**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

August 2, 2024 **Refer to NMFS No:** WCRO-2024-01349

James Mazza
Chief, Regulatory Division
U.S. Department of the Army
San Francisco District, Corps of Engineers
450 Golden Gate Avenue, 4th Floor
San Francisco, California 94102-3404

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Main Street over Dutch Bill Bridge Repair in Monte Rio, California

Dear Mr. Mazza:

Thank you for your letter of June 13, 2024, 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 Main Street over Dutch Bill Creek Bridge Repair. The U.S. Army Corps of Engineers (Corps) has received an application from the County of Sonoma (County) for a permit pursuant to Section 404 of the Clean Water Act to repair the Main Street Bridge over Dutch Bill Creek in Monte Rio, Sonoma County, California.

In this biological opinion, we conclude that the proposed action is not likely to jeopardize the continued existence of the federally endangered Central California Coast (CCC) coho salmon (*Oncorhynchus kisutch*), or the threatened CCC steelhead (*O. mykiss*) and California Coastal (CC) Chinook salmon (*O. tshawytscha*). We also conclude the proposed action is not likely to result in the destruction or adverse modification of designated critical habitat for these listed species. However, NMFS anticipates that incidental take of all three species is reasonably certain to occur as a result of the proposed action. Therefore, an incidental take statement with terms and conditions is included with the enclosed biological opinion.

Thank you also for your request for essential fish habitat (EFH) consultation. NMFS reviewed the proposed action for potential effects on EFH pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. The proposed action includes best practice strategies to avoid or minimize potential adverse effects to EFH. Thus, no additional EFH conservation recommendations are provided.

Please direct questions regarding this letter to Jodi Charrier (707)575-6069 or via email at jodi.charrier@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 E. West, USACE, Sarah.E.West@usace.army.mil
Copy to E-File: ARN 151422WCR2024SR00116

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

Main Street over Dutch Bill Bridge Repair

NMFS Consultation Number: WCRO-2024-01349

Action Agency: U.S. Department of the Army Corps of Engineers

Affected Species and NMFS' Determinations:

| ESA-Listed Species | Status | Is Action Likely to Adversely Affect Species? | If likely to adversely affect, Is Action Likely to Jeopardize the Species? | Is Action Likely to Adversely Affect Critical Habitat? | If likely to adversely affect, is Action Likely to Destroy or Adversely Modify Critical Habitat? |
|---|---|---|---|---|---|
| Central California Coast steelhead (*Oncorhynchus mykiss*)) | Threatened | Yes | No | Yes | No |
| Central California Coast coho salmon (*O. kisutch*) | Endangered | Yes | No | Yes | No |
| California coastal Chinook (*O. tshawytscha*) | Threatened | Yes | No | Yes | No |

| 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 |

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

**Issued By:**

Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

**Date:** August 2, 2024

## Table of Contents


**1. Introduction ........ 1**

1.1. Background ........ 1

1.2. Consultation History ........ 1

1.3. Proposed Federal Action ........ 2

**2. Endangered Species Act: Biological Opinion And Incidental Take Statement ........ 4**

2.1. Analytical Approach ........ 4

2.2. Rangewide Status of the Species and Critical Habitat ........ 5

2.3. Action Area ........ 12

2.4. Environmental Baseline ........ 13

2.5. Effects of the Action ........ 20

2.6. Cumulative Effects ........ 24

2.7. Integration and Synthesis ........ 24

2.8. Conclusion ........ 27

2.9. Incidental Take Statement ........ 27

2.9.1. Amount or Extent of Take ........ 28

2.9.2. Effect of the Take ........ 28

2.9.3. Reasonable and Prudent Measures ........ 29

2.9.4. Terms and Conditions ........ 29

2.10. Conservation Recommendations ........ 31

2.11. Reinitiation of Consultation ........ 31

**3. Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response ........ 32**

**4. Data Quality Act Documentation and Pre-Dissemination Review ........ 33**

4.1. Utility ........ 33

4.2. Integrity ........ 33

4.3. Objectivity ........ 33

**5. References ........ 34**

# 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 (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' North-Central Coast Office in Santa Rosa, California.

## 1.2. Consultation History

May 1, 2023 – The County of Sonoma (County), requested a virtual meeting to discuss the Main Street Bridge over Dutch Bill Creek, and repairs needed after severe weather.

July 12, 2023 – The U.S. Army Corps of Engineers (Corps) sent a letter to NMFS requesting informal consultation The Main Street Bridge over Dutch Bill Creek Project (project) and included a biological assessment. NMFS confirmed via email that the project was eligible for application under the 2018 NLAA Program (Corps SPN 20113-00187 and SPK-2013-00451; NMFS WCR-2018-10641).

February 2, 2024 – The County sent an email stating that construction was not able to take place the previous year, and that construction would likely need to occur during a time when water will be present and dewatering necessary at the Main Street Bridge, which would require formal consultation.

June 13, 2024 – NMFS received an email from the Corps, which requested formal section 7 consultation for The Main Street Bridge over Dutch Bill Creek Repair.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 Fed. Reg. 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to the Services' existing practice in implementing section 7(a)(2) of the Act. 89 Fed. Reg. at 24268; 84 Fed. Reg. at 45015. We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this opinion and ITS would not have been any different under the 2019 regulations or pre-2019 regulations.

### 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).

The County is proposing the structural repair of a damaged bridge pier that supports the Main Street Bridge in the town of Monte Rio, California. The pier was initially damaged by large woody material that was mobilized from upstream during previous high-flow events. Prolonging the repair could result in further damage or bridge failure. Bridge failure could potentially become an evacuation safety issue to the residents of Monte Rio.

The County's proposed activities include the removal and replacement of a single damaged 15-inch hexagonal concrete pile from the upstream side of the bridge. The existing damaged pile will be abandoned approximately 4 feet below the existing stream grade. Two new 15 to 18-inch cast-in-drilled hole concrete piles will be placed adjacent to the existing pile to a depth of approximately 30-feet. An 8-foot long by 2-foot wide by 2-foot deep pile cap would connect the two new piles. A concrete pedestal approximately 2 feet in diameter will be installed atop the pile cap to a 3-foot height above grade and a new steel H-column will be bolted to the pedestal and bottom of the existing bridge. The centerline of the new column will match the centerline of the prior column. If needed, sheet pile with a concrete seal course will be used by the work crews to minimize water seeping into the excavations. The sheet pile will be installed using a vibratory hammer driven through the gravel platform. Operating from the work area, a vibratory hammer will vibrate or twist permanent steel casings for the Cast In Drilled Hole (CIDH) piles. A drill rig will be used to drill holes within the casing. The drill spoils will be loaded onto trucks and removed for disposal off-site. Concrete will be pumped from trucks into the casings to form the expanded footing cap. This will result in the permanent placement of a one-point-two cubic yard concrete cap within 16 feet of the dry season wetted area of Dutch Bill Creek.

Given the likelihood of the channel being wetted during construction, a temporary 40-foot-by-40-foot (1600 square feet) gravel work pad will be built using 50 cubic yards of gravel around the damaged pier. To build the work pad, water will need to be diverted from the work area. This will be accomplished by digging a trench into the existing gravel bar edges to redirect upstream flow toward the right bank and away from the work area. The trench length will be approximately 15 feet in length and will not initially breach the gravel bar edges until the trench is complete. The eastern side of the Dutch Bill Creek channel (approximately 10 feet) will remain unobstructed to allow for movement of aquatic organisms up and downstream of the work site. The creek will be accessed via a gravel road upstream (south) of the bridge on the southern side of the bridge.

Once the work area is dewatered, the gravel pad will be formed in the area surrounding the pile by pushing the newly added gravel into place from the left bank. The gravel will extend down to the bank toe and slowly spread out toward the damaged pier. Gravel will be uncrushed, rounded, natural river rock with no sharp edges and would also be completely free of oils, clay, debris, and organic material. A top layer of compacted aggregate (separated by a layer of filter fabric) may be used on top of the river gravel to support the weight of heavy equipment needed for the project. The constructed gravel bar will be approximately 2 feet higher in elevation, which will isolate the wetted trenched channel from the work pad. If isolated pools form and directly interfere with construction activities , they will be dewatered following inspections and relocation of fish and other aquatic species to suitable habitat out of the project area. A qualified biologist will be onsite and will use block nets to guide and relocate fish out of the work area prior to any dewatering and in-channel construction activities. If any fish are encountered, NMFS and CDFW will be contacted prior to any fish relocation activities. Existing water and/or water that seeps into the work area and confirmed void of fish, will either be pumped for disposal on nearby uplands in a manner that prevents it from flowing back into the river, or pumped directly into trucks and disposed of away from the river channel in an upland area.

After the completion of the repairs, the project will require a "dry time" around the pier of at least 30 days for the cement to cure. Once this time has passed, all imported gravel used for the work pad will be removed to the extent possible without encountering the wetted channel. Once completed the  and allowing the  stream channel will be allowed to form back to its original configuration.

*Avoidance and Minimization Measures*

The County proposes to include the following  avoidance and minimization measures as part of the project to reduce the likelihood of project-related effects to salmonids:

- All work will be completed within the in-water work window of June 15 to October 15; and only when hydrologic conditions remain dry.

- Except for the project footprint, the bed and banks will be undisturbed.

- Water quality will be monitored during any channel moving activities.

- Following the repair, the gravel work pad will be breached and the channel location will be returned to the pre-repair location. Prior to the breaching, the work pad will be removed and taken offsite to a certified location. Any remnant clean gravel will naturally be moved by the ensuing higher winter flows to downstream locations.

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

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).

# 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.

## 2.1. Analytical Approach

This 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 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 coho salmon, and steelhead and CC Chinook salmon uses 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 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, 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.

## 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 designated critical habitat, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated critical habitat, and discusses the function of the PBFs that are essential for the species' conservation.

NMFS assesses four population viability[1] parameters to discern the status of the listed Evolutionarily Significant Units (ESUs) and Distinct Population Segments (DPSs) and to assess each species ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient data to evaluate these population viability parameters quantitatively, NMFS has used existing information to determine the general condition of the populations in the CCC coho salmon and CC Chinook salmon ESUs and CCC steelhead DPS and the factors responsible for the current status of these listed species.

We use these population viability parameters as surrogates for "reproduction, numbers, and distribution" in the regulatory definition of "jeopardize the continued existence of" (50 CFR 402.02). For example, abundance, population growth rate, and distribution are surrogates for numbers, reproduction, and distribution, respectively. The fourth parameter, diversity, is related to all three regulatory criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained, resulting in reduced population resilience to environmental variation at local or landscape-level scales

[1] NMFS defines a viable salmonid population as "an independent population of any Pacific salmonid (genus *Oncorhynchus*) that has a negligible risk of extinction due to threats from demographic variation, local environmental variation, and genetic diversity changes over a 100-year time frame" (McElhany *et al*. 2000).

Available information indicates the following listed species (Evolutionary Significant Units [ESU] or Distinct Population Segments [DPS]) under the jurisdiction of NMFS may be affected by the proposed Project:

**Central California Coast coho salmon ESU** (*Oncorhynchus kisutch*)
Endangered, 64 Fed. Reg. 24049 (May 5, 1999)
Critical Habitat, 65 Fed. Reg. 42,422 & 42,481 (Jul. 10, 2000);

**Central California Coast steelhead DPS** (*O. mykiss*)
Threatened 71 Fed. Reg. 834 (Jan. 5, 2006)
Critical Habitat 70 Fed. Reg. 52,488 (Sep. 2, 2005);

**California Coastal Chinook salmon ESU** (*O. tshawytscha*)
Threatened 70 Fed. Reg. 37,160 (Jun. 28, 2005)
Critical habitat 70 Fed. Reg. 52,488 (Sep. 2, 2008).

### 2.2.1. CCC Coho Salmon Status

The CCC coho salmon ESU is defined as all naturally spawned coho salmon originating from rivers south of Punta Gorda, California, to and including Aptos Creek, as well as such coho salmon originating from tributaries to San Francisco Bay. In accordance with NMFS' 2005 Hatchery Listing Policy, the ESU also includes coho salmon from the three following artificial propagation programs: Don Clausen Fish Hatchery (DCFH) Captive Broodstock Program, the Scott Creek/Kingfisher Flat Conservation Program, and the Scott Creek Captive Broodstock Program.

Historically, the CCC coho salmon ESU comprised approximately 76 coho salmon populations. Most of these were dependent populations that needed immigration from other nearby populations to ensure their long-term survival. There are now 11 functionally independent populations (meaning they have a high likelihood of surviving for 100 years absent anthropogenic impacts) and one potentially independent population of CCC coho salmon (Spence et al. 2008, Spence et al. 2012). Most of the populations in the CCC coho salmon ESU are currently not viable, hampered by low abundance, range constriction, fragmentation, and loss of genetic diversity.

Brown *et al*. (1994) estimated that annual spawning numbers of coho salmon in California ranged between 200,000 and 500,000 fish in the 1940s. Abundance declined further to 100,000 fish by the 1960s, then to an estimated 31,000 fish in 1991. In the next decade, abundance estimates dropped to approximately 600 to 5,500 adults (NMFS 2005). CCC coho salmon have also experienced acute range restriction and fragmentation. Adams *et al.* (1999) found that in the mid-1990s, coho salmon were present in 51 percent (98 of 191) of the streams where they were historically present, and documented an additional 23 streams within the CCC coho salmon ESU with no historical records. Recent genetic research has documented reduced genetic diversity within subpopulations of the CCC coho salmon ESU (Bjorkstedt et al. 2005), likely resulting from inter-breeding between hatchery fish and wild stocks.

Available data from the few remaining independent populations suggests population abundance continues to decline, and many independent populations essential to the species' abundance and geographic distributions have been extirpated. This suggests that populations that historically provided support to dependent populations via immigration have not been able to provide enough immigrants to support dependent populations for several decades. The viability of many of the extant independent CCC coho salmon populations over the next couple of decades is of serious concern. These populations may not have sufficient abundance levels to survive additional natural or human caused environmental change.

The substantial decline in the Russian River coho salmon abundance led to the formation of the Russian River Coho Salmon Captive Broodstock Program (RRCSCBP) in 2001. Under this program, offspring of wild captive-reared coho salmon are released as juveniles into tributaries within their historic range with the expectation that some of them will return as adults to naturally reproduce. Coho salmon have been released into several tributaries within the lower Russian River watershed as well as in Salmon, Walker, and Redwood Creeks.

The available data for populations within the CCC coho salmon ESU indicate that all independent and dependent populations remain far below recovery targets for abundance and, in some cases, are below high-risk thresholds. The current viability of the populations is progressively worse moving north to south in the ESU. Recent data from the Lost Coast-Navarro Point and Navarro Point-Gualala Point diversity strata suggest a slight improvement in the viability of independent populations since the last status review (Spence 2016), with most populations having rebounded somewhat since low levels reached during California's multi-year drought between 2012 and 2015. However, for dependent populations in these strata, while the abundance of some populations has improved slightly since the previous status review, long-term trends have generally continued downward and remain a concern. The slight improvement in abundance of some populations is encouraging considering both the extended drought and the unprecedented warm ocean temperatures and associated marine ecosystem impacts that began in 2014 and have persisted most years since (SWFSC 2023). Smolt-to-adult survival estimates from four Life-Cycle Monitoring (LCM) stations on the Mendocino Coast indicate that marine survival of coho salmon was extremely low from brood years 2004 to 2008 (i.e., smolt outmigration years 2005–2009), but rates have since risen to levels more typically seen, even in years corresponding to the marine heat wave. Thus, it appears that near-coast conditions along the northern California coast during the springs of 2014 to 2016 may have been more favorable than occurred more generally in the northeast Pacific Ocean. For dependent populations in these strata, while the mean abundance of some populations has increased slightly since the previous viability assessment, long-term trends have generally continued downward and remain a concern.

Assessment of independent populations in the Coastal and Santa Cruz Mountain diversity strata remains difficult due to the scarcity of reliable data, though the establishment of a rigorous monitoring program in the Russian River basin is a positive development. While coho salmon numbers remain low in the Russian River population, fish are reproducing naturally in several watersheds that have received outplants of fish from the ongoing captive rearing program at the DCFH. The extremely low numbers of coho salmon in the Santa Cruz Mountain Diversity Stratum, the high dependence of population persistence on the ongoing captive rearing program, and loss of genetic diversity in the hatchery broodstock (which has necessitated infusion of out of-stratum broodstock from DCFH into the program) remain major concerns. Overall, the available new information since the 2016 viability assessment indicates the extinction risk has not changed appreciably. It shows slight improvements in the two northernmost diversity strata, but little change in the Coastal Diversity Stratum and perhaps worsening conditions in the Santa Cruz Mountain Stratum. The latest status review of CCC coho salmon determined the extinction risk for CCC coho salmon as a whole thus remains high (Seghesio 2023).

### 2.2.2. CCC Steelhead Status

The CCC steelhead DPS includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Russian River to and including Aptos Creek, and all drainages of San Francisco and San Pablo Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin rivers. This also includes steelhead from the DCFH and Kingfisher Flat Hatchery Program. The Russian River is the largest drainage in the CCC steelhead DPS.

Historically, approximately 70 populations of steelhead existed in the CCC steelhead DPS (Spence *et al*. 2008, Spence *et al*. 2012). About 37 of these were considered independent, or potentially independent (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 - the largest population within the DPS (Busby et al. 1996). Though still below historic levels, the trend of adult returns to the Warm Springs and Coyote Valley fish facilities on the Russian River has improved since the 1980s and ‘90s. 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, Caspar creeks) of individual run sizes of 500 fish or less (62 FR 43937; August 18, 1997). Some loss of genetic diversity has been documented and attributed to previous among-basin transfers of stock and local hatchery production in interior populations in the Russian River (Bjorkstedt et al. 2005). In San Francisco Bay streams, reduced population sizes and fragmentation of habitat has likely also led to loss of genetic diversity in these populations.

A 2008 viability assessment of CCC steelhead concluded that populations in watersheds that drain to San Francisco Bay are highly unlikely to be viable, and the limited information available did not indicate that any other CCC steelhead populations were demonstrably viable (Spence et al. 2008). Although there were average returns (based on the last ten years) of adult CCC steelhead during 2007/08, research monitoring data from the 2008/09 and 2009/10 adult CCC steelhead returns show a decline in returning adults across their range compared to the previous ten years. The lack of adequate spawner surveys within the Russian River precludes the estimation of wild steelhead escapement within the basin; however, hatchery returns suggest the vast majority of returning fish are of hatchery origin. Information from years of the Coastal

Monitoring Program in the Santa Cruz Mountains suggests that population sizes there are higher than previously thought. However, the long-term downward trend in the Scott Creek population, which has the most robust estimates of abundance, is a source of concern. Population-level estimates of adult abundance are not available for any of the seven independent populations (i.e., Novato Creek, Corte Madera Creek, Guadalupe River, Saratoga Creek, Stevens Creek, San Francisquito Creek, and San Mateo Creek) inhabiting the watersheds of the coastal strata.

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 (Spence 2016). Population-level estimates of abundance do not exist for any populations in the Interior and Coastal San Francisco Bay strata, thus, their viability remains highly uncertain. It remains likely that many Interior and Coastal San Francisco Bay populations where historical habitat is now inaccessible due to dams and other passage barriers are at high risk of extinction, as noted in prior viability assessments (Spence *et al*. 2008; Williams *et al*. 2011, 2016). In summary, while data availability for this DPS remains generally poor, the new information for CCC steelhead available since the previous viability assessment indicates that overall extinction risk is moderate and has not changed appreciably.

### 2.2.3. CC Chinook Salmon Status

The CC Chinook salmon ESU includes all naturally spawned populations of Chinook salmon from rivers and streams south of the Klamath River, in Humboldt County, to the Russian River. Seven artificial propagation programs were considered part of the ESU at the time of listing: the Humboldt Fish Action Council (Freshwater Creek), Yager Creek, Redwood Creek, Hollow Tree, Van Arsdale Fish Station, Mattole Salmon Group, and Mad River Hatchery fall-run Chinook hatchery programs.

The CC Chinook salmon ESU was historically comprised of approximately 32 Chinook salmon populations (Bjorkstedt et al. 2005). About 14 of these populations were independent, or potentially independent. The remaining populations were likely more dependent upon immigration from nearby independent populations than dependent populations of other salmonids (Bjorkstedt et al. 2005). Data on CC Chinook salmon abundance, both historical and current, is sparse and of varying quality (Bjorkstedt et al. 2005). Estimates of absolute abundance are not available for populations in this ESU (Myers et al. 1998). In 1965, CDFG (1965) estimated escapement for this ESU at over 76,000. Most were in the Eel River (55,500), with smaller populations in Redwood Creek (5,000), Mad River (5,000), Mattole River (5,000), Russian River (500) and several smaller streams in Humboldt County (Myers et al. 1998). Between 2000 and 2020, the average number of adult Chinook salmon counted at Mirabel Dam on the Russian River was 2,716 fish (no data was obtained in 2014 and 2015) (SCWA website 2021).

CC Chinook salmon populations remain widely distributed throughout much of the ESU. Notable exceptions include the area between the Navarro River and Russian River and the area between the Mattole and Ten Mile River populations (Lost Coast area). The lack of Chinook salmon populations both north and south of the Russian River (the Russian River is at the southern end of the species' range) makes it one of the most isolated populations in the ESU.

Myers et al. (1998) reports no viable populations of Chinook salmon south of San Francisco, California.

Because of their prized status in the sport and commercial fishing industries, CC Chinook salmon have been the subject of many artificial production efforts, including out-of-basin and out-of-ESU stock transfers (Bjorkstedt et al. 2005). Therefore, it is likely that CC Chinook salmon genetic diversity has been significantly adversely affected despite the relatively wide population distribution within the ESU. An apparent loss of the spring-run Chinook life history in the Eel River Basin and elsewhere in the ESU also indicates risks to the diversity of the ESU.

Williams et al. (2016) summary of previous status reviews (Good et al. 2005, Williams et al. 2011) concluded that the loss of representation from one diversity stratum, the loss of the spring run history type in two diversity substrata, and the diminished connectivity between populations in the northern and southern half of the ESU pose a concern regarding viability for this ESU. The latest status review of CC Chinook salmon determined that there is no change in the extinction risk for this ESU, and NMFS affirmed that the CC Chinook salmon ESU should remain listed as threatened (NMFS 2016a). NMFS's recovery plan (NMFS 2016b) for the CC Chinook salmon ESU identified the major threats to recovery as channel modification, roads, logging and timber harvesting; water diversions and impoundments; and severe weather.

### 2.2.4. Status of Critical Habitat

There is designated critical habitat for CCC coho salmon and steelhead within the action area. There is no critical habitat for CC Chinook salmon in Dutch Bill Creek itself, however, effects are being considered due to the project's proximity (275 feet) with the confluence mainstem Russian River, which is critical habitat for Chinook salmon. PBFs for CCC steelhead critical habitat within freshwater include:

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

For CCC coho salmon critical habitat, the following essential habitat types were identified: 1) juvenile summer and winter rearing areas; 2) juvenile migration corridors; 3) areas for growth and development to adulthood; 4) adult migration corridors; and 5) spawning areas. Within these areas, essential features of coho salmon critical habitat include adequate: 1) substrate, 2) water quality, 3) water quantity, 4) water temperature, 5) water velocity, 6) cover/shelter, 7) food, 8) riparian vegetation, 9) space, and 10) safe passage conditions (64 FR 24029, 24059; May 5, 1999).

The condition of designated critical habitat for CCC coho salmon and steelhead, and CC Chinook salmon, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined that currently depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat[2]: logging, agriculture, mining, urbanization, stream channelization and bank stabilization, dams, wetland loss, and water withdrawals (including unscreened diversions for irrigation). Impacts of concern include: altered stream bank and channel morphology, elevated water temperature, lost spawning and rearing habitat, habitat fragmentation, impaired gravel and wood recruitment from upstream sources, degraded water quality, lost riparian vegetation, and increased erosion into streams from upland areas (Weitkamp et al. 1995; Busby et al. 1996; 64 FR 24049; 70 FR 52488). Diversion and storage of river and stream flow has dramatically altered the natural hydrologic cycle in many of the streams within coho and Chinook salmon ESUs and steelhead DPSs. Altered flow regimes can delay or preclude migration, dewater aquatic habitat, and strand fish in disconnected pools, while unscreened diversions can entrain juvenile fish.

2.2.5. Additional Threats to Listed Species and Critical Habitat

Another factor affecting the rangewide status of coho salmon, steelhead, and Chinook salmon, and their critical habitat at large, is climate change. Impacts from global climate change are already occurring in California and listed salmonids here may have already experienced some detrimental impacts. For example, average annual air temperatures, heat extremes, and sea level have all increased in California over the last century (Kadir *et al.* 2013). California has a history of episodic droughts. However, the state has experienced a two-decade period of persistently warm and dry conditions. The five-year period from 2012 to 2016 was the driest since record keeping began (Williams *et al.* 2016). The extreme drought conditions for most of California from January 2020 through August 2021 have resulted from the lowest total precipitation and near-highest temperatures recorded since 1895 (Mankin *et al.* 2021).

The threat to salmonids from global climate change will continue 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 be comprised of higher temperatures (Hayhoe *et al*. 2004, Moser *et al.* 2012; Kadir *et al.* 2013). Total precipitation in California will likely decline and critically dry years may increase (Lindley *et al*. 2007; Schneider 2007; Moser *et al.* 2012).

For Northern California, most models project heavier and warmer precipitation. Extreme wet and dry periods are projected, increasing the risk of both flooding and droughts. Many of these changes are likely to further degrade salmonid habitat by reducing stream flow during the

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[2] Other factors, such as over fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability from such factors as drought and poor ocean productivity.

summer and raising summer water temperatures. For example, in the San Francisco Bay region, warm temperatures generally occur in July and August, but as climate change takes hold, the occurrences of these events will likely begin in June and could continue to occur in September (Cayan *et al.* 2012). Climate simulation models project that the San Francisco region will maintain its Mediterranean climate regime, but will also experience a higher degree of variability of annual precipitation during the next 50 years.

Although wildfires are an integral ecological feature in California, they are expected to increase in frequency and magnitude (Westerling et al. 2011, Moser et al. 2012, and Goss et al. 2020). In 2020, the Walbridge fire alone burned over 55,000 acres and included approximately half of the CCC coho salmon spawning habitat available in the lower Russian River tributaries. In the same year, the CZU Lightning Complex fire burned 86,500 acres in San Mateo and Santa Cruz Counties. Of the nine historic CCC coho salmon populations in the Santa Cruz Mountains identified in the recovery plan, six experienced burning, of which three experienced severe burning. These three populations (Gazos Creek, Waddell Creek, and Scott Creek) represented some of the highest quality habitat for CCC coho salmon south of San Francisco (J. Casagrande, personal communication 2020). Wildfires can increase wet-season runoff, reduce summertime surface flows, and increase stream temperatures (Boughton et al. 2007). When wildfires are followed by heavy rains in areas which are geomorphically unstable, high flows may cause an increase in sediment delivery to streams via debris torrents (Spina and Tormey 2000, Keeley 2006), that cover habitats and fish alike. Estuaries may also experience changes detrimental to salmonids.

Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002, Ruggiero *et al.* 2010). In marine environments, ecosystems and habitats important to juvenile and adult salmonids are likely to experience changes in temperatures, circulation, water chemistry, and food supplies (Brewer and Barry 2008; Feely *et al*. 2004; Osgood 2008; Turley 2008; Abdul-Aziz *et al.* 2011; Doney *et al.* 2012).

## 2.3. Action Area

"Action area" means all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for the project encompasses the active channel of Dutch Bill Creek where the existing bridge crosses the creek as well as the active channel 50 feet upstream and 100 feet downstream of the Main Street Bridge, and all upland staging and access areas. Dutch Bill Creek is a tributary to the Russian River and the project location is located approximately 100 feet from the confluence of the Russian River.

Dutch Bill Creek is an 11-square-mile watershed and has a variety of land uses including cattle grazing, commercial vineyards, logging and rural residential uses. Pool disconnection and streambed drying are prevalent in the low-gradient alluvial stretches near its confluence with the Russian River. Low stream flows and streambed drying occur in portions of Dutch Bill Creek during the late summer and fall dry season.

## 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 impacts to listed species or designated critical habitat from federal agency activities or existing federal agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

The Russian River watershed covers approximately 1,485 square miles, is 110 miles long and includes over 200 tributaries that provide anadromous salmonid habitat. The headwaters are in Potter and Redwood Valleys, approximately 15 miles north of Ukiah in Mendocino County. The proposed project is located within the lower portion of the watershed which is confined in a narrow valley with limited floodplain area and steep forested hillsides. This reach of the Russian River is stable with little meander or movement from one year to the next with a sandy, gravel beach on the north bank, and a steep, vegetated south bank. The Dutch Bill Creek sub-watershed covers 55-square-miles and flows for 8 miles starting from its headwaters north of Occidental. The lower reach of Dutch Bill Creek consists of steep vegetated banks and dries in late summer and early fall.

This area has a Mediterranean climate characterized by cool wet winters with typically high runoff, and dry warm summers characterized by greatly reduced instream flows. Fog is a dominant climatic feature along the coast, generally occurring daily in the summer and not infrequently throughout the year. The average annual rainfall is 31.2 inches, falling during the winter and early spring as rain. The average air temperatures range from 46° to 72° F.

High seasonal rainfall on bedrock and other geologic units with relatively low permeability, erodible soils, and steep slopes contribute to the flashy nature (stream flows rise and fall quickly) of the Russian River Watershed. In addition, these high natural runoff rates have been increased by road systems, urbanization, and other land uses. High seasonal rainfall combined with rapid runoff rates on unstable soils delivers large amounts of sediment to river systems. As a result, many river systems within the Russian River watershed contain a relatively large sediment load, typically deposited throughout the lower gradient reaches of these systems. The land use around the project sites is primarily rural residential and with some agriculture, mainly vineyards. The upland areas are predominantly forested with rural residences.

### 2.4.1 Status of CCC Coho Salmon, CCC Steelhead, and CC Chinook Salmon in the Action Area

In 2001, the RRCSCBP was developed, whereby coho salmon and steelhead are spawned and raised at the Warm Springs Hatchery (WSH) and Coyote Valley Fish Facility (CVFF) respectively, as mitigation for the loss of spawning and rearing habitats caused by construction of Coyote Valley Dam (CVD) and Warm Springs Dam (WSD). It has become the largest coho salmon recovery hatchery program in California. Since 2013, California Sea Grant (CSG) and

Sonoma Water have implemented the Coastal Monitoring Plan that includes genetic analysis and annual monitoring of the distribution and survival of stocked juvenile salmon and the subsequent return of adult coho to the Russian River. CSG has established long-term life cycle monitoring in Willow, Dutch Bill, Green Valley, and Mill creeks. Sonoma Water conducts life cycle monitoring in Dry Creek for coho salmon and steelhead and operates a life cycle monitoring station at the Mirabel dam site on the mainstem Russian River (at river kilometer 39.67) aimed at assessing status and trends of adult Chinook salmon. CSG and Sonoma Water's efforts also include basin-wide spawner surveys in the Russian River for coho salmon and steelhead, and basin-wide snorkel surveys for juvenile coho salmon.

*CCC Coho Salmon*

Information on the historic run size of coho salmon in the Russian River is limited. Late 19th and early 20th Century records are sparse, or non-specific as to species (Chase et al. 2007). They once occupied many tributaries throughout the basin, probably reared in backwater areas of the main stem, and were a major component of the fish community (Spence et. al. 2005). Bjorkstedt (2005) concluded that coho salmon existed as two populations in the Russian River: a large independent population in the lower basin, and a smaller ephemeral population that occupied tributaries in the northwest corner of the basin. The lower river population represented what was historically the largest and most dominant source population in the ESU. They are now restricted to a few tributaries in the lower watershed (CDFG 2002), and rear only in isolated areas of suitable habitat.

The RRCSCBP was initiated to reestablish self-sustaining runs of coho salmon in tributary streams within the Russian River Basin (Obedzinski *et al.* 2007). This program currently releases approximately 200,000 juvenile offspring of wild captive-reared coho salmon into 20 to 30 Russian River tributaries within their historic range with the expectation that a portion of them will return to these areas as adults to naturally reproduce (PACT 2019). According to CSG spawner surveys, the estimated annual adult hatchery coho salmon returns to the Russian River from 2010 to 2021 range from 200 fish to over 700. The estimated number of hatchery coho salmon adults returning during the winter of 2019/20 was 547, the third highest on record and adults or redds were observed in 16 of the 32 coho salmon streams surveyed. (CSG 2020). In the summer of 2020, young of the year coho salmon were detected in 31 of the 43 streams surveyed (CSG 2020a). Adult coho salmon can begin migrating in the lower mainstem Russian River as early as late September and into tributaries around mid-November (CSG 2021, unpublished data). Coho salmon smolt out- migration occurs from March to June (SCWA 2021).

Monitoring of coho salmon populations in the Russian River basin has shown that Dutch Bill Creek plays an important role in providing habitat for rearing juveniles and according to the joint CDFW and NMFS Priority Action Coho Team (PACT, formed in 2011), is considered essential for recovery. As part of the RRCSCBP, thousands of pre-smolt and smolt coho salmon are released each year into Dutch Bill Creek. The smolt to adult ratio includes the probability of smolts surviving the riverine, estuarine, and ocean environments from when they leave the tributary until they returned as adults. Though smolt to adult ratios are quite low in Dutch Bill Creek, averaging 0.5 percent from 2010 through 2017 (CSG 2020), trends for estimated adult coho salmon abundance show that returns began to stabilize since 2013. In 2020, CSG snorkeled over 7 miles of Dutch Bill Creek and estimated nearly 2,000 young of the year coho salmon occupied the creek, mostly in the upper reaches (CSG 2020a). This is a positive indication of spawning success.

Preservation of locally adapted genotypes is critical to the recovery of the CCC coho salmon ESU. Genetic analyses of coho salmon sampled from Russian River tributaries are consistent with what would be expected for a population with such extremely reduced abundance. A review by Bjorkstedt (2005) found both strong departures from genetic equilibrium and evidence of recent, severe population bottlenecks. Historical hatchery practices may also have contributed to these results. This evidence suggests an acute loss of genetic diversity for the Russian River coho salmon population.

Based on the decline in abundance, restricted and fragmented distribution, and lack of genetic diversity, the Russian River population of coho salmon is in immediate danger of extinction. The wild population is considered functionally extirpated. The Russian River population itself is in the middle of the CCC coho salmon ESU's range and inhabits a watershed that fully represents a third of the ESU by area. For these reasons, irrespective of the condition of the watershed, the Russian River has great potential to provide important geographic continuity, diversity, and habitat space for the species. The continued existence of CCC coho salmon in the Russian River is, therefore, significant to the survival and recovery of the entire CCC coho salmon population.

*CCC Steelhead*

Russian River steelhead runs once ranked as the third largest in California behind the Klamath and Sacramento rivers. The Russian River was renowned as one of the world's finest steelhead rivers during the l930's and on through the 1950's (SEC 1996). SEC (1996) reported historic Russian River catch estimates for steelhead: 15,000 for the 1936 sport catch, and 25,000 for the 1956/57 sport catch. These estimates are based on best professional judgment by a CDFG employee and, for the latter estimate, a sportswriter. Other estimates include one of 57,000 steelhead made in 1957 (SEC 1996). Since the mid-20th Century, Russian River steelhead populations have declined. Estimates based on best professional judgment infer a wild run of 1,750 to 7,000 fish near the end of the 20th Century (Busby 1996). Hatchery returns averaged 6,760 fish for the period 1992/93 to 2006/07, and ranged from 2,200 to 11,828 fish. Though there were challenges with sampling conditions, Sonoma Water's estimate for the 2019/20 spawner season was 1,606 redds in the Russian River basin (SCWA 2020). The information available suggests that recent basin-wide abundance of wild steelhead has declined considerably from historic levels. A limited catch-and-release hatchery sport fishery still offers a fishing season for hatchery steelhead in the Russian River.

Reproduction of the Russian River steelhead population is primarily dependent on tributary spawning outside the action area. In 2019/20, CSG detected 27 steelhead redds in Dutch Bill Creek, mostly concentrated in the lower reach. This uncharacteristically high number of redds (usually less than 10), may have been due to the release of adult hatchery steelhead in the mainstem Russian River across from Dutch Bill Creek. Steelhead also rear in the mainstem, but in very low numbers. Degraded rearing habitat and low densities indicate the mainstem within the action area is not currently capable of supporting large numbers of rearing juvenile steelhead.

The mainstem throughout the action area and beyond, although degraded for rearing, is used as a migration corridor for by out-migrating smolts and returning adult steelhead. Adult steelhead typically return to the Russian River watershed in December, with the migration (upstream/downstream) continuing into late May.

Hatchery practices have also impacted steelhead populations within the action area. Since the 1870's, millions of hatchery-reared salmonids have been released into the Russian River Basin. The combination of planting out-of-basin stocks, hatchery selecting processes, and interbreeding have led to a decrease in salmonid genetic diversity and loss of local adaptations (SEC 1996). The CVFF, located upstream of the action area primarily produces and releases steelhead which have the potential to affect naturally-produced steelhead within the action area.

Despite declines in abundance, steelhead remain widely distributed within the basin (NMFS 2005). The primary exceptions to this are the barriers to anadromy caused by the CVD and WSD. CVD has blocked approximately 21 percent of the historical habitat of the Upper Russian River population, and WSD has blocked approximately 56 percent of the Dry Creek population's historical habitat (Spence 2006).

While the steelhead population has declined dramatically in the Russian River over the past several decades, its current numbers, distribution, and diverse use of habitat will likely provide much stronger resistance to environmental and anthropogenic disturbance when compared to coho salmon and Chinook salmon. However, no information exists that demonstrates that the decline in the Russian River steelhead population has stabilized.

*CC Chinook Salmon*

Chinook salmon use the mainstem Russian River through the action area strictly as a migration corridor. Chinook salmon currently spawn mostly in Dry Creek and in the mainstem of the Russian River from Healdsburg to Ukiah. Though Chinook salmon have been observed in the lower reaches of Dutch Bill Creek, it is likely that they moved in from the Russian River for short periods of time and do not use the creek for spawning or rearing. Steiner Environmental Consulting (SEC) (l996) reported that there were no Chinook salmon population estimates in the Russian River Watershed until the 1960's, and by that time the returns appeared strongly associated with periods of sustained hatchery supplementation. Estimated Chinook salmon escapement was1,000 in 1966 (CDFG 1966) and 500 in 1982 (COE 1982). SEC (1996) reported that despite heavy planting in Dry Creek during the 1980's, a viable Chinook salmon run was not established. Returns to WSD from 1980 to 1996 ranged between zero and 304, with the biggest count in 1988. Hatchery supplementation was finally terminated in 1996.

Since 2000, SCWA has conducted annual counts of CC Chinook salmon moving past the Mirabel Dam water diversion facility located approximately 23 river kilometers upstream from the proposed project. Between 2000 and 2020, the average number of adult Chinook salmon counted at Mirabel Dam was 2,716 fish (no data was obtained in 2014 and 2015). 2012 saw the highest count at 6,730 adult Chinook salmon, and in 2020, 602 were counted, the lowest total since counting began (SCWA website 2021). These data suggest a fluctuating, but stable population of Chinook salmon in the Russian River. However, the decrease in adult escapement in the past couple of years is concerning.

Genetic diversity is an important measure of viability as well. Genetic analysis of Russian River Chinook salmon suggests they are not closely related to either the nearby Eel River or Central Valley Chinook salmon, and likely evolved as part of a diverse group of native coastal populations (Hedgecock 2002). A history of hatchery stocking, however, has likely had some effect on genetic diversity (Bjorkstedt *et al.* 2006, Chase *et al.* 2007).

The Russian River is the largest watershed in the CC Chinook Central Coastal Diversity Stratum and has the second largest population in the ESU (Eel River). This population is also at the southern extent of the species range. Therefore, their extension would result in a substantial range restriction, the loss of the largest population in the stratum, and probably the loss of a unique genetic component of the ESU. For these reasons, the survival and recovery of the Russian River population of CC Chinook is important to the conservation of the ESU as a whole.

2.4.2 Status of Critical Habitat in the Action Area

The functioning of salmonid critical habitat within the lower mainstem Russian River has been compromised by changes in flow, temperature and fine sediment loading resulting from upstream dams and diversions. In 1922, the completion of Scott Dam forming Lake Pillsbury on the upper Eel River allowed the storage and diversion of water from that basin to the Russian River Basin. Subsequently, the construction of the CVD in 1958 in the upper Russian River Basin and the construction of the WSD on Dry Creek in 1982 further altered the flows and sediment routing in the Russian River. Environmental Consulting (SEC) (1996) cite unpublished data from the California State Water Resources Control Board (CSWRCB), which state that there are over 500 small dams on the Russian River and its tributaries.

The action area is also influenced by the annual installation of two summer dams approximately 3 to 4 miles upstream on the mainstem Russian River. Johnson's Beach summer dam in Guerneville impounds water to approximately one mile downstream of the Odd Fellows crossing. The second dam is the Vacation Beach summer dam, which is located just upstream of the Vacation Beach summer crossing and impounds water upstream to the Johnson's Beach summer dam.

These dams have a variety of functions including residential, commercial, and agricultural water supply, flood and/or debris control, and recreation. However, they also interfere with fish migration, affect sediment transport, and affect water flow and temperature. Forestry and agriculture are other significant land uses within the basin, and there are some in-channel gravel mining operations. Brown and Moyle (1991) reported that logging and mining in combination with naturally erosive geology have led to significant aggradation of up to 10 feet in some areas of Austin Creek, a lower Russian River tributary.

The riverbed material of the Russian River consists mostly of alluvial deposits of igneous and sedimentary origin. The upper reaches of the river have a dominant substrate of gravel with cobbles. However, by the time the river nears the Guerneville area, additional fine sediment has entered the river system and the dominant substrate is gravel mixed with a large sediment load. The substrate in the action area lacks clean, loosely compacted, gravel in cool water with highly dissolved oxygen and an inter-gravel flow necessary for spawning. Lack of clean gravel and high-water temperatures are two of the factors that make the areas in the lower river unsuitable for spawning habitat. However, the lower river is used by all the salmonid species as a migration corridor to the upper reaches of the mainstem and to the tributaries of the upper and lower river.

The Russian River was included on the 2013 CWA section 303(d) list of water quality limited segments. The pollution factors for the Russian River vary by sub-watershed, but commonly include sediment, temperature, dissolved oxygen, various nutrients, and many chemical pollutants and pathogens. Forestry, agriculture, dams with flow regulation, urban and land development, and nonpoint sources are listed as the potential sources for these factors. Lake Sonoma, a reservoir impounded by WSD, is included on the section 303(d) list because of elevated levels of mercury associated with historic mining. Total maximum daily load (TMDL) is a regulatory term in the CWA, describing a plan for restoring impaired waters that identifies the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards (www.epa.gov). Currently, there is no approved TMDL for the Russian River watershed.

Since 2015, NMFS has been working with partners to evaluate the viability of Forecast Informed Reservoir Operations (FIRO) in achieving improved flood management, water supply, and environmental flows associated with the operations of Lake Mendocino, the reservoir created by the CVD. The FIRO program, authorized by the Corps, allows reservoir operators to use forecasts to inform the storage and release of water in the portion of the flood control pool. If effective, FIRO will provide several benefits for listed salmonids, including: increased cold-water pool availability, more reliable and higher minimum in-stream flows, and better water quality conditions.

We rely on information from section 2.2.5 with respect to the broader climatic variables influencing the current condition of habitat in the action area. Variables such as air temperature, wind patterns, and precipitation are likely influencing localized environmental conditions, such as water temperature, stream flow, and food availability. These local environmental conditions can affect the biology of listed species and the functioning of critical habitat and its value for conservation. The combination of climate change effects and effects of past and current human activities on local environmental conditions further reduce the current condition of available habitat for listed species in the lower Russian River.

Rearing habitat in the mainstem of the Russian River is marginal; primarily due to elevated stream temperatures, fine sediment loading, and the abundance of warm-water predator fish species. Overwinter and outmigration habitat conditions are also poor because the mainstem channel lacks habitat complexity and velocity refuge and carries a high level of fine sediment (Ritter and Brown 1971, COE 1982, Beach 1996, CDFG 2001). Therefore, salmonid habitat conditions within the action area are poor and are not anticipated to improve in the immediate future.

In 1894, a railroad was constructed along the entire length of Dutch Bill Creek to facilitate intensive logging efforts. For over a century, the watershed was stripped of its redwood forests, which led to its current state: critically low stream flows and streambed drying across large portions of Dutch Bill Creek during the late summer and fall. Pool disconnection and streambed drying are common in the low-gradient alluvial reaches near its confluence with the Russian River, but can also occur in the prime spawning and rearing reaches in the central portion of the creek. The current major land use in the Dutch Bill Creek watershed is unmanaged forestland, but there are areas of vineyards, and concentrated residential development, including the communities of Occidental and Camp Meeker.

The coho salmon population decline in Dutch Bill Creek triggered intensive efforts to restore salmon habitat. For nearly two decades, the Dutch Bill Creek watershed has been the site of intensive efforts to enhance habitat for endangered fish species and restore watershed processes. Extensive work has been undertaken to improve fish passage and enhance habitat within the creek. This instream work has been coupled with efforts to reduce sedimentation and improve water quality through erosion control projects, with a focus on the network of unpaved roads throughout the watershed. In the past several years, water conservation, water storage and streamflow enhancement projects have been designed and built to ensure that the stream has enough flow year-round to support a healthy aquatic community.

Starting in 2009, the Russian River Coho Water Resources Partnership (Partnership)[3] developed a Streamflow Improvement Plan for Dutch Bill Creek which identified the following priority actions that have since been implemented:

- Reducing or eliminating direct dry season diversions from mainstem Dutch Bill Creek and its tributaries with institutional and residential users.
- Pursuing flow releases from ponds and spring-to surface- water reconnection.
- Assessing the impact of stormwater runoff and exploring infiltration and groundwater recharge opportunities.

Other conservation efforts in Dutch Bill Creek include:

- <u>The Westminster Woods Water Conservation and Storage Project</u> - The Westminster Woods Camp and Conference Center partnered with Gold Ridge RCD and the Partnership to irrigate its playing fields with stored spring water, alleviating the need to take water from the creek during the summer/fall dry season. The Westminster Woods water storage project now sources 175,000 gallons of water per year from nearby springs.
- <u>The Dutch Bill Creek Water Release Project</u> - In collaboration with the Partnership, the Gold Ridge RCD also participated in the release of water from the Camp Meeker system, which pumps from the Russian River mainstem, into upper Dutch Bill Creek to support summer stream flows. The Partnership also negotiated with several area agricultural operators to release late season water from large ponds.

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[3] The Partnership consists of a multidisciplinary collaboration among CSG, Gold Ridge Resource Conservation District, Occidental Arts and Ecology Center's WATER Institute, Sonoma Resource Conservation District, and Trout Unlimited, with support from the National Fish and Wildlife Foundation and SCWA.

- Installation of Large Woody Debris - Several instream large woody debris structures designed to improve winter rearing and spawning habitat for coho salmon and steelhead have been installed.
- Culvert and dam removal - Before 2009, the upper reaches of Dutch Bill Creek, historically prime spawning habitat for the endangered coho and steelhead salmon, were blocked to salmon by the Market Street culvert and Camp Meeker dam. In collaboration with community partners, the Gold Ridge RCD worked to decommission and replace both the dam and culvert with passable structures. Fish access was further improved with instream fish passage enhancement structures.

## 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 but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.02).

Effects to Species

During construction, the effects of the project to juvenile coho salmon, steelhead, and Chinook salmon are reasonably likely to include increased stress or mortality due to fish relocation, degraded water quality and benthic habitat and prey loss. The timing of the bridge replacement (June 15 to October 15, likely with an August start date) will avoid the majority of both juvenile and adult salmonid and steelhead migrations through the Dutch Bill Creek. However, there may be some overlap with the following species and life-history stages: 1) a high likelihood with the beginning of adult Chinook salmon migration within the mainstem Russian River; and 2) a high likelihood of rearing coho and steelhead. As noted above, though Chinook salmon have been observed in the lower reaches of Dutch Bill Creek, they typically do not use the creek for spawning or rearing. NMFS believes the likelihood of the project affecting adult coho salmon or adult steelhead upstream migration is low because the majority of upstream migration of coho salmon does not begin until the latter half of November, and the peak run for adult steelhead typically occurs later in the winter. Adult Chinook salmon may enter the Russian River as early as late August, but significant upstream migration typically doesn't occur until river flows increase with precipitation events. However, the proposed project is located 100 feet upstream from the confluence of the mainstem Russian River and impacts are likely to be muted beyond approximately 100 feet downstream. Dutch Bill Creek is highly productive, so a small number of juvenile coho salmon and steelhead may rear in the action area and may be present during construction activities. Therefore, juvenile coho salmon and steelhead have potential to be most affected by the proposed action.

*Fish Relocation*

Fish relocation activities may injure or kill rearing juvenile salmonids or steelhead because of the associated risk that collecting poses to fish, including stress, disease transmission, injury, or death (Hayes 1996). The amount of injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. A qualified fisheries biologist will use block netting to attempt to remove all salmonids from any wetted areas prior to being filled with gravel, minimizing their presence in the construction area. However, effects from herding with block nets can include crushing or stranding if gravel is placed in flowing water to construct an access pad on juvenile fish include stress, scale loss, physical damage, suffocation, and desiccation. The herding or placement of relocated fish into nearby habitats that are already occupied by protected salmonids may result in some displacement of those individuals into less desirable habitats. This may increase their risk of predation, and may cause them to experience greater stress from increased competition, less suitable stream temperatures, less cover or other factors. In some cases, fish may be relocated upstream and these fish may have to compete with other crowding of native and non-native fishes for available resources such as food and habitat. Fish relocation activities will occur during the summer low-flow period after most of the emigrating smolts have left the proposed project site and before the majority of the adult fish travel upstream in the late fall.

Most of the impacts to salmonids and steelhead associated with fish relocation is anticipated to be non-lethal; however, a very low number of rearing juveniles (mostly young of the year) captured may be injured or die. Harmful effects of fish relocation activities are expected to be significantly reduced by implementing measures to reduce stress and potential for injury or death. Fish relocation activities will occur during the summer low-flow period after most of the emigrating smolts have left the proposed project site and before the majority of the adult fish travel upstream in the late fall. Therefore, the majority of the fish that may be captured will be juveniles, generally young of the year and one-year age classes. There is also a small potential of unintentional mortality of older age-class fish. Based on prior experience with current relocation techniques and protocols likely to be used to conduct the fish relocation, unintentional mortality of juvenile salmonids and steelhead expected from capture and handling procedures is not likely to exceed three percent. Mortality from these activities can be reduced to near 1 percent with increased skill and experience of the operator, and field crew conducting the work.

*Water Quality*

High levels of suspended sediment concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Sigler *et al.* 1984, Berg and Northcote 1985, Gregory and Northcote 1993, Velagic 1995, Waters 1995). For fish exposed to high concentrations of suspended sediment, normal feeding behavior and feeding efficiency may be disrupted (Cordone and Kelley 1961, Berg and Northcote 1985). Additionally, growth rates may be reduced (Crouse et al. 1981), and plasma cortisol levels may be increased (Servizi and Martens 1992), indicating the potential for increased stress and impaired physiological condition. Instream and near-stream construction activities have been shown to result in temporary increases in turbidity (reviewed in Furniss et al. 1991, Reeves et al. 1991, Spence et al. 1996). It is anticipated that rearing juvenile and smolt salmonids and steelhead within the action area may be affected by short-term increases in turbidity caused during the trenching of the streambed bar and placement/removal of the gravel work pad. There is also a very slight possibility that a temporary turbidity plume could enter the mainstem Russian River where adult Chinook salmon are migrating just downstream of the project location.

To decrease the impacts of turbidity, the proposed project will use only imported, clean, river-run gravel for the construction of the instream work pads. Levels of increased turbidity will fluctuate as materials are placed and removed from the flowing water. Water encountered during construction activities will also be removed in a manner that prevents it from flowing back into the river to help prevent additional increases in turbidity. Based on observations and data collected during previous years, increased turbidity will be temporary, occurring during the placement and removal of the gravel work pad and trench and will return to normal conditions after the high flows of the following fall and winter seasons. Therefore, NMFS does not anticipate harm, injury, or behavioral impacts to protected salmonids associated with exposure to the minor elevated suspended sediment levels that would be generated by the project.

*Pollution and Contaminants*

Operating equipment in and near streams has the potential to introduce hazardous materials and contaminants into streams. Exposure of freshly poured concrete for the footing caps to water would increase the pH and harm salmonids and other aquatic life in the action area. Potentially hazardous materials include wet and dry concrete debris, fuels, and lubricants. Spills, discharges, and leaks of these materials can enter streams directly or via runoff. If introduced into streams, these materials could impair water quality by altering the pH, reducing oxygen concentrations as the debris decomposes, or by introducing toxic chemicals such as hydrocarbons or metals into aquatic habitat. Oil and similar substances from construction equipment can contain a wide variety of polynuclear hydrocarbons (PAHs) and metals. PAHs can alter salmonid egg hatching rates and reduce egg survival as well as harm the benthic organisms that are a salmonid food source (Eisler 2000). Disturbance of streambeds by heavy equipment or construction activities can also cause the resuspension and mobilization of contaminated stream sediment with absorbed metals. However, any water coming into contact with wet concrete will be collected and disposed of away from the river and the action area would not be rewetted until a 30-day period to allow for proper curing. Water quality will also be monitored during any channel moving activities so conveyance of toxic materials into active waters at the work site both during, and after, project construction is expected to be minimal.

*Noise Disturbance*

Noise, motion, and vibration produced by heavy equipment operation during construction is expected. However, the use of equipment, which will be short-term use and is expected to result in insignificant adverse negligible effects to listed fishes. Sound pressure levels generated by vibratory hammers to install the pile cap produce lower peak sound levels and would not present a risk of physical injury or mortality to salmonids (Molnar *et al.* 2020). Listed salmonids and steelhead will be able to avoid interaction with instream machinery by temporarily relocating either upstream or downstream into suitable habitat adjacent to the work pad. Therefore, effects to protected salmonids are expected to be insignificant.

*Critical Habitat*

The action area is designated critical habitat for CCC coho and CCC steelhead. In general, PBFs of critical habitat for both steelhead and salmon found within the action area include sites for migration, spawning, and rearing. Effects of the proposed project on designated critical habitat include temporary disturbance to the flow from dewatering; temporary disturbance to waterways from construction; and temporary increases in turbidity and minor alteration of flow from dewatering.

*Water Quality*

As mentioned previously, elevated sediment and turbidity levels are also likely to affect critical habitat through sedimentation and turbidity levels associated with this Project during construction and removal of gravel for the work pad and during the subsequent rewetting of the construction site within the action area. Salmonids and steelhead may temporarily vacate their preferred habitat areas and temporarily reduce their feeding efficiency. The behavioral modifications affecting small numbers of juvenile fish will likely result in less fitness of individual fish due to occupation of less suitable habitat, reduced feeding, and potentially greater intra and interspecific competition which, along with increased predation risks, will result in a very minor reduction in survival rates.

*Benthic Habitat Loss*

Stream area where in-water work or gravel placement take place will make salmonid critical habitat unavailable during construction periods. Based on the size of the area to be dewatered for the instream construction activities, there will be a reduction in available wetted habitat during specific project construction activities (gravel placement and in-water equipment work). Construction methods and minimization measures will ensure that a portion of Dutch Bill Creek (temporary trench) is available for salmonids to migrate and survive during construction.

Localized losses in benthic macro-invertebrate abundance are expected when substrates are modified (Thomas 1985; Harvey 1986). These organisms are consumed by salmonids, and may represent a substantial portion of their diet at various times of the year. Since large portions of the channel bottom and marsh will remain intact, remaining prey organisms will recolonize the disturbed sediment quickly. Shortly after the project is complete, macroinvertebrates occurring upstream and downstream of the Project site will recolonize the site, resulting in a return of the densities and diversities of these organisms to approximately pre-project levels (Fowler 2004). Drift from upstream is likely to provide food supply downstream, as well as insect drop from riparian plants in the action area and upstream unaffected by the project. Since impacts to the substrate will be localized to a small area within the watershed and the surrounding area is highly productive, it is likely there will be other prey readily available.

*Migration*

Fish migrating through and rearing within the action area will experience degraded aquatic habitat caused by the project for varying durations. The primary concern regarding adult salmonids migrating upstream is they must have stream flows that provide suitable water depths for successful upstream passage (Bjornn and Reiser 1991). Temporary loss of waterway, substrate within the waterway and riparian zone from the temporary narrowing of the low flow channel. However, this loss of habitat would only be temporary and the habitat would be restored to its original state upon completion of construction. The repairs will exist within the original footprint of the bridge structure and the new supports are not expected to be much larger or more robust than the existing structure. Post construction the new 1.2 cubic yard concrete cap would be the only new permanent placement within the action area. Therefore, no significant lasting adverse effects are expected to reduce the survival chances of individual fish.

## 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 ]. 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.

For the purpose of this analysis, the action area that is the subject of this opinion is limited to the permanent project footprint, temporary construction work areas, potential staging areas, and bank to bank width of Dutch Bill Creek, upstream approximately 50 feet and approximately 100 feet downstream of the project site, as described above in Section 2.3 above. Actions occurring outside of the action area may affect the action area. For example, a new water diversion upstream may affect flows in the action area. Therefore, future actions occurring in the watershed may be considered cumulative effects, depending upon their specific location and impact. Future Federal actions, including the ongoing operation of dams, hatcheries, fisheries, water withdrawals, and land management activities will be reviewed through separate ESA section 7 consultation processes and are not considered here.

Additional development, tourism, and accompanying infrastructure construction is expected to occur in the Russian River Watershed based on the general and specific plans of local communities and Sonoma County. Additional development is likely to lead to increasing water demands, which may impact stream flows if current allocations are not being fully utilized. Agricultural activities surrounding the action area are primarily the cultivation of crops, mainly viticulture. The impacts of this land use on aquatic species include decreased bank stability, loss of shade and cover-producing riparian vegetation, increased sediment inputs, decreased ground and surface water supply, and elevated coliform bacteria levels. Vineyard development and management will continue to impact salmonid habitat by increasing sediment delivery to streams, diverting and decreasing stream flow, and encroaching on riparian habitat.

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).

## 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.

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's biological opinion as to whether the proposed action is likely to: 1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or 2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

As independent populations, federally endangered CCC coho salmon and threatened CCC steelhead and CC Chinook salmon within the Russian River watershed, including Dutch Bill Creek, are important to the recovery of the ESU and DPS, respectively. Many independent populations of CCC coho salmon that supported the species' overall numbers and geographic distributions in the past have been extirpated and CCC steelhead and CC Chinook salmon numbers are substantially reduced from historic levels. The Russian River is the largest watershed within the CCC coho salmon ESU and is critical to the survival and recovery of the species. The CCC steelhead and CC Chinook salmon populations that use the action area, while substantially reduced from historical numbers, appear to be relatively stable. CCC coho salmon abundance has improved slightly since 2011 within several independent populations, although all populations remain well below their recovery targets. These populations are likely to persist with enough resiliency to rebound from limited impacts for the foreseeable future. However, due to their low numbers, the continuation of impacts from current baseline conditions to the population's numbers, distribution, or reproduction could limit their chance of survival and recovery. The recovery of these populations will, therefore, depend upon programs that protect and restore aquatic habitats in watersheds and the continued reduction of impacts from land use and water withdrawal.

Dutch Bill Creek is one of the few remaining tributaries in the lower Russian River that still supports spawning and rearing for coho salmon as well as for steelhead. Dutch Bill Creek is also an integral stream for the RRSCBP conservation hatchery program and is one of the four such tributaries assigned for life cycle monitoring as part of the Coastal Monitoring Program. The populations of coho salmon that use the action area are also critical in sustaining and recovering this species because they are likely to be relied upon as both natural and managed "source" populations as part of the RRSCBP. The action area is within a core priority area for protection and restoration as detailed in the CCC coho salmon recovery plan (NMFS 2012a). Therefore, further degradation of the Russian River watershed (and tributaries including Dutch Bill Creek) could appreciably affect the survival and recovery chances of this listed species by reducing the number of fish available to repopulate the species.

The action area represents a relatively small portion of the overall CCC coho salmon, CCC steelhead, and CC Chinook salmon geographic range. Small populations are more vulnerable to demographic and environmental fluctuations than are larger populations (Gilpin and Soule 1986, Pimm *et at.* 1988), while each small population also acts as a buffer against extinction of the species. The species' relatively broad distribution throughout the species' ranges is a positive indicator because species with broad distributions may allow a species to avoid environmental fluctuations and stochastic events as a whole (Pimm *et al.* 1988), even if they suffer local extirpation. However, the value of these watersheds to salmonids remains significant given the current degraded condition of habitat throughout the ESUs and DPS. Because degraded habitat conditions, and thus lowered carrying capacity, throughout the species' range are not expected to improve dramatically in the near future, remaining areas of habitat which appear to support relatively large sub-populations are judged highly important.

Global climate change presents another real threat to the long-term persistence of listed salmonids, especially when combined with the current depressed population status and human caused impacts. Regional (*i.e.,* North America) climate projections for the mid to late 21st Century expect more variable and extreme inter-annual weather patterns, with a gradual warming pattern in general across California and the Pacific Northwest. However, extrapolating these general forecasts to the smaller action area is difficult, given local nuances in geography and other weather-influencing factors. The risk of increased water temperatures, wildfires, and drought will persist in the action area due to climate change over the next several decades, reinforcing the likelihood of reduced carrying capacity in the action area due to loss of habitat.

Construction activities associated with repair of the Main Street Bridge may adversely affect: 1) juvenile or smolt CCC coho salmon, and 2) juvenile or smolt CCC steelhead. A small number of rearing coho salmon and steelhead juveniles, which do not flee the area where gravel is pushed into standing or flowing water, may be crushed while taking refuge in the interstices of the substrate when the gravel work pad is placed and removed from Dutch Bill Creek. Increases in turbidity, degraded water and noise from construction equipment may result in behavior modifications that result in short-term behavioral changes of individual fish. The behavioral modifications of juvenile coho salmon and steelhead which may result from project impacts, (i.e., reduced feeding rates, occupation of less suitable habitat, and potentially greater intra and/or inter-species competition), will likely result in less fitness of individual fish. Reduced fitness of individual fish, along with potentially increased predation risks, may result in a minor reduction in survival rates. Passage of adult fish and smolts may be disrupted or hindered due to in-water construction activity and changes in hydrology from trenching and work pad installation. Delayed or modified migration behavior could affect long-term reproductive success and the ability for individual fish to survive.

The ultimate effect of changes in the distribution and productivity of salmon and steelhead due to project impacts will vary with life stage, the duration and severity of the stressor, the frequency of stressful situations, the number and temporal separation between exposures, and the number of contemporaneous stressors experienced (Newcombe and Jensen 1996; Shreck 2000). Overall, the action area is very small compared to the total number of miles of critical habitat available in each species' recovery domain. The number of individual coho salmon and steelhead that may be adversely affected or killed (unlikely) during proposed action activities is expected to make up a very small portion of the individuals within the action area, a smaller portion of the Russian

River watershed populations, and subsequently an even smaller portion of the overall ESUs and DPS. Because the quality of habitat in and around the action area is adequate to support rearing salmonids, NMFS expects fish will be able to find food and cover in the vicinity of the project site as needed during construction activities.

It is unlikely that the potential small loss of juvenile coho salmon and steelhead resulting from this proposed action, via the effects of repairing the Main Street Bridge (i.e., placement and movement of instream gravel, fish relocation activities, altered stream hydrology/morphology and impaired water quality), would impact future adult returns such that impacts would occur to the populations' resilience and persistence over time. As noted in the effects section, effects from the proposed action are likely to be limited to a small area within the action area. In addition, given the small reduction in the growth and survival of juvenile salmonids that will be directly affected, primarily at the fry, parr, and smolt life stages, and the relatively low intensity and severity of that reduction at the population level, any adverse effects to juvenile salmonid growth and survival are likely to be inconsequential to the populations inhabiting the action area.

The adverse effects of the proposed action will be short-term, and limited to harm or kill more than a small number of (largely) juvenile fish across the range of a single population. Thus, it is unlikely that the small losses of fish resulting from this proposed action would impact future adult returns. The resilience and persistence of these populations, their numbers, reproduction, and distribution, are unlikely to be meaningfully reduced by the proposed action. Habitat changes resulting from this project are limited to a very small area. The action area will be mostly unaltered from its previous condition and would not introduce any new adverse effects to the action area. Consequently, we do not expect that implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the CCC coho salmon ESU, CCC steelhead DPS or CC Chinook salmon ESU in the wild by reducing their numbers, reproduction, or distribution. The repair is also not likely to diminish the value of designated critical habitat in Dutch Bill Creek.

## 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 coho salmon, CC Chinook salmon or CCC 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 opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

> The construction activities associated with the repair of the Main Street Bridge, conducted from August 15 to October 15, is reasonably certain to result in incidental take of federally endangered CCC coho and threatened CC Chinook salmon and CCC steelhead in the form of injury, harm, or mortality as follows:
>
> > In this opinion, NMFS determined that a low-level of incidental take in the form of harm of any freshwater life stage of CC Chinook salmon, and juvenile or smolt CCC coho salmon or CCC steelhead is reasonably certain to occur from habitat-related impacts (altered stream hydrology/morphology, impaired water quality, and degraded riparian habitat conditions) due to the construction activities associated with the repair of the bridge piling. NMFS expects this incidental take to be mostly localized and occur within the action area. The precise number of these listed salmonids that are expected to be incidentally taken resulting from these habitat-related impacts cannot be accurately quantified because: 1) these species are relatively small (especially as eggs, alevins, and juveniles); 2) these species live in aquatic environments where visibility is often low, hiding cover is often available, and predators feed; 3) exactly how many adults that will migrate through the action area will experience delays or behavioral modifications is unknown; and 4) we cannot precisely predict where and when habitat impacts may affect these species later in their life cycles. NMFS will, therefore, use the following incidental take surrogates pursuant to 50 CFR 402.14(i)(1)(i).

As described in the preceding opinion, based on prior experience with current relocation techniques and protocols likely to be used to conduct the fish relocation, unintentional mortality of listed salmonids expected from capturing and handling fish is not likely to <u>exceed three percent of the total number of salmonids handled</u>. The amount of incidental take during fish relocation will be considered exceeded if more than three percent of the total fish handled are injured or killed during any construction activity.

### 2.9.2. Effect of the Take

In this 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" refer to those actions the Director considers necessary or appropriate to minimize the impact of the incidental take on the species (50 CFR 402.02).

1. Measures shall be taken to minimize the amount or extent of incidental take due to construction activities associated with the Main Street Bridge Repair within Dutch Bill Creek.
2. Measures shall be taken to reduce delivery of contaminants from fuel leaks or storm runoff from road approaches and the bridge from being delivered directly into the river.
3. Measures shall be taken to monitor the amount and extent of incidental take by reporting the results of fish relocation activities as well as other project details.

### 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 the County 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.

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

1. The County will develop and submit a fish relocation plan to NMFS for review and approval within 30 days from the start of construction.
2. The County will avoid work during wet weather or where saturated ground conditions exist; if a 60 percent chance of a 0.5 inch of rain or more within a 24-hour period is forecasted, cease operations until 24 hours after rain has ceased and/or correspondence (phone or email) with NMFS has occurred.
3. The County shall retain a qualified biologist with expertise in the areas of salmonid and steelhead biology, behavior, habitat relationships; and biological monitoring. The applicant shall ensure that all fisheries biologists working on this project are qualified to monitor fish presence and behavior in a manner which minimizes all potential risks to ESA-listed salmonids and steelhead.
    a. Due to the potential for early-arriving (October) coho salmon into Dutch Bill Creek, the County will check in with NMFS weekly starting October 1st and provide project status updates and weather forecasts. NMFS will provide technical assistance and the project will be adaptively managed accordingly to ensure no harm occurs to adult coho salmon.
4. If ESA-listed fish are handled, the biologist shall ensure that the fish are handled with extreme care and they shall be kept in water to the maximum extent possible during rescue

activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. To avoid predation the biologist shall have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids shall be relocated as soon as possible to a suitable instream location where suitable habitat conditions are present to allow for survival of transported fish and fish already present.

5. The biologist shall be on-site during all construction events to ensure that all ESA-listed fish are avoided to the maximum extent practicable and any use of seining or block-nets is in accordance with BMPs developed to minimize potential harmful effects or mortality.

6. Turbidity Monitoring: Turbidity sampling will be implemented when gravel is disturbed in the wetted channel during construction of the roadway base. Work will be stopped, and the work area will be allowed to "rest" for a minimum of 10 minutes if gravel entering the river causes a plume of turbidity above background levels. Work will resume after the stream reaches original background turbidity levels.

7. Gravel Pushing Procedures: Where gravel must be pushed into the flowing or standing water to build the approach to the bridge pier, the gravel will be pushed from the upstream end toward the downstream end. This process of pushing gravel into the flowing or standing water will be at a slow rate. This process will be done in such a way that no ponded areas that could entrap fish are created.

The following term and condition implement reasonable and prudent measure 2:

1. Construction equipment used within the river channel will be checked each day prior to work within the river channel (top of bank to top of bank) and, if necessary, action will be taken to prevent fluid leaks. If leaks occur during work in the channel, the County or their contractors will contain the spill and remove the affected soil.

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

1. In order to monitor the impact of incidental take, the County must notify the NMFS Santa Rosa Office by letter or email within 30 days after project completion and describe in detail any incidental take that occurred during the project. This shall include the species taken, date taken, type of take (injury or mortality), number taken, and fork length of any mortalities.

    a. Any injuries or mortality that exceeds three percent shall be reported to the NMFS Santa Rosa Office by email within 48 hours and construction activities shall cease until a NMFS biologist is on site to oversee the remainder of any fish relocation activities.

    b. Any salmonid or steelhead mortalities must be retained, placed in an appropriately sized whirl-pack or zip-lock bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NMFS.

2. The applicant will prepare an implementation monitoring report following construction activities and submit to NMFS annually by January 1. The monitoring report should include the following:

   a. Project identification;

   b. Permittee name, permit number, and project name;

   c. County contact persons;

   d. Start and end dates of construction activities;

   e. Summary of habitat conditions – Include photos (including both river banks, upstream and downstream views, and the bridge construction itself) of the project site before, during and after construction activities; and

   f. Results of downstream turbidity monitoring before, during and after construction.

### 2.10. Conservation Recommendations

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

1. The County is encouraged to explore the opportunity to apply for individual projects under a programmatic Section 7 consultation that would alleviate the need to conduct individual consultations, particularly for small-scale and maintenance projects.

### 2.11. Reinitiation of Consultation

This concludes formal consultation for the Main Street over Dutch Bill Bridge Repair. Under 50 CFR 402.16(a): "Reinitiation of consultation is required and shall be requested by the federal agency, where discretionary federal 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."

## 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 associated physical, chemical, and biological 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 may result from actions occurring within EFH or outside of it and may include direct, indirect, site-specific or habitat-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 (50 CFR 600.905(b))].

### 3.1 EFH Affected by the Proposed Action

Pacific coast salmon EFH may be adversely affected by the proposed action. Specific habitats identified in the PFMC (2014) for pacific coast salmon include habitat areas of particular concern (HAPCs), identified as: 1) complex channels and floodplain habitats; 2) thermal refugia; and 3) spawning habitat. HAPCs for coho salmon and Chinook salmon include all waters, substrates, and associated biological communities falling within critical habitat areas described above in the accompanying biological opinion for the project located on the mainstem of the Russian River. HACPs for salmon also include all waters and substrates and associated biological communities falling within the habitat areas defined above. Essentially, all coho and Chinook habitat located within the proposed action are considered HACP as defined in PFMC (2014). These HAPC EFH areas include current and historical distribution of salmon in California obtained from Calfish (2012) and NMFS (2005a; 2005b)(as cited in PFMC 2014).

### 3.2 Adverse Effects on EFH

NMFS has evaluated the proposed project for potential adverse effects to EFH pursuant to Section 305(b)(2) of the MSFCMA. As described and analyzed in the accompanying above, NMFS anticipates some short-term sediment impacts will occur at and downstream of the project location. Increased fine sediment could further degrade already degraded habitat conditions in many of the proposed project locations. Flowing water will be temporarily diverted during construction, resulting in short-term loss of habitat space and short-term reductions in macroinvertebrates (food for EFH species).

The duration and magnitude of direct effects to EFH associated with implementation of individual conservation projects will be significantly minimized due to the multiple minimization measures utilized during project execution. The Project proposes to maintain downstream flows to allow fish species utilizing the area to find suitable passage around the work areas and prevent contamination exposure to the active channel waters. Post construction, any remaining gravel from the work pad is expected to wash downstream into the Russian River during winter high flows. If any gravel were to remain, it would be the size preferred by salmonid species for use in redd construction and therefore unlikely to produce any adverse effects in relation to salmonid species.

### 3.3 Essential Fish Habitat Conservation Recommendations

Section 305(b)(4)(A) of the MSFCMA authorizes NMFS to provide EFH Conservation Recommendations that will minimize adverse effects of an activity on EFH. Although short-term potential adverse effects anticipated as a result of project activities, the proposed minimization and avoidance measures in the Enclosure 1 are sufficient to avoid, minimize and/or mitigate for the anticipated effects. Therefore, no EFH additional Conservation Recommendations are necessary at this time to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

## 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 the County. Individual copies of this opinion were provided to the Corps and County. The document will be available within 2 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, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

## 5. REFERENCES

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