2 work window (June 15 to October 31). NMFS shall review the results of the inspections to determine the adequacy of the proposed maintenance and NMFS will respond to the Valley Water through the NPW review procedure.

d) A follow-up inspection of each of the above facilities must be performed between September 1 and October 31 to confirm the completion of maintenance and repairs, if any were performed. If no repairs or maintenance were performed, the follow-up inspection must confirm whether or not the condition of the facility remains as reported in the previous NPW. The follow-up inspection must identify any condition that is or could be in the future compromising the functionality of the fish ladder or screen. The results of the follow-up inspection must be presented in the Annual Summary Report.

e) Valley Water must develop and maintain an inspection and maintenance log books for each of the above fish ladder and screen facilities.

3) The following terms and conditions implement reasonable and prudent measure 3:

a) Valley Water must prepare and submit all pre-project site assessments for sediment removal and bank stabilization projects in anadromous salmonid streams with the annual NPW.

b) Through the annual NPW review procedure, Valley Water must identify all proposed on-site and off-site mitigation actions for potential impacts to LWD (Tier 3 and 4), coarse sediment, and instream habitat complexity to NMFS for review and approval. Each off-site mitigation action must identify: (1) project-specific objectives; (2) project design plans and specifications; (3) monitoring/evaluation program; and (4) project success criteria. NMFS approval of proposed mitigation actions will be based upon the anticipated probability of the project to successfully achieve project-specific objectives, ability of the monitoring program to assess the project's success criteria, and whether the mitigation project adequately compensate for anticipated impacts.

4) The following terms and conditions implement reasonable and prudent measure 4:

a) Off-site SMP-2 mitigation projects for LWD (Tier 3 and 4), coarse sediment, and habitat complexity must be monitored for a period of at least five (5) years postconstruction with assessments performed, at minimum, in Years 1, 3, and 5.

b) Monitoring and evaluation of mitigation sites must be performed by a qualified biologist to evaluate the condition of the project, utilization by target species, and achievement of the project-specific success criteria.

c) Monitoring and evaluation of mitigation sites must conform with the principals and procedures for project evaluation and monitoring contained in the California Salmonid Stream Habitat Restoration Manual (Part VIII Project Evaluation and Monitoring) (CDFG 1998). Methods must include "as-built" design drawings, photographs, and narrative descriptions. Post-construction assessments should include a variety of methods to determine if project-specific objectives have been achieved (e.g., fish observations, electrofishing, water depths and velocities, channel cross-section surveys).

5) The following terms and conditions implement reasonable and prudent measure 5:

a) Herbicides must only be applied when wind conditions will not result in drift.
b) No direct application of herbicides into water.
c) Instream herbicide application methods must be limited to small, low-volume equipment such as a hose, hand gun, or backpack unit.

6) The following terms and conditions implement reasonable and prudent measure 6:

a) Maintenance and repair work at Valley Water fish ladders and screens completed by SMP-2 during the previous work season must be presented in the Annual Summary Report (ASR).
b) Evaluation and monitoring performed at SMP-2 mitigation sites for LWD (Tier 3 and 4), coarse sediment, and habitat complexity in anadromous salmonid streams must be presented in the ASR.
c) The Final Water Quality Monitoring Reports prepared by the SMP-2 for water diversions at SMP-2 work sites (as described in Attachment E of the 2019-2023 SMP Manual [Valley Water 2019]) must be provided to NMFS no later than January 31 of each year.
d) Valley Water must provide the ASR to NMFS no later than January 31 of each year. The report must be submitted to the NMFS North Central Coast Office Attention: San Francisco Bay Branch Chief, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404.

2.10. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, "conservation recommendations" are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

NMFS offers the following Conservation Recommendations:

1. Valley Water and the Corps should continue to implement fish habitat restoration projects within steelhead streams in Santa Clara County, particularly projects from Valley Water's 2018 "Study of Santa Clara Steelhead Streams to Identify Priority Locations for Gravel Augmentation and Large Woody Debris Placement, Santa Clara County, California." Priority should be given to projects that restore spawning gravel, remedy fish barriers, and increase instream habitat complexity. Valley Water and Corps should identify funding sources and collaborative partners to assist with habitat restoration projects in Santa Clara County.

2.11. Reinitiation of Consultation

This concludes formal consultation for the Corps.

Under 50 CFR 402.16(a): "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: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If 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 written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action."

2.12. "Not Likely to Adversely Affect" Determinations

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 (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

The Corps has determined that the proposed action is not likely to adversely affect the following species and critical habitat:

North American green sturgeon Southern DPS (*Acipenser medirostris*)
Threatened (71 FR 17757; April 7, 2006)
Critical Habitat (74 FR 52299; October 9, 2009).

The life history of green sturgeon in California is summarized in Adams et al. (2002), NMFS (2018), and NMFS (2021). The southern DPS of North American green sturgeon are anadromous, making migrations as adults to the Sacramento River in the spring (Moyle et al. 1995). As juvenile green sturgeon age, they migrate downstream and live in the lower delta and bays, spending from 3 to 4 years there before entering the ocean. Individuals are present in San Francisco Bay and the estuary provides rearing habitat for juveniles and foraging habitat for non-spawning adults and subadults.

Within the action area, the tidally-influenced stream reaches (i.e., San Francisquito Creek, Guadalupe River, and Coyote Creek) provide rearing habitat for juvenile, subadult, and adult green sturgeon. Critical habitat for southern DPS green sturgeon includes all tidally influenced areas of San Francisco Bay and extends up to the elevation of mean higher high water. However, activities conducted under SMP-2 will only occur in waterways that are upstream of estuarine areas that support southern DPS green sturgeon and no work will be authorized in the tidal portions of these waterways. Effects of SMP-2 activities conducted in freshwater reaches of streams in the action area are not expected to extend downstream to tidally-influenced areas due to the relatively small areas affected by each activity, BMPs, and compensatory mitigation. Valley Water has not detected any southern DPS green sturgeon during the course of biological surveys, monitoring, or maintenance work, including dewatering and relocation activities. Based on the above, effects to southern DPS green sturgeon and their designated critical habitat during the implementation of SMP-2 activities are expected to be insignificant or discountable. Based on this analysis, NMFS concurs with the Corps that the proposed action is not likely to adversely affect southern DPS green sturgeon or its designated critical habitat.

3. Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Under the MSA, this consultation is intended to promote the conservation of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the physical, biological, and chemical properties that are used by fish (50 CFR 600.10). Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) of the MSA also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH. Such recommendations may include measures to avoid, minimize, mitigate, or otherwise offset the adverse effects of the action on EFH [CFR 600.905(b)].

This analysis is based, in part, on the EFH assessment provided by the Corps and descriptions of EFH for Pacific Coast Salmon (PFMC 2014) contained in the fishery management plans (FMPs) developed by the Pacific Fisheries Management Council and approved by the Secretary of Commerce.

3.1. Essential Fish Habitat Affected by the Project

The Corps determined that the proposed action would adversely EFH for species managed under the Pacific Coast Salmon FMP may be adversely affected by the Project. This determination is based on temporary impacts associated with maintenance activities, such as dewatering and increased turbidity, and on permanent impacts such as reduced habitat heterogeneity in the loss of suitable refugia habitat for juveniles and prey species. San Francisco Bay, downstream of the project area, is also designated as EFH for various life stages of fish species managed under the Coastal Pelagic Species FMP and Pacific Groundfish FMP.

3.2. Adverse Effects on Essential Fish Habitat

NMFS has determined the proposed action would adversely affect EFH for species managed under the Pacific Coast groundfish, Coastal Pelagic Species, and Pacific Coast Salmon FMPs by:

1. degrading small amounts of instream habitat by, removing sediment, disturbing benthic habitat and prey resources, armoring banks for stabilization, and preventing natural fluvial and geomorphic processes that create and maintain salmonid habitat; and
2. temporarily impacting water quality in the form of dewatering and increased turbidity in the water column and suspension of sediments.

The potential adverse effects of the Project on EFH have been described in the preceding Biological Opinion. To avoid, minimize, and mitigate the impact of the proposed action, the project includes design, monitoring, and Best Management Practices meant to avoid or minimize potential adverse effects to EFH from the project, and with elements to promote habitat recovery. As such, NMFS provides no EFH Conservation Recommendations at this time.

3.3. Supplemental Consultation

The Corps must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations [50 CFR 600.920(l)].

4. 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.

4.1. 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. Other interested users could include Valley Water. Individual copies of this opinion were provided to the Corps and Valley Water. The document will be available within two weeks at the NOAA Library Institutional Repository [https://repository.library.noaa.gov/welcome]. The format and naming adhere to conventional standards for style.

4.2. 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.

4.3. 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 part 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 [*and EFH consultation, if applicable*] 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 MSA implementation, if applicable*], and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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