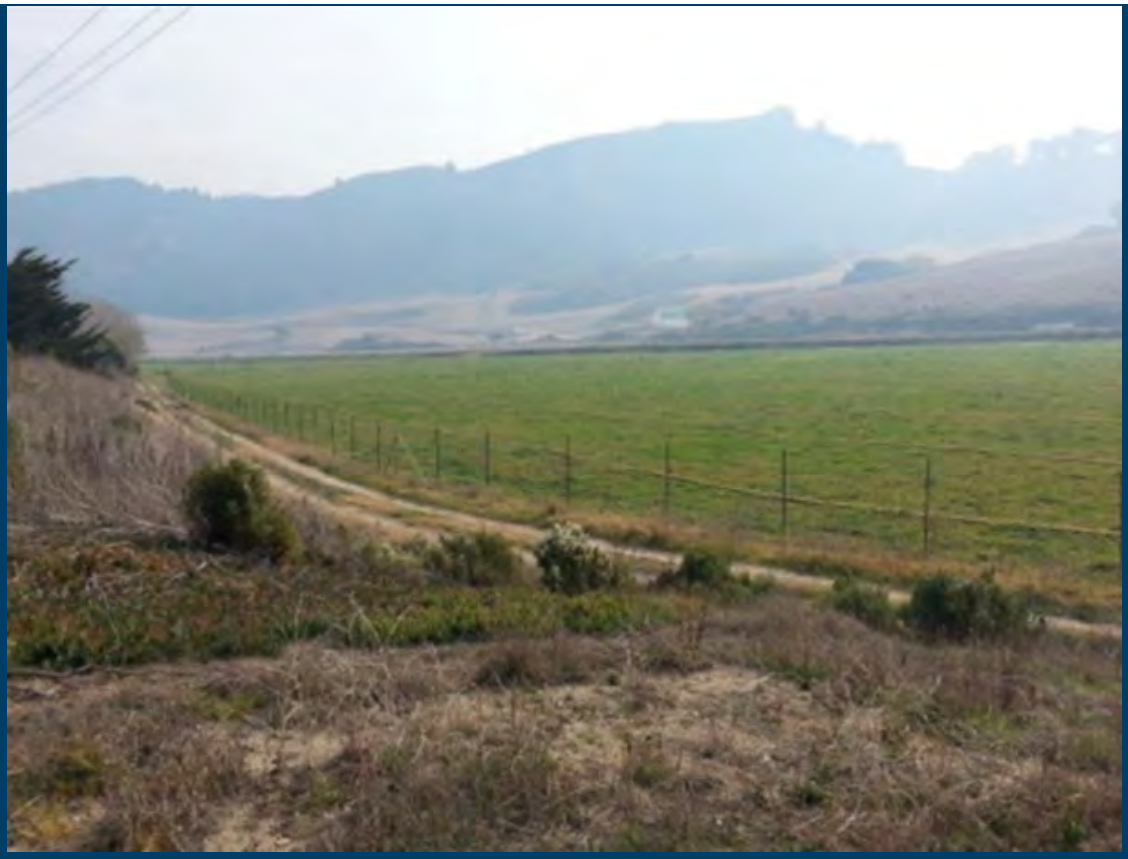

Draft Environmental Assessment

Carmel River Floodplain Restoration and Environmental Enhancement Project (CRFREE)

HMGP-4344-539-094

Monterey County, California

April 2025

FEMA

Federal Emergency Management Agency
Region 9
Department of Homeland Security
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Appendices

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AMM	avoidance and minimization measures
APE	Area of Potential Effects
ASBS	Area of Special Biological Significance
ASC	Anthropological Studies Center
BFE	Base Flood Elevation
BMP	Best Management Practice
BSLT	Big Sur Land Trust
Cal OES	California Governor's Office of Emergency Services
Cal-IPC	California Invasive Plant Council
CalAm	California American Water Company
Caltrans	California Department of Transportation
CAWD	Carmel Area Wastewater District
CCC	California Coastal Commission
CCMP	California Coastal Management Program
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CLOMR	Conditional Letter of Map Revision
County	Monterey County
CRFREE	Carmel River Floodplain Restoration and Environmental Enhancement Project
CRHR	California Register of Historic Places

CRLEP	Carmel River Lagoon Enhancement Project
CRLF	California red-legged frog
CRMB	Carmel River Mitigation Bank
CWA	Clean Water Act
dBA	A-weighted decibels
EA	environmental assessment
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ETMC	Esselen Tribe of Monterey County
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HMGP	Hazard Mitigation Grant Program
HPTP	Historic Property Treatment Plan
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration
LOMR	Letter of Map Revision
MB	monarch butterfly
MFCA	maintained flood conveyance areas
MMPA	Marine Mammal Protection Act

MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPRPD	Monterey Peninsula Regional Park District
N/A	not applicable
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OCEN	Ohlone/Costanoan-Esselen Nation
PRC	Public Resources Code
RHPO	Regional Historic Preservation Officer
RMP	Restoration Management Plan
RWQCB	Regional Water Quality Control Board
SCCC	South-Central California Coast
SBB	Smith's blue butterfly
SHPO	California State Historic Preservation Officer
SPT	southwestern pond turtle
SR 1	State Route 1
State Parks	California Department of Parks and Recreation
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load

U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USFWS	U.S. Fish and Wildlife Service

SECTION 1. Introduction

Monterey County (County) applied to the Federal Emergency Management Agency (FEMA) through the California Governor's Office of Emergency Services (Cal OES) for a flood hazard mitigation grant under FEMA's Hazard Mitigation Grant Program (HMGP). Cal OES is the direct Applicant for the grant, and the County is the Subapplicant. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA's HMGP provides funds to eligible state and local governments, federally recognized tribal governments, and nonprofit organizations to help implement long-term hazard mitigation measures after a presidential major disaster declaration. The HMGP funds were made available following the 2017 DR-4344-CA disaster declaration made in response to a series of devastating wildfires in California.

Monterey County and Big Sur Land Trust (BSLT), a non-profit organization, are co-sponsors of the proposed Carmel River Floodplain Restoration and Environmental Enhancement (CRFREE) Project. The floodplain restoration project would restore the natural functions and values of the Carmel River floodplain, including connectivity with the coastal and estuarine waters of the Carmel Lagoon. The floodplain restoration component includes the removal of portions of existing levees along the south side of the river channel, widening of the floodplain, and creation of new distributary channels that would flow to the south arm of the Carmel River Lagoon (Appendix A, Figure 1 and Figure 5). The County, under a California Department of Transportation (Caltrans) Encroachment Permit, would replace the existing roadway embankment with a new overflow bridge (causeway) on a portion of State Route 1 (SR 1) to allow floodwaters to flow under the highway to the south arm of the Carmel Lagoon (Appendix A, Figure 1 and Figure 5). This new path for floodwaters would reduce flooding in developed areas to the north and would result in changes in the extent and depth of floodwaters during a flood event in downstream areas. Because the proposed changes in the floodplain have the potential to affect other structures downstream, additional actions are needed to mitigate for the effects of the floodplain restoration.

The proposed floodplain restoration and causeway components are described in the Carmel River Floodplain Restoration and Environmental Enhancement Project Final Environmental Impact Report/Environmental Assessment (EIR/EA), which was published in January 2020 (U.S. Fish and Wildlife Service [USFWS] and Monterey County 2020). The EIR/EA determined that the floodplain restoration would result in higher water levels and flood velocities downstream and recommended that flood mitigation be applied to the Carmel Area Wastewater District's (CAWD) pipeline and California Department of Parks and Recreation (State Parks) Barn Complex components downstream. Flood mitigation measures for the CAWD pipeline and State Parks Barn Complex are required only because of the proposed floodplain restoration and causeway components, and thus are considered connected actions to the floodplain restoration. Therefore, all four components of the Proposed Action are evaluated in this EA, and they include (1) floodplain restoration, (2) replacement of a section of the SR 1 embankment with a causeway, (3) undergrounding the CAWD's pipeline crossing of the Carmel Lagoon, and (4) the construction of two earthen berms or the elevation of historic structures above the projected base flood elevation to mitigate potential flood impacts to the

State Parks Barn Complex at Carmel River State Beach. The location of these four components are shown in Appendix A, Figure 1.

USFWS, California Department of Water Resources (DWR), the National Fish and Wildlife Foundation (NFWF), the Wildlife Conservation Board (WCB), and the California State Coastal Conservancy (SCC) have provided funding for the design of the floodplain restoration and causeway components. The SCC has provided funding for the design of the CAWD pipeline. Caltrans is funding a portion of the causeway component with state funds, and FEMA is proposing to provide additional funding to support construction of all four components of the Proposed Action.

This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations Parts 1500 to 1508)[1], U.S. Department of Homeland Security Instruction 023-01-001, and FEMA Instruction 108-01-1, NEPA implementing procedures. FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this draft EA is to analyze the potential environmental impacts of the Proposed Action. FEMA will use the findings in this draft EA to determine whether to prepare an environmental impact statement or to issue a Finding of No Significant Impact (FONSI).

[1] Consistent with E.O. 14154, CEQ has rescinded the NEPA regulations, effective April 11, 2025, and is working with Federal agencies to revise or establish their own NEPA implementing procedures. Per CEQ Guidance, while revisions are ongoing, agencies should continue to follow their existing practices and procedures implementing NEPA and can voluntarily rely on the regulation in 40 CFR 1500-1508 in completing ongoing NEPA reviews (Implementation of the National Environmental Policy Act, February 19, 2025).

SECTION 2. Purpose and Need

The purpose of the FEMA HMGP, per Section 404 of the Stafford Act, is to provide funding to state, local, tribal, and territorial governments to implement projects that reduce or permanently eliminate future risk to lives and property from natural hazards before and during the recovery from a federally declared disaster (42 USC 5170c). The purpose of the Proposed Action is to reduce flood hazards and the risk of flood damage in Monterey County within the CRFREE project area. The Proposed Action is needed to protect life and reduce the likelihood of flood damage to property and infrastructure.

The project area is in the lower Carmel River floodplain, which is subject to periodic flooding and is within the FEMA 100-year floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM), Numbers 06053C0316H and 06053C0320H, effective June 21, 2017. The FIRM shows that the project area lies within Zone AE, an area that has a 1-percent probability of flooding every year and where predicted floodwater elevations have been established. Numerous incidents of flooding have been reported since at least 1911, and flood events in 1995 and 1998 produced two of the highest flows on record, overtopping and damaging SR 1 and causing substantial residential and commercial property damage.

The downstream end of the Carmel River floodplain has been significantly altered, particularly with the construction of nonengineered levees along the north and south banks of the main river channel in the 1930s and the construction of SR 1. The levees and the SR 1 embankment prevent sheet flows and channel interaction with the floodplain west of the highway. The approximately 100 acres of floodplain in the project area that lie to the east, upstream of SR 1, have been effectively isolated by the levees and the embankment from the downstream, western portion of the floodplain and lagoon, limiting the capacity of the floodplain (Appendix A, Figure 2). Under current conditions, floodwaters from the Carmel River enter the floodplain east of the SR 1 embankment and pool in the area adjacent to SR 1. The embankment prevents the floodwaters from reaching the other side of the floodplain.

Past floodplain restoration efforts downstream of SR 1 included the Carmel River Mitigation Bank (CRMB) Project and the Carmel River Lagoon Enhancement Project (CRLEP), both within the Carmel River State Beach on the west side of SR 1 (Appendix A, Figure 2). Caltrans and State Parks cooperatively funded the CRMB, a 43-acre area adjacent to and east of the mouth of the Carmel River (Appendix A, Figure 2). Under the restoration plan, 37 acres of woody riparian species and 6 acres of freshwater wetland species were planted from 1996 to 1998 (Caltrans 1996). The CRLEP involved the excavation and restoration of the south arm of the Carmel Lagoon (Appendix A, Figure 2). The CRLEP converted 10.5 acres of former agricultural land back to estuarine wetland, extending the south arm of the Carmel Lagoon to the southeast approximately 0.25 miles, and restored 85 acres of habitat surrounding the new lagoon (Watershed Institute 2007). The floodplain restoration component of the Proposed Action builds on these two previous efforts to address long-standing flood management problems within the lower Carmel River Basin by restoring the natural function of

the floodplain through hydraulic reconnection of the Carmel River to the east with the lower basin floodplain and lagoon addressed by the CRLEP to the west.

Construction of a causeway would replace a portion of the existing SR 1 roadway embankment with a bridge and remove portions of the existing levees on the south side of the river to physically and hydrologically reconnect the floodplain to the river and to the south arm of the Carmel Lagoon. The causeway component is necessary to allow floodwaters that enter the floodplain upstream of the highway to cross SR 1 without overtopping the roadway.

Implementation of the floodplain restoration and causeway components would reconnect the floodplain east of SR 1 with the floodplain west of SR 1, flood water velocities and debris flows into the south arm of Carmel Lagoon would increase and there would be an increased risk that the existing CAWD outfall and sewer force main pipelines crossing that portion of the lagoon could be damaged. Raw sewage discharge of approximately 90,000 gallons per day and secondary treated wastewater discharge between 0.3 to 5.0 million gallons per day could be released into Carmel Lagoon and Carmel Bay if the pipeline or outfall were to be damaged by these flows. The undergrounding the CAWD's pipeline crossing of the Carmel Lagoon is therefore necessary to reduce the risk of damage from the increased flood velocities and debris flow that would result from the floodplain restoration.

Removal of portions of the levees and construction of the causeway would result in increased floodwater flows in the south floodplain that could damage the Creamery and the Blacksmith Shop at the State Parks Barn Complex (see Appendix A, Figure 1). These historic structures are part of a larger historic district eligible for the National Register of Historic Places (NRHP), and need to be protected from adverse effects in the form of potential flood damage resulting from the floodplain restoration and causeway components.

SECTION 3. Alternatives

This section describes the No Action Alternative, the Proposed Action, and alternatives that were considered but dismissed.

3.1. No Action Alternative

The No Action Alternative is included in this EA to describe potential future conditions if no additional action is taken to implement the CRFREE project. Under the No Action Alternative, the existing conditions at the SR 1 embankment and levee between the main river channel would remain unchanged. Much of the floodplain upstream of the highway would remain unchanged except for the BSLT property (see Appendix A, Figure 3). BSLT would implement a modified restoration approach on a portion of their property east of SR 1 to install native vegetation in lieu of agricultural uses on the disturbed areas of these parcels and would maintain the existing riparian vegetation along the river corridor. Variation in the types of native plants would be limited, and success rates for plant establishment may diminish without the benefits of hydrologic reconnection with the Carmel River. The existing flood risk to developed areas to the north of the Carmel River would not change, and these areas would continue to flood under certain conditions. The existing SR 1 embankment would continue to be at risk of overtopping and damage, resulting in the closure of the highway with limited or no access through this area. The historic floodplain functions and values present prior to the construction of the non-engineered levees, and the SR 1 embankment would not be restored.

Under this alternative, the mitigation components to underground the CAWD pipeline and to mitigate potential flood impacts to the State Parks Barn Complex through berm construction or structural elevation would not occur.

3.2. Proposed Action

The Proposed Action includes four connected project components (Appendix A, Figure 1):

1. The CRFREE floodplain restoration component would include grading approximately 100 acres within the south floodplain of the Carmel River to reconnect the southern Carmel River floodplain to the Carmel River and Carmel River Lagoon.

2. The causeway component would replace part of the SR 1 roadway embankment with an overflow bridge (causeway) and include associated demolition and grading activities to hydrologically reconnect the historic floodplain under SR 1.

3. The CAWD pipeline component would replace two existing pipelines that span Carmel Lagoon with approximately 1,000 feet of two new parallel wastewater pipelines. The new pipelines would be undergrounded to protect them from altered flood levels and debris flows.

4. The State Parks Barn Complex component would either elevate the Creamery and Blacksmith Shop above the new base flood elevation or construct two new earthen berms that would tie into an existing earthen berm to protect the complex from increased flood levels.

The floodplain restoration and causeway replacement components are described in detail in the Final EIR/EA[2] (USFWS and Monterey County 2020) and summarized in this document. The other two components are described in more detail below.

3.2.1. PROJECT LOCATION

The Proposed Action would be conducted within unincorporated Monterey County, California, adjacent to the City of Carmel-by-the-Sea. The project area is at the downstream end of the Carmel River Watershed within two distinct work areas. The eastern work area encompasses the portion of the floodplain restoration east of the causeway and causeway construction. The western work area encompasses the portion of the floodplain restoration west of the causeway, the State Parks Barn Complex, and the CAWD pipeline work area. The pipeline work area is further downstream from the other components on the south arm of the Carmel Lagoon, approximately 800 feet upstream from the confluence of the Carmel River and Pacific Ocean at Carmel River State Beach. The project area and vicinity are shown in Appendix A, Figure 1.

The floodplain restoration work area comprises parcels owned by BSLT, State Parks, Caltrans, the Monterey Peninsula Regional Park District (MPRPD), and one private landowner (Appendix A, Figure 3). The causeway work would be primarily within Caltrans' right-of-way, with some work requiring property acquisition from adjacent properties owned by State Parks on the northwest side of the highway and BSLT on the southeast side. The Creamery and Blacksmith Shop are approximately 600 feet west of SR 1 and are part of the State Park's Carmel River Floodplain Agricultural Landscape and Historic District (Carmel River Floodplain Historic District).

The CAWD pipeline replacement and undergrounding work area is approximately 0.48 miles northwest of the causeway (Appendix A, Figure 6). The CAWD Carmel Meadows Pump Station is directly west of the lagoon, and part of the work area is within the Caltrans' CRMB project area and the Carmel River State Beach, which is owned and operated by State Parks. The existing outfall and parallel force main pipes are underground except where they cross over the lagoon and travel to and from the CAWD wastewater treatment plant to the banks of the Carmel Lagoon. The force main crosses over the lagoon to connect to the Carmel Meadows Pump Station, and the buried outfall travels west to the Pacific Ocean. An unpaved access road at the eastern portion of the pipeline work area would provide access to the east side of the lagoon. Paved and unpaved access roads and trails at the western portion of the work area would be used to access the west side of the lagoon.

3.2.2. PROJECT DURATION

The CRFREE project construction contract would be for an approximate 3-year period. The project would begin with utility relocation, followed by construction of a temporary highway detour (Appendix A, Figure 4), then floodplain grading, and restoration east of SR 1 (Appendix A, Figure 5). Due to the limited access to the west side of SR 1, the remaining grading and restoration would be completed on the west side of SR 1 after the highway is re-opened and the detour removed, allowing equipment

[2] Available at: https://www.countyofmonterey.gov/government/departments-a-h/housing-community-development/planning-services/library-current-major-projects/carmel-river-free

to pass under the causeway. Alternatively, grading and restoration may occur on both the east and west sides of SR 1 concurrently with implementation of a conveyor belt system to mechanically move materials under SR 1 or other means approved by Caltrans. Following installation, the restoration areas would be subject to a 3-year plant establishment period and then would be monitored for an additional 7 years, for a total 10-year monitoring period. Voluntary restoration would also occur on the BSLT parcels, east of SR 1, over several years following completion of floodplain grading. Temporary levee plugs (retaining berms) would be installed at the levee removal areas during floodplain grading activities to redirect floodwaters and reduce the frequency of the floodplain being inundated during the early post-construction years to protect newly established vegetation. The levee plugs would be removed approximately 3 to 5 years after construction once the restored floodplain has achieved sufficient vegetative cover.

The CAWD pipeline undergrounding would occur before the removal of the portions of the levee and the removal of the highway detour. The pipeline construction work (Appendix A, Figure 6 and Figure 7) would be completed in 10 months, including 1 month for site mobilization, 4 months for the pipeline horizontal directional drilling (HDD) and pipe pullback, 2 months for pipeline tie-in and cathodic protection modifications, 1 month for demolition of the existing aerial crossing, and 2 months for demobilization.

Construction of the earthen berms (Appendix A, Figure 8) around the State Parks Barn Complex would take place prior to the removal of the levee plugs, as part of the floodplain grading west of SR 1. If the Creamery and Blacksmith Shop are elevated in lieu of constructing the berm, the structures would be raised prior to the removal of the levee plugs.

3.2.3. FLOODPLAIN RESTORATION

Floodplain restoration work (Appendix A, Figure 5) is proposed on 128 acres within the 134-acre floodplain restoration work area and would include:

- Removal of 1,470 feet of the south bank levee (Appendix A, Figure 2) to restore site hydrology. Four new levee notches, cuts made into the levee to allow water to flow through, would be constructed along with the expansion of an existing levee notch.

- Restoration of topography on approximately 102 acres of existing farmland to support native habitat restoration.

- Creation of maintained flood conveyance areas (MFCAs) to convey floodwaters from the main river channel upstream (east) of the project area into the floodplain restoration area and then west under SR 1 to the south arm of the lagoon. The MFCA includes several sediment sequestration elements (depressions) to capture and retain excess sediment associated with the first few inundation events. The MFCA also includes the creation of an intermittent drainage channel to capture runoff from up-slope properties to the south and route it to the restored floodplain.

- Creation of a 23-acre agricultural preserve to maintain the agricultural heritage of the area. The preserve would be elevated above the 100-year floodplain elevation with placement of soil generated on-site during earthwork associated with the levee removal and floodplain restoration component (Appendix A, Figure 3).

- Installation of approximately 2.7 miles or 3 acres of access/maintenance roads and trails for ongoing restoration and maintenance activities and public access.

- Implementation of the Restoration Management Plan (RMP).

The RMP would be implemented in two tiers and includes restoration of various habitats throughout the site as well as maintenance, monitoring, and reporting protocols to successfully comply with compensatory mitigation requirements (Tier 1), and guidance for voluntary restoration actions (Tier 2). Compensatory mitigation would include the active restoration of 11.3 acres within the floodplain to offset the vegetation removal and grading required to implement the project. Mitigation includes replanting willow and cottonwood riparian forest at a 3:1 ratio for the area of riparian forest disturbed and at a 2:1 ratio for the area of degraded riparian forest and riparian scrub disturbed, as described in Mitigation Measure NC-4 in Section 2.3.1 of the Final EIR/EA (USFWS and Monterey County 2020). The voluntary restoration of the remainder of the floodplain would be passively restored.

Construction earthwork activities would include clearing, grading, excavation, and revegetation with native plants in the historic floodplain. Grading would occur on existing farmland to adjust the topography to support native vegetation and floodplain functions. The construction activities are described in more detail in the Final EIR/EA (USFWS and Monterey County 2020).

Maintenance

Maintenance of the MFCAs and intermittent drainage channels would limit the establishment of woody vegetation in areas that could impede flood flows. Maintenance of access roads/trails would continue to provide vehicle and pedestrian access as needed and include mowing and vegetation removal. This may include scraping or grading to reshape sections of roads/trails after flood events. Post-storm maintenance and restoration after high-flow events would occur if the MFCAs' configuration were altered and would be limited to 36 acres, even if the precise location or alignment of these features change. Accumulated sediments would not be removed within the MFCAs.

Biological surveys would be conducted before maintenance activities to avoid and reduce impacts on resources. Maintenance of access roads/trails would be managed by each landowner and coordinated by the County, BSLT, State Parks, and MPRPD. Restoration areas would be monitored during plant establishment periods for a period of 10 years or more as needed for adaptive management.

3.2.4. CALTRANS CAUSEWAY

A portion of the SR 1 roadway embankment would be replaced with an overflow bridge (causeway) measuring 360 feet in length and ranging in width from 43.5 feet to 52.5 feet. The causeway would

allow floodwaters to flow under the highway from the east side of SR 1 to the west into the south arm of Carmel Lagoon.

A temporary detour road would be constructed to allow the movement of traffic during construction (Appendix A, Figure 4). Paving to temporarily tie the detour road to the existing SR 1 would be done at night with temporary traffic controls. Similarly, after the causeway and associated SR 1 work is complete, the final paving connecting the existing SR 1 with the completed causeway would be performed at night with temporary traffic controls and the temporary detour road would be removed. A haul road would then be constructed to transport excavated soil from the west side of the highway underneath the causeway to the agricultural preserve.

Once constructed, the causeway would support a two-lane highway with 12-foot travel lanes, similar to existing conditions. The causeway would incorporate 8-foot-wide shoulders, transitioning to match existing 4-foot-wide shoulders at the southern project limits. The causeway would also include a southbound left-turn lane at the Palo Corona Ranch Regional Park entrance.

Approximately 5.4 acres would be disturbed for the causeway construction, including grading and construction of the temporary detour road. Additional causeway construction activities would include demolition of existing culverts and paving, utility relocations, pile driving, bridge construction, paving, signage and striping, and removal of the temporary detour road. Contractor staging areas would be located on both sides of SR 1. The haul road would become a permanent maintenance road/trail once construction is completed.

3.2.5. CARMEL AREA WASTEWATER DISTRICT PIPELINE UNDERGROUNDING AND REPLACEMENT

CAWD proposes to remove and replace segments of two existing pipelines that currently carry untreated and treated wastewater. A 6-inch force main currently transports raw sewage from the Carmel Meadows Pump Station east over the south arm of the Carmel Lagoon to the CAWD wastewater treatment plant. A 24-inch wastewater pipeline is currently used to transport treated wastewater from the CAWD wastewater treatment plant west over the south arm of the Carmel Lagoon to the Pacific Ocean. The existing 6-inch raw sewage force main and 24-inch treated wastewater pipeline proposed for replacement include sections of undergrounded pipe on either side of the lagoon, as well as an approximate 150-foot, pile-supported section that spans the lagoon. Approximately 1,000 feet of existing pipelines would be replaced with new high-density polyethylene (HDPE) pipe, 8 inches and 28 inches in diameter, respectively. The pipelines would be installed under the Carmel Lagoon using HDD methods to minimize effects on the lagoon (Appendix A, Figure 6).

The HDD entry and exit points would be in upland locations along the existing pipeline footprint; however, the proposed pipelines would be installed in a straight line between entry and exit points and would therefore be located largely outside of the existing pipeline footprint (Appendix A, Figure 6). Once the new pipelines are installed, limited trenching within upland locations on the east and west sides of the lagoon would be necessary to tie the new pipelines into the existing pipelines. Once the new pipelines are installed and tied in, the existing aboveground pipelines spanning the lagoon

and associated support piles would be removed. Underground segments of the existing pipelines bypassed by the new pipelines would be abandoned in place. The pipeline removal work area would be approximately 0.3 acres within and adjacent to the lagoon and includes the maintenance road and trail adjacent to the Carmel Meadows Pump Station.

Staging areas required for drilling and receiving operations would be on both sides of the HDD pits on both sides of the lagoon (Appendix A, Figure 6). Each HDD work area would be approximately 0.3 acres (Appendix A, Figure 7). During pullback of the HDPE pipes into the drilled hole, pipes would be laid along existing dirt maintenance roads. Portions of existing access roads and adjacent upland areas on the east and west sides of the lagoon would need to be cleared and grubbed as well as stabilized and widened to accommodate construction vehicle access, equipment and material storage, and pipeline laydown. Work areas in the eastern portion of the project would be accessed by an existing maintenance road/easement that starts at the wastewater treatment plant entrance gate. Approximately 3,200 feet of the Carmel Meadows trail network would provide motorized access, pipe laydown, staging, and access. The foot trail from the paved maintenance road to the pipeline lagoon crossing would provide pedestrian access to the west side of the lagoon and material transport during pipeline dismantling activities. Work areas in the western portion of the project would be accessed by an existing maintenance road/trail that starts at the end of Calle La Cruz. Appendix A, Figure 6 shows staging and access areas.

Construction Activities

Total grading disturbance required for the underground work would be approximately 1,700 square feet (0.04 acres) and include 1,000 square feet for HDD work on the east side of the lagoon, 500 square feet for HDD work on the west side of the lagoon, and 200 square feet to connect the force main to the existing pump station. In addition, as previously discussed, all vegetation within each of the 0.3-acre work areas would need to be removed to clear an area large enough to accommodate construction equipment.

Vegetation would also be trimmed to provide construction access. CAWD currently maintains a 15-foot-wide easement along the maintenance road, so vegetation removal is expected to be minimal. Vegetation would be hand trimmed or mowed along the foot trail on the west side of the lagoon to provide 6-foot-wide access for pedestrians.

Seasonal and perennial wetlands on the roads and trail east of the lagoon would be protected from vehicle use with the installation of 2-inch-thick open-celled and interlocking HDPE mats. Plywood or similar material would be used to stabilize the pedestrian trail under the pipeline that would be winched up the trail on the west side of the lagoon.

Horizontal Directional Drilling and Pipeline Placement

Drill entry and exit pits would be approximately 20- by 20-feet wide by 6-feet deep and used to contain drilling fluid and spoil returns. Drilling fluid typically consists of a bentonite/water mixture and would be stored in fixed-angle storage tanks in the work areas. Used drilling fluid would be transported to an appropriate off-site upland sanitary landfill.

The drill path would arc under the lagoon for approximately 1,000 feet and reach a maximum depth of 25 feet below the lagoon's lowest elevation. Two holes would be drilled under the lagoon; one for the new 8-inch force main pipe and one for the new 28-inch treated wastewater outfall pipe.

Trenching and Tie-In

All trenching from the HDD entry and exit points to tie the new pipes into the existing pipes would occur in upland areas. In the eastern HDD work area, an open trench approximately 20 feet wide by 50 feet long would be excavated to a depth of 5 feet. In the western HDD work area, an open trench approximately 55 feet long by 5 feet wide would be excavated to a depth of 5 feet to connect the new 28-inch HDPE treated wastewater pipeline to the existing pipeline, which would continue west as it currently does to the Pacific Ocean.

The HDD exit point for the new raw sewage force main, west of the lagoon, is approximately 250 feet west of where it would tie into the Carmel Meadows Pump Station. The new raw sewage force main would be connected to the pump station by slip lining it through the existing 24-inch treated wastewater pipeline. A trench approximately 40 feet long by 5 feet wide would be excavated to a depth of 5 feet adjacent to the pump station to connect the new force main to the slip lining. The rest of the 24-inch pipeline would be abandoned in place and filled with grout after slip lining and installation of the 8-inch HDPE force main is complete. Once complete, the new slip lined force main would transport raw sewage west from the Carmel Meadows Pump Station to the new force main that would direct it northeast under the Carmel Lagoon to the CAWD wastewater treatment plant.

Removal of the Outfall and Force Main

The 150-foot section of existing pipelines and supporting piles spanning the Carmel Lagoon would be removed once the new pipelines are tied into the existing pipelines. The input to the pipelines would be shut down and the pipes would be drained to the existing exit point to the Carmel Meadows Pump Station. A crane would be used to remove pipeline segments and support piles crossing the lagoon. The crane would be parked in the upland portion of the pipeline removal area on the existing maintenance road directly west of the pump station. Small watercraft and divers would remove the pipeline within a 40-foot-wide corridor along the easement/footprint and up the hill to the west. The divers and small watercraft would access the removal area from the western shoreline. Piles would be cut into segments down to the mudline by divers.

Permeable turbidity curtains anchored to the shoreline would enclose the pipeline removal work areas and be installed so as not to drag on the bottom of the lagoon. Curtains would not be installed across the entire lagoon at one time to maintain fish passage and water flow. Permeable curtains would also be placed below cutting locations to contain debris. As described further in the Construction Schedule section below, in-water pipeline removal work would generally be restricted to June 15 to October 31. However, it is expected that these activities would extend outside of this period in the late fall or early winter to avoid the need to remobilize the following spring.

Post-construction Activities

Once construction is completed, temporary fill, best management practices (BMPs), and other protective measures would be removed from wetlands. The areas would be restored to preconstruction grade elevations and restored with native vegetation in accordance with a revegetation plan approved by the U.S. Army Corps of Engineers (USACE). Permanent erosion controls and BMPs would be installed as needed.

Construction Equipment and Workers

Construction equipment would include but not be limited to water trucks, HDD drill rig and associated drilling and fluid handling equipment, a skid steer, excavators, cranes, casing jacking equipment, and other hand tools and equipment. Construction vehicles would transport workers to the site on designated access roads. Five to 10 construction workers would be present on-site at any given time during construction. Divers would be present during pile removal.

Construction Schedule

Construction working hours would be between 6:00 a.m. and 5:00 p.m. Monday through Friday. The anticipated construction duration is described in Section 3.2.2.

Work areas that are sensitive for biological and aquatic resources have specific work windows in some cases. Sensitive areas include coastal scrub west of the lagoon, the Carmel Lagoon and 100-foot buffer, wetlands, and riparian zones east of the lagoon. Construction activities within coastal scrub in uplands west of the lagoon may occur at any time of the year. Ground disturbance is generally restricted to the South-Central California Coast steelhead work window (June 15 to October 31) within the 100-foot buffer directly east and west of the lagoon. However, in-water pipeline removal work may not be able to be completed within the South-Central California Coast steelhead work window to avoid the need to remobilize the following spring. Work outside of approved work windows would be conducted with BMPs and avoidance and minimization measures (AMMs) as required through consultation with the National Marine Fisheries Service (NMFS), as described in Appendix B.

Most construction activities (HDD excavations, pipeline trenching, and soil stabilization) proposed in the wetlands and riparian zones east of the lagoon would be limited to the work window for the California red-legged frog (CRLF) (May 1 to October 31). Some minimally invasive mobilization activities may occur outside of work windows to ensure completion before October 31. Work outside of approved work windows would be conducted with BMPs and AMMs as required through consultation with USFWS, as described in Appendix B.

Best Management Practices and Avoidance and Minimization Measures

BMPs and AMMs to be incorporated into the project are listed in the Draft Initial Study/Mitigated Negative Declaration (IS/MND) CRFREE Mitigation Pipeline Undergrounding Project (CAWD 2021). The Subapplicant would implement the BMPs and other measures to avoid impacts on the human and natural environment.

3.2.6. STATE PARKS BARN COMPLEX

A number of historic buildings that contribute to the Carmel River Floodplain Historic District, which is eligible for the NRHP, are within State Parks property on the west side of SR 1. These buildings include a barn, Blacksmith Shop, Creamery, and former residence that comprise the State Parks Barn Complex. The western portion of the barn collapsed in 2003 after a series of thunderstorms damaged the barn, but the Creamery and Blacksmith Shop remain standing. Hydrologic modeling determined that the existing berm along the north edge of the State Parks Barn Complex does not fully protect the structures, which could be subject to indirect, operational flooding impacts as a result of the project.

To mitigate potential future flooding of the State Parks Barn Complex, the County proposes to either elevate the Creamery and Blacksmith Shop or construct two earthen berms that would expand the existing berm to surround the complex. If berms are constructed, this work would consist of constructing two earthen berms along the southwest and northeast portion of the State Parks Barn Complex (Appendix A, Figure 8). An 18-inch storm drainpipe with flap gate would be added in the southwest berm. The berms would have an approximately 40-foot-wide disturbance area, with a final berm width of 30 feet. The berms would be 1.5 to 2 feet high and extend approximately 1,300 feet. The soil used to create the berms would be obtained on-site from the adjacent floodplain excavation area. If the structures are elevated, the Creamery and Blacksmith Shop would be raised between 6 to 8 inches and placed on concrete foundations before the levee plugs are removed as part of the floodplain restoration component. The new concrete foundations would be either concrete perimeter or pier foundations. Engineering plans would be updated before implementation of either mitigation measure to reflect any changes in building codes since their original preparation.

Mitigation measures were developed by USFWS and the County to avoid or reduce potential effects and impacts on cultural resources and would be implemented during the construction of the berms or elevation of the structures. The measures were developed in consultation with USFWS, Caltrans, State Parks, the County, BSLT, and Native American tribes. The mitigation measures are listed in the Final EIR/EA (USFWS and Monterey County 2020) and are included in Appendix C.

3.3. Action Alternatives Considered and Dismissed

Two additional alternatives for the floodplain restoration component were considered and dismissed: a Reduced Proposed Action Alternative and a Secondary Channel Alternative.

The Reduced Proposed Action Alternative proposed a smaller levee opening and smaller floodplain restoration area. Based on hydrologic and hydraulic modeling, the Reduced Proposed Action Alternative would result in a smaller reduction in flood flows in the Carmel River compared to the other alternatives. The causeway and floodplain grading would also be reduced in size to accommodate the smaller expected flow. The final elevation of the agricultural preserve would be lower because less fill would be generated from floodplain grading. The mitigation components—undergrounding the CAWD pipeline and constructing berms around or elevating structures within the State Parks Barn Complex—would still be necessary under this alternative. This alternative would not meet the purpose and need for the project.

The Secondary Channel Alternative is very similar to the Proposed Action; however, it included more grading and design features to create habitat for South Central California Coast steelhead. This alternative was determined to be infeasible because of the additional cost.

There were no alternatives identified for the CAWD pipeline undergrounding and replacement component in the CRFREE Mitigation Pipeline Undergrounding Project Draft IS/MND (CAWD 2021). Because the need for the CAWD pipeline undergrounding and replacement is triggered by the floodplain restoration and causeway components of the Proposed Action, there are no feasible alternatives to undergrounding the pipelines across the lagoon.

SECTION 4. Affected Environment, Potential Impacts, and Mitigation

This section describes the environment potentially affected by the alternatives, evaluates potential environmental impacts, and recommends measures to avoid or reduce those impacts. The evaluation of effects is based on the detailed evaluation presented in the CRFREE Mitigation Pipeline Undergrounding Project Draft IS/MND (CAWD 2021), and the CRFREE Project Final EIR and EA (USFWS and Monterey County 2020). When possible, quantitative information is provided to establish potential impacts, and the potential impacts are evaluated qualitatively based on the criteria listed in **Table 4.1**. The study area generally includes the project area for the project components and access and staging areas needed for the Proposed Action. If the study area for a particular resource category is different from the project area, the differences are described in the appropriate subsection.

Table 4.1. Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None/Negligible	The resource area would not be affected, or changes or benefits would be either nondetectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, although the changes would be small and localized. Impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional-scale impacts/benefits. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes would be readily measurable and would have substantial consequences on a local or regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

4.1. Resources Not Affected and Not Considered Further

The following resources would not be affected by either the No Action Alternative or the Proposed Action because they do not exist in the project area, or the alternatives would have no effect on the resource (**Table 4.2**). These resources have been removed from further consideration in this EA.

Table 4.2. Resources Eliminated from Further Consideration

Resource Topic	Reason for Elimination
Wild and Scenic Rivers Act	According to the National and Wild and Scenic Rivers website (National Wild and Scenic Rivers System 2022), the closest wild and scenic river, the Big Sur River, is approximately 20 miles south of the project area. Thus, the alternatives would have no effect on wild and scenic rivers.
Sole Source Aquifers	According to the U.S. Environmental Protection Agency's (EPA) sole source aquifer map (EPA 2022a), there are no sole source aquifers designated in the project area; therefore, the alternatives would have no effect on sole source aquifers.
Greenhouse Gases	The release of greenhouse gasses would be negligible (USFWS and Monterey County 2020).

4.2. Geology, Topography, Soils, and Farmland Soils

The project area is located within Monterey County, which is bounded by the Pacific Ocean to the west and a discontinuous series of mountain ranges, ridges, and valleys to the east and south. Geology in the area is characterized by tectonic activity that has resulted in deformed and displaced geologic units of granitic basement and overlying tertiary deposits (EPA 2022b).

The Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes and addresses earthquake related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. The project area is in a seismically active region but is not located within an AlquistPriolo Earthquake Fault Zone. The project area does not transect any active faults; the closest active fault is the Tularcitos-Navy fault located 3.7 miles northeast of the project area. No historical evidence of liquefaction has been documented within two miles of the project area, and no landslides have been documented within the project area (Denise Duffy and Associates 2016).

The project area is located within the Carmel River floodplain on alluvial plains and terraces that surround Monterey Bay. The project area topography is relatively flat with elevations ranging from sea level to approximately 400 feet according to the North American Vertical Datum of 1988 (EPA 2022b).

Soils within the project area primarily consist of unconsolidated silt and sand with discontinuous and relatively thin lenses of clay and silty clay (USFWS and Monterey County 2020). The project area is located on soils previously disturbed for agricultural uses and includes areas of historic fill.

The Farmland Protection Policy Act requires federal agencies to minimize the unnecessary conversion of farmland into nonagricultural uses. The California Department of Conservation maps California's agricultural resources through the Farmland Mapping and Monitoring Program (FMMP). According to the FMMP, the project area is located on Prime Farmland, Grazing Land, Other Land, and includes areas of Urban and Built-Up Land (California Department of Conservation 2022). The project area has been used for agricultural purposes since the early 20th century (USFWS and

Monterey County 2020), and creation of the 23-acre agricultural preserve will ensure non-conversion of the area and preservation of its agricultural heritage.

Chapter 16.08 of the Monterey County Code identifies rules and regulations for activities that include grading, excavation, fill, and embankments and requires permits for grading activities. The purpose of Chapter 16.08 is to minimize erosion as a result of ground-disturbing activities. The code establishes procedures for the issuances of grading permits.

4.2.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, no changes to geology would occur and there would be no grading activity or levee removal for floodplain restoration that would alter topography. Modified restoration on BSLT property could disturb soils, including farmland soils, or result in the exposure to seismic-related hazards. However, modified restoration would occur primarily on soils that have been previously disturbed. Therefore, there would be no short-term effect on geology, seismicity, and topography, and a minor short-term effect on soils, including farmland soils.

In the long term, the Carmel River floodplain would not be hydraulically and hydrologically reconnected and there would be no resultant need to underground the CAWD pipeline. The State Parks Barn Complex would not be protected and would remain at a slight risk for flooding, and the risk of water overtopping SR 1 and resultant flooding would not be reduced. Floodwaters could result in ground disturbance and transportation of soils that could expose bedrock geology or alter topography over time. No structures would be modified or constructed in a seismically active area. Receding floodwaters could carry soils with agriculturally valuable mineral resources or soils contaminated with herbicides and pesticides from agricultural production away from the project area or into larger waterbodies, such as the Carmel River. Continued flooding could reduce the agricultural production capacity of farmland soils in the project area. Thus, there could be a minor long-term impact on geology, topography, soils, and farmland soils from continued flooding and associated erosion of soils and there would be no impact to seismicity.

4.2.2. PROPOSED ACTION

The Proposed Action would modify structures and landscapes located in a seismically active region and could result in exposure to seismic-related hazards if an earthquake were to occur. However, no construction or modification to structures and landscapes would hit bedrock, occur within a known active fault zone, or occur in areas with documented instances of liquefaction or landslides. For the floodplain restoration component, the project area would be revegetated, resulting in the stabilization of soils. The causeway component would be designed and constructed in accordance with local and state regulations for seismic hazard reduction. CAWD pipeline undergrounding would include replacing existing pipeline with HDPE pipeline, and undergrounding this infrastructure could reduce impacts in the event of an earthquake as compared to above-ground pipelines. The construction of berms or elevation of structures to reduce flood risk to the State Parks Barn Complex would not increase exposure to seismic hazards, and such measures would be designed and constructed in accordance with local and state regulations for seismic hazard reduction. All components of the Proposed Action would reduce the risk of exposure to seismic-related hazards by

stabilizing soils, updating infrastructure to the most recent local and state code for seismic-hazard reduction, and undergrounding pipelines to reduce the potential impact in the event of an earthquake. Therefore, the Proposed Action would have no impact on geology and would have a minor beneficial effect on seismic-related hazards.

Use of construction equipment for all project components would disturb soils and could result in erosion. Some soils impacted by construction activities for floodplain restoration are currently used for agricultural purposes. Disturbance of agricultural soils would be temporary and localized to the project area. For all project components, ground disturbance would occur on soils previously disturbed, including from the historic placement of artificial fill. All ground-disturbing activity would be subject to erosion control requirements for water quality (Section 4.5) and Chapter 16.08 of the Monterey County Code, Section 16.08.340, which stipulates the development of an Erosion Control Plan. Thus, there would be minor short-term impacts on soils, including farmland soils.

In the long term, topography would be altered through levee removal and grading associated with floodplain restoration and causeway construction as well as potential berm construction near the State Parks Barn Complex. Topographic changes would occur from the reuse of fill material generated on-site during earthwork and would be isolated to the project area. CAWD pipeline undergrounding and the potential elevation of the State Parks Barn Complex would not alter topography. Thus, there would be a minor long-term impact on topography from grading activities associated with floodplain restoration and potential berm construction. Soils disturbed during construction would be stabilized through revegetation, reducing the risk of soil erosion over time. Some areas of existing farmland soils would be restored to floodplain functions. However, the Proposed Action would reduce the risk of flooding and associated erosion of farmland soils in the project area, and approximately 23 acres would be elevated out of the floodplain with reused fill material generated on-site and put in permanent conservation as an agricultural preserve. Thus, there would be a minor beneficial effect on soils, including farmland soils, from the reduced risk of erosion and the restoration of farmland soils to floodplain functions.

4.3. Visual Quality and Aesthetics

Because floodplain restoration, causeway construction, pipeline undergrounding, and construction of berms or structural elevation can alter the character of the natural and built environment, they have the potential to affect visual quality. The analysis of visual quality is a qualitative analysis that considers the visual context of the project area, potential for changes in character and contrast, assessment of whether the project areas include any places or features designated for protection, the number of people who can view the site and their activities, and the extent to which those activities are related to the aesthetic qualities of the area.

The project area's visual character is primarily composed of agricultural land and riparian habitat adjacent to the Carmel River and the Carmel River and associated tidal marsh habitats. Riparian vegetation creates a visual buffer between the project area and surrounding residential areas to the north, east, and southwest. Middle ground and background views consist of the San Lucia mountains to the south, the Palo Corona Regional Park to the southeast, the Pacific Ocean to the

west, and the Carmel River to the west, north, and northeast. The project area is primarily natural and undeveloped in nature. The built environment is minimal in the project area and includes SR 1, a state-designated scenic highway, local roadways, the Carmel River Wastewater District structures, and the State Parks Barn Complex (Federal Highway Administration 2022).

4.3.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, modified restoration on BSLT property would occur; however, no heavy equipment would be used and no causeway construction, pipe undergrounding, berm construction, or structural elevation would occur that could temporarily degrade views. The restoration activities would improve the overall visual character of the area, but plant variation and success rates for plant establishment would be limited. Thus, there would be a negligible beneficial impact on visual quality and aesthetics. In the long term, the risk of overtopping of SR 1 and resultant flooding would not be reduced. Overtopping of SR 1 would require temporary closure or detours of this state-designated scenic byway. Floodwaters could transport debris or result in damage to property, reducing visual and aesthetic appeal. There would be no impact on middle ground and background views of the San Lucia mountains, the Palo Corona Regional Park, the Pacific Ocean, or the Carmel River. Thus, there would be a minor long-term impact on visual quality and aesthetics from the potential reduction of access to a state-designated scenic byway and reduction of visual appeal from flood damage and debris transport/deposition.

4.3.2. PROPOSED ACTION

During construction, construction activities would reduce the visual quality of the project area, including views of the Carmel River and Carmel Beach State Park, from ground disturbance and the presence of equipment. However, construction activity would be temporary and localized to the project area. There would be no visual changes to the San Lucia Mountain Range, Palo Corona Regional Park, or Pacific Ocean. Thus, there would be a minor short-term impact on visual quality and aesthetics from construction activity. In the long term, the minor topographic alterations associated with floodplain restoration would create a visual change in the project area. Floodplain restoration would include replanting vegetation, including native riparian species along the Carmel River, thus creating a more natural appearing landscape. Visual changes would also occur from the presence of the causeway, undergrounding the CAWD pipeline, and berm construction or structural elevation associated with the State Parks Barn Complex. The causeway would increase the visual diversity of views of SR 1 by allowing viewers to see through the causeway. Undergrounding the CAWD pipeline could reduce the amount of infrastructure within the viewshed. Berm construction would change views of the State Parks Barn Complex and background, depending on the viewers' location. If elevation of the State Parks Barn Complex is selected, it would increase the visibility of the elevated structures by a negligible amount. Visual changes resulting from the Proposed Action could be perceived as a safer and more natural landscape, though berm construction or the elevation of structures within the State Parks Barn Complex could be perceived as a degradation of views due to either the addition of a constructed topographic feature or from the increased height of the structures. The risk of overtopping SR 1, a state-designated scenic byway, and the associated need for detours and closures would be reduced, maintaining access to this visual resource. The risk of flooding and associated visual degradation from damage to property would be reduced. Thus,

there would be a minor long-term beneficial effect to visual quality and aesthetics from the reduced risk of flooding and damage, restoration of the landscape, and maintenance of access to the Scenic Byway SR 1.

4.4. Air Quality

The Clean Air Act, amended in 1990, requires EPA to set National Ambient Air Quality Standards for six pollutants harmful to human and environmental health, including ozone, particulate matter, nitrogen dioxide, carbon monoxide, sulfur dioxide, and lead (EPA 2016). According to the EPA's Green Book (2022c), Monterey County is currently in attainment status for all criteria pollutants.

Air quality is negatively affected by everyday activities such as emissions from vehicle use and fugitive dust, which is considered a component of particulate matter. Fugitive dust is released into the air by wind or human activities such as construction and can have human and environmental health impacts (California EPA Air Resources Board 2007). Some of the roads in the project area are surfaced with gravel or dirt, and dust may be released when they are driven on during dry conditions.

4.4.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be modified restoration activities on BSLT property; however, no heavy equipment would be used. Thus, there would be no short-term construction-related impacts on air quality. In the long-term, the risk of flooding would not be reduced. Floodwater would continue to overtop SR 1, requiring road closures and detours, and damage private property. Vehicles and equipment used for flood-related repairs and road detours that result in longer trips would generate additional emissions that reduce air quality. Therefore, there would be a negligible, recurring, and short-term impact on air quality. There would be no long-term effect on air quality because there would be no new permanent air emissions source.

4.4.2. PROPOSED ACTION

For all project components, construction vehicle and equipment use would result in a temporary increase in emissions and particulate matter that reduces air quality. Construction activities could result in substantial emissions of fugitive dust from vehicle use on dirt and gravel roadways, heavy machinery use for earth moving activities, floodplain grading activities, causeway construction, trenching and pit digging for pipeline undergrounding, and construction activities for the State Parks Barn Complex berms or structural elevations. The Subapplicant would also implement Mitigation Measures AQ-1 and AQ-2, as described in the Final EIR/EA, which require the Subapplicant to comply with all federal, state, and local air quality regulations, and apply water to the project area and equipment as necessary to control fugitive dust emissions (USFWS and Monterey County 2020). Thus, there would be a minor short-term impact on air quality from the use of vehicles and equipment and construction activities. In the long-term, the risk of flooding and associated detour or closure of SR 1 and need for flood-related repairs would be reduced. Existing farmland soils would be converted to floodplain uses, reducing the amount of land subject to annual tilling and mowing that could result in fugitive dust (see Geology, Topography Soils, and Farmland Soils). The Proposed Action would not result in any new permanent sources of emissions. Thus, there would be a

negligible, long-term beneficial effect from the reduced risk of flooding that avoids flood-related emissions from roadway detours and repairs and reduction of fugitive dust.

4.5. Water Quality

The Clean Water Act (CWA) Sections 303 and 304 established requirements for states and tribes to identify and prioritize waterbodies that do not meet water quality standards and to issue water quality standards, criteria, and guidelines. CWA Section 404 requires a federal license or permit approved by USACE to discharge dredged or fill material into waters of the U.S. CWA Section 401 requires the applicant for a federal license or permit to also obtain certification from the state before issuance of the federal license or permit. In California, 401 water quality certification is administered by the applicable Regional Water Quality Control Board (RWQCB), which would be the Central Coast Region for the project area. CWA Section 402 established the requirement to protect waterbodies from stormwater discharges from municipal, construction, and industrial point sources in compliance with the National Pollutant Discharge Elimination System (NPDES), which is administered by the State Water Resources Control Board (SWRCB) in California and Central Coast RWQCB. Construction activities of 1 acre or more are subject to the Construction General Permit under the NPDES program and are required to develop and implement a Stormwater Pollution Prevention Plan (SWPPP). California Department of Fish and Wildlife (CDFW) Fish and Game Code Section 1602 requires a Lake and Streambed Alteration Agreement for projects that would affect the bed, bank, and/or channel of a river, stream, or lake.

The project area is at the downstream end of the Carmel River watershed and would potentially affect the Carmel River and Lagoon and the Carmel River Estuary (Appendix A, Figure 9). The Carmel River eventually reaches the Pacific Ocean at Carmel Bay. However, the lagoon is separated from the ocean during the dry season by a sand bar. The lagoon was expanded beginning in 2004 as a result of the CRLEP, which also included restoration of the south arm of the Carmel Lagoon.

Beneficial uses and water quality objectives of these surface waters are identified in the *Water Quality Control Plan for the Central Coastal Basin*, also known as the Basin Plan (RWQCB, Central Coast Region 2019). Beneficial uses for the Carmel River and Estuary include the following:

- Municipal
- Agricultural Supply
- Industrial Process Supply
- Groundwater Recharge
- Water Contact Recreation
- Noncontact Water Recreation 2
- Wildlife Habitat

- Cold Freshwater Habitat
- Warm Freshwater Habitat
- Migration of Aquatic Organisms
- Spawning, Reproduction and/or Early Development
- Preservation of Biological Habitats of Special Significance
- Rare, Threatened or Endangered Species
- Estuarine Habitat
- Freshwater Replenishment
- Commercial and Sport Fishing
- Shellfish Harvesting

The Basin Plan describes water quality objectives for each of the beneficial uses identified above, ocean waters including Carmel Bay, and specific water quality objectives for the Carmel River (RWQCB, Central Coast Region 2019).

Groundwater beneficial uses within the project area include agricultural (AGR), municipal (MUN), and industrial (IND) uses, and there are no water quality objectives identified for groundwater in the Basin Plan (RWQCB, Central Coast Region 2019).

The provisions of the SWRCB's Water Quality Control Plan for Ocean Waters in California and Water Quality Control Plan for Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries also apply to Carmel Bay (RWQCB, Central Coast Region, 2019). Water quality objectives for dissolved oxygen, pH, and radioactivity are also described in the Basin Plan for all ocean waters including Carmel Bay. Carmel Bay is considered an Area of Special Biological Significance (ASBS) by the SWRCB. Limited discharges of stormwater runoff, silt, and urban runoff must be controlled to the extent practicable by the RWQCB nonpoint source programs.

The SWRCB adopted the *Final 2020 Integrated Report*, which provides information about assessed waterbodies and whether they are impaired for certain pollutants on the 303(d) list. The Carmel River is newly listed (2020) as being impaired for benthic community effects along some river segments and toxicity for the segment between SR 1 and the Pacific Ocean based on water body assessments. No source analysis is available regarding the source of the impairments, though a waterbody listed for benthic community effects must also have a listing for another pollutant. A toxicity impairment designation indicates that during water quality assessments, the response of organisms in the samples were significantly different than the control organisms. Numeric water quality objectives have been adopted by the SWRCB for toxicity but are not currently in effect. The expected Total Maximum Daily Load (TMDL) completion date is 2035. The river is classified as 5A,

meaning that water quality standards are met and a TMDL standard is required but not yet completed for the listed pollutants (SWRCB 2022).

Water quality studies in the Carmel Lagoon were conducted by the Central Coast Watershed Studies Team between 2004 and 2007 after the CRLEP was completed (USFWS and Monterey County 2020). The study concluded that dissolved oxygen, salinity, and temperature are variable depending on the season and depth. Isolated saltwater exists in the bottom of the southern arm as a result of topography and lack of mixing and creates anoxic conditions below the halocine.[3] During the summer months, river flow near the lagoon ceases most years and some slow input from groundwater provides freshwater into the lagoon. Mixing does occur in the lagoon once it has breached the sand bar and enough freshwater is supplied by the river. During heavy precipitation events or if sediment is disturbed on the bottom of the lagoon, turbidity levels will increase.

Groundwater elevations fluctuate between 3 to 8 feet below the ground surface upslope of the lagoon. Groundwater monitoring data was collected between 2012 through 2015 in the project area and vicinity. The groundwater monitoring well closest to the lagoon had higher sodium and chloride levels than wells further away, with the lowest level reported at the well furthest away. Piezometers on State Parks property monitored for sodium and chloride suggest freshwater stratification occurs from 0 to 5 feet below sea level (USFWS and Monterey County 2020).

4.5.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, modified restoration on BSLT property would occur, which would slightly improve the quality of water entering the Carmel Lagoon and enhance beneficial uses, such as wildlife habitat, preservation of biological habitats, and preservation of rare and endangered species. However, there would be no benefit to groundwater quality, recharge, or sedimentation from restoration of the hydrologic reconnection of the floodplain. Because flood flows would continue to be confined to the main channel of the Carmel River, the lagoon would not benefit from scouring and flushing flows that move sediment out of the lagoon. SR 1 would continue to experience overtopping from floodwaters during extreme flood events, and the embankment would continue to be at risk of damage and erosion. Under the No Action Alternative, the 303(d) impairment status of the Carmel River and estuary between SR 1 and the Pacific Ocean would not change and limit the potential to meet future TMDL standards if they are eventually completed. Stormwater runoff would not increase under the No Action Alternative. There would be no change in water levels and flood velocities downstream under the No Action Alternative, and there would be no need to modify the CAWD pipelines to reduce the risk of damage and water quality impacts. Therefore, there would be negligible beneficial impacts on water quality under the No Action Alternative.

4.5.2. PROPOSED ACTION

Under the Proposed Action, the floodplain restoration component would remove a portion of the south bank levee and replace a section of the SR 1 embankment with a causeway, which would help to restore the area's hydrology and hydrologic connections between the river and the lagoon via the

[3] The zone where the salinity changes rapidly when a layer of freshwater sits on top of saltwater.

floodplain. The levee and embankment removal would be scheduled to occur after the CAWD pipeline is replaced and floodplain grading and restoration activities are completed to minimize and avoid impacts downstream from flooding, erosion, and polluted stormwater runoff. Appendix A, Figure 5 depicts the floodplain restoration design features. The floodplain restoration component would result in vegetated areas that would support larger rooted trees and shrubs and create floodplain side channels with herbaceous vegetation that would reduce channel blockage and scour.

The new 23-acre agricultural preserve would be elevated above the 100-year floodplain on the southern portion of the site (Appendix A, Figure 5). The preserve would drain toward the southwest corner of the field. Runoff from agricultural fields would be collected in a drainage ditch along the north side of the field access road. This would keep runoff from the agricultural preserve, which could contain fertilizers and chemicals used for operations, from flowing into the restored intermittent drainage channel on the other side of the road. The runoff from the preserve would be conveyed by a 36-inch culvert into a settling pond at the eastern terminus of the agricultural runoff ditch to naturally filter the runoff prior to reaching groundwater. To protect water quality, an outlet riser would be included at the culvert to protect the settling pond levees from erosion due to overtopping during flood events.

Part of the SR 1 roadway embankment would be replaced with an overflow bridge (causeway) and earthwork would be performed to provide for floodwater conveyance under SR 1 and restore hydrologic connectivity with the Carmel Lagoon and riparian habitat. Construction of the causeway and the State Parks Barn Complex berms or structural elevations could result in short-term water quality impacts due to earthwork activities during construction. The impervious surface area of SR 1 or the State Parks Barn Complex would not increase compared to existing conditions and would have no long-term impact on water quality.

Work in waters of the U.S. including wetlands would occur for the floodplain restoration and CAWD pipeline components and would be subject to the regulations of the CWA Sections 404 and 401 (Appendix A, Figure 9). Authorization from USACE under CWA Section 404 and CWA Section 401 Water Quality Certification from the RWQCB have been acquired for the floodplain restoration component. Authorization from USACE under CWA Section 404 and CWA Section 401 Water Quality Certification from the RWQCB would be required before starting construction of the CAWD pipeline work. The underground pipelines would be installed by HDD, which would avoid disturbance within the lagoon and wetlands. Cutting of the concrete-filled sheet pile and removal of the aboveground pipe could temporarily increase turbidity and degrade water quality of the estuary. Turbidity curtains would be placed around the work area to prevent turbid water from spreading into other parts of the lagoon. During the dismantling of the pipes, construction BMPs would prevent debris from falling into the lagoon. Turbidity monitoring would be conducted in the southern arm of the lagoon during pipeline work. Additional controls would be implemented if turbidity levels exceed standards.

The new pipe tie-in points in the upland areas would be dewatered on the east and west sides of the trenching area. Drilling spoils would be stockpiled on either side of the lagoon, and the fluids would be stored in tanks on-site. Safety measures to minimize potential frac-out, which is the unintentional release of drilling fluids to the lagoon during directional drilling, are included in the proposed pipe

installation design. A frac-out plan that includes measures to reduce the potential for frac-out and identify response measures to minimize impacts on water quality would be implemented.

The Proposed Action would disturb more than 1 acre of land during construction and be subject to conditions of the SWRCB Construction General Permit. Compliance with the NPDES General Construction Permit would require preparation of a SWPPP by a Qualified SWPPP Developer. The SWPPP must include erosion and water quality control measures and include measures to prevent adverse effects on water quality during dewatering activities and construction. Monitoring and reporting compliance requirements would also be described in the SWPPP in accordance with the NPDES Construction General Permit. Regular weekly monitoring, and before and after storm events, would be conducted. Water samples would be collected and analyzed in the event of a polluted stormwater discharge to surface waters. Discharges and analytical data would be reported to the RWQCB. Corrective actions would be implemented as needed to minimize long-term effects to water quality. Use of hazardous materials during construction could result in an accidental release into the environment. Appropriate measures to prevent released hazardous materials from mobilizing and entering surface waters would be implemented in accordance with the SWPPP. In addition, avoidance and mitigation measures for the use of hazardous materials during and after construction would also be implemented as described in Section 4.14, Hazardous Materials.

The floodplain restoration and causeway construction areas would be restored in accordance with USFWS approved plans after grading is completed. A habitat restoration plan would be implemented in coordination with the USFWS after the CAWD pipeline replacement is completed. The floodplain restoration area would be monitored and maintained in accordance with the USFWS and USACE-approved RMP to ensure the long-term stability and pollutant load reductions from erosion and sediment.

Compliance with the CWA Sections 404 Permit, Section 401 Water Quality Certification, Section 402 NPDES Construction General Permit including implementation of a SWPPP, and California Fish and Game Code Section 1602 would ensure that only negligible short-term impacts on water quality would occur during construction. The Proposed Action would result in a moderate long-term beneficial effect on surface water and groundwater beneficial uses, including groundwater recharge, freshwater replenishment, warm freshwater habitat, cold freshwater habitat, wildlife habitat, preservation of biological habitats, and preservation of rare and endangered species. Floodplain restoration would increase groundwater storage and sediment and nutrient filtration, which would improve the quality of water entering the lagoon. In addition, the undergrounding of the pipelines crossing of the Carmel Lagoon would reduce the risk of damage from the increased flood velocities and debris flow resulting from the floodplain restoration. This would reduce the risk that raw sewage and secondary treated wastewater would be released into Carmel Lagoon and Carmel Bay if the pipeline or outfall were to be damaged by the increased flows.

4.6. Coastal Resources

The Coastal Zone Management Act, enacted in 1972, was established to preserve, protect, develop, and where possible, restore or enhance the resources of the nation's coastal zone. Section 307 of

the Coastal Zone Management Act requires federal actions within (or outside of, but with the potential to affect) the coastal zone to be consistent with the enforceable policies of the state's federally approved coastal zone management program (National Oceanic and Atmospheric Administration 2022). The Coastal Zone Management Act is implemented by coastal counties through the creation of Local Coastal Programs.

The federal government certified the California Coastal Management Program (CCMP) in 1977. Under the CCMP, the California Coastal Commission (CCC) is responsible for federal consistency reviews under the Coastal Zone Management Act. The CCC reviews activities that affect the coastal zone, regardless of their location, based on the enforceable policies of the CCMP. These policies address the maintenance and enhancement of public access, recreation, and the marine environment; the protection of land resources including lands of agricultural value; and maintenance of scenic resources. The Proposed Action is located within the coastal zone and thus subject to enforceable policies.

4.6.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, the modified restoration of the BSLT property would occur, which could conflict with enforceable policies of the CCMP. The Subapplicant would be required to coordinate with the CCC and obtain any necessary coastal permitting and federal consistency certification. The modified restoration would protect and enhance coastal resources and, therefore, would result in a negligible beneficial impact on coastal resources. In the long term, the risk of flooding would not be reduced. Periodic flooding would reduce access to the project area and adjacent lands while floodwaters recede or would require temporary detours or closures of SR 1, a scenic byway (Section 4.16). Road detours or closures would be temporary. Floodwaters could erode farmland soils (Section 4.2). The No Action Alternative would be inconsistent with enforceable policies of the CCMP as access to coastal and visual resources could be reduced and agricultural lands could be degraded. Thus, there would be a minor long-term impact on coastal resources from continued flooding.

4.6.2. PROPOSED ACTION

Under the Proposed Action, construction would occur within the coastal zone. Construction activities would result in the temporary restriction of access to the project area and could result in short-term adverse effects on water quality from ground-disturbing activities (Section 4.5). All ground-disturbing activity would be subject to erosion control requirements for water quality (Section 4.5) and Chapter 16.08 of the Monterey County Code, Section 16.08.340, which stipulates the development of an Erosion Control Plan. The Subapplicant would be required to coordinate with the CCC to obtain a federal consistency certification that identifies any required mitigation measures to ensure consistency with coastal hazard objectives and enforceable policies. If those measures would result in any changes to the scope of work, the project must be resubmitted to FEMA prior to initiation of any work. Thus, there would be a negligible short-term adverse effect on coastal resources.

In the long-term, floodplain restoration would improve coastal resources by restoring the natural floodplain functions of the study area and restoring wetlands adjacent to the Carmel River (Section

4.7). Existing farmland soils would be restored to the natural floodplain function and approximately 23 acres would be elevated out of the floodplain and put in permanent conservation as an agricultural preserve to maintain the agricultural heritage of the area (Section 4.2). Causeway construction would reduce the risk of overtopping of SR 1 and associated impacts on access from flood-related detours and closures. Berm construction around the State Parks Barn Complex or structural elevation of the Creamery and Blacksmith Shop would reduce the risk of damage to this public recreation resource from floodwaters. Thus, there would be a minor long-term beneficial effect on coastal resources, and the Proposed Action would be consistent with enforceable policies of the CCMP by maintaining and enhancing access to recreational and scenic resources and protecting lands of agricultural value.

4.7. Wetlands

Executive Order (EO) 11990, Protection of Wetlands requires federal agencies to consider alternatives to work in wetlands and limits potential impacts on wetlands if there are no practicable alternatives. FEMA regulation 44 Code of Federal Regulations (CFR) Part 9, Floodplain Management and Protection of Wetlands, sets forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding activities in a wetland unless no practicable alternatives are available. Under the CWA, the discharge of dredged or fill material into waters of U.S. and adjacent wetlands is regulated under Section 404 by USACE and Section 401 by the California RWQCB Central Coast Region. Alterations to wetlands are also regulated by CDFW under Section 1602 of the California Fish and Game Code.

USACE jurisdictional wetlands in and surrounding the project area (Appendix A, Figure 9) were mapped by Denise Duffy and Associates and Johnson Marigot Consulting during preparation of biological resource studies for the CRFREE Final EIR/EA and Mitigation Pipeline Undergrounding Project Draft IS/MND, respectively. Detailed descriptions of additional wetland studies and mapping efforts also are described in these documents. Approximately 0.01 acres of wetlands are mapped in the floodplain restoration area (USFWS and Monterey County 2020), and approximately 3.27 acres of wetlands are mapped in the CAWD pipeline replacement area (Johnson Marigot Consulting, LLC 2021) for a total of 3.28 acres.

4.7.1. NO ACTION ALTERNATIVE

In the absence of floodplain restoration, causeway construction, and pipeline replacement, the No Action Alternative would not affect wetlands with dredge or fill through construction and grading activities. The modified restoration approach on the BSLT property would include planting of native vegetation in agricultural areas, which would not affect wetlands. In addition, the beneficial effects to wetlands under the Proposed Action, including expansion of wetland habitat and improved functions and values, would not occur.

4.7.2. PROPOSED ACTION

Under the Proposed Action, approximately 0.27 acres of wetlands would be temporarily impacted during floodplain restoration (0.01 acres) and the CAWD pipeline work (0.26 acres). The remaining approximately 3 acres of wetlands mapped in the pipeline replacement project area would not be

affected by the HDD because the drill path is below the ground surface and wetlands. Floodplain habitats including wetlands would be expanded as a result of the project and substantially improve wetland functions and values.

During construction, a qualified biologist would monitor project activities to ensure compliance with regulatory permits and to minimize impacts on biological resources. The Subapplicant would install protective fencing to keep construction vehicles and personnel out of wetlands except where disturbance has been authorized under an appropriate permit. The RMP would be implemented during construction and the maintenance, monitoring, and reporting activities to comply with compensatory mitigation requirements.

There could also be impacts on wetlands outside of work areas due to construction activities nearby, causing erosion or sedimentation to undisturbed wetlands. As described in Section 4.5 Water Quality, a frac-out plan would include measures to reduce the potential for frac-out during installation of the CAWD pipeline and identify response measures to minimize impacts on wetlands.

There would be no net loss of wetlands under the Proposed Action. In areas where wetlands would be temporarily impacted by the CAWD pipeline work, BMPs including construction mats would be placed over the wetland to minimize damage. All wetlands disturbed during construction would be revegetated with appropriate native vegetation. BMPs, AMMs, and the conditions of the Section 404 and 401 permits would be implemented during construction to avoid and minimize effects to wetlands.

Monitoring and maintenance activities in the MFCAs would occur in perpetuity to maintain flood conveyance within a 36-acre area composed primarily of grasslands. Monitoring and maintenance activities could temporarily disturb small areas of wetlands; however, effects on wetlands would be negligible (USFWS and Monterey County 2020).

Under the Proposed Action there would be minor short-term adverse impacts on wetlands. Project BMPs would be implemented to protect wetlands and restore areas disturbed during construction to minimize impacts. There would be a moderate long-term beneficial effect to wetlands from the project because wetland habitat would be expanded, and wetland functions and values would improve because of the proposed floodplain restoration work.

4.8. Floodplains

EO 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. FEMA regulations (44 CFR Part 9.7) use the area subject to inundation by a 1-percent-annual-chance flood as the minimum area for floodplain impact evaluation.

Based on FEMA Flood Insurance Rate Map panels 06053C0316H and 06053C0320H, effective June 21, 2017, most of the proposed project area falls within the 100-year floodplain boundary. Some staging and access areas for the CAWD pipeline seaward of the pipeline alignment lie within

the VE Zone (100-year floodplain with additional hazards due to storm-induced velocity wave action). Some areas within the floodplain restoration component are within the 0.2-percent-annual-chance flood hazard zone. Upland areas fall within Zone X, an area of minimal flood hazard (USFWS and Monterey County 2020).

Major flood events have been reported along the Carmel River since 1911, with the latest flood event occurring in 2017, which affected surrounding development. The portion of the project area within the 100-year floodplain does periodically flood. The area has been modified by human activity over the years, with the construction of levees along the banks of the main channel meant to protect development from flooding. However, the existing levees channelize the flow instead of allowing it to spread into the adjacent floodplain. Flood events in 1995 and 1998 produced the two highest flows on record and caused substantial residential and commercial property damage (USFWS and Monterey County 2020). The 1995 flood event destroyed the SR 1 bridge, which was replaced prior to the 1998 event. Although flood waters did overtop the bridge again in 1998, this did not result in substantial damage. The existing aboveground CAWD wastewater pipelines that span the lagoon and the Creamery and Blacksmith Shop within the State Parks Barn Complex are also within the 100-year floodplain. Hydrologic modeling prepared by Balance Hydrologics, Inc. determined that high flows overtopping SR 1 and an existing partial berm causes flooding risk from the east, and water from the south arm would cause backwater flooding into the State Parks Barn Complex under existing conditions (USFWS and Monterey County 2020).

FEMA completed an 8-step checklist as part of compliance with EO 11988, which is included as Appendix E.

4.8.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, voluntary restoration on the BSLT property would occur; though it would be limited and flood capacity would be minimally increased compared to the Proposed Action. Floodplain functions and values would remain unchanged outside of the modified restoration area. There would be no effect on the Carmel River flow or drainage patterns. Flood risks posed by high water conditions in the Carmel River and lagoon would remain unchanged and would continue to be a concern for the existing State Parks Barn Complex historic buildings, SR 1, and surrounding private properties. Portions of the area would continue to be used for agriculture; however, the fields would flood periodically.

4.8.2. PROPOSED ACTION

Under the Proposed Action, the height of the levees would be reduced to slightly below the 2- to 5-year flood event to allow flows to spread over the south bank area in accordance with historical floodplain conditions. The levee removal would provide flood attenuation benefits to residential and commercial development north of the CRFREE project area that have experienced historic and ongoing flooding during high-flow events. Approximately 3,180 feet of the existing levee would remain in place to preserve important areas of existing vegetation that would support colonization and expansion of riparian plant communities in the floodplain. Retaining berms would be constructed to help transition flood flow patterns as a result of levee section removal. This would

limit the volume and velocities of flows into the floodplain during flood events. A total of 36 acres of MFCAs would be established to convey flood flows through the restored floodplain area. Maintenance activities would include mowing and removal of woody vegetation necessary to retain flood conveyance capacity.

The changes to the floodplain under the Proposed Action would cause water surface elevations to be substantially lowered upstream and in developed areas north of the Carmel River. Flood depths south of the river upstream of the causeway would be reduced to a maximum of 7.5 feet for a 50 and 100-year flood (USFWS and Monterey County 2020). Flood elevations in the Carmel River upstream of SR 1 would be reduced by a maximum of 1.6 feet for the 10-year flood and 2.3 feet for the 100-year flood. This would result in lowered flood flows along the developed north bank primarily from SR 1 upstream to Val Verde Drive, which experienced extensive flooding in 1995 and 1998. Because of these changes in water surface elevations and flood depths, a Conditional Letter of Map Revision (CLOMR) would be processed through the County and FEMA for approval prior to construction. Once construction is completed and the final floodplain elevations are confirmed, a Letter of Map Revision (LOMR) would be completed for the project to officially update the Flood Insurance Rate Map panels.

An existing domestic well (Riverfield) would be raised above the 100-year flood elevation for protection and to reduce the risk of adverse health and safety effects in accordance with agreed-upon measures by MPRPD and the shared-use inholding landowner. No housing or new structures would be constructed within the 100-year floodplain.

Part of the SR 1 roadway embankment would be replaced with an overflow bridge (causeway). The floodplain under the causeway would be graded to provide floodwater conveyance under SR 1 and restore hydrologic connectivity with the Carmel Lagoon and riparian habitat. The replacement of the SR 1 embankment with a causeway would eliminate the damming effects of the roadway across the floodplain and improve distribution of flows through the lower watershed. Lowering floodplain elevations would provide additional flood capacity, and elevated terraces would be created that would no longer be inundated by flood flows. An agricultural preserve would be elevated above the 100-year floodplain to reduce flood hazards to agricultural crops. The floodplain restoration and causeway components would provide moderate long-term beneficial effects to the floodplain and reduce the risk of flooding in populated areas.

The Proposed Action would affect floodplain functions and values and flood hazards in and near the project area. Hydraulic modeling was conducted to evaluate existing and post-project conditions. Post-project, the capacity of the floodplain would be increased and flood hazard risks to developed areas and SR 1 would be reduced. However, post-project modeling also showed that the flow velocities would increase beyond the threshold for erosion and scour at the existing CAWD outfall and aboveground sewer force main pipelines, which would increase the risk of rupture to the pipelines and outfall.

Monterey County would either construct two berms to expand the existing berm around the State Parks Barn Complex or elevate the Creamery and Blacksmith Shop structures prior to completion of

the project to minimize the risk of flood damage to these historic buildings (USFWS and Monterey County 2020).

CAWD would complete the pipeline undergrounding and replacement through the lagoon prior to removal of the levee and the detour road to avoid flood damage to the outfall and sewer force main pipeline from future floods. Flows would be less channelized once portions of the south bank levee are removed, resulting in flow reductions through the main channel after the project is completed (USFWS and Monterey County 2020).

There would be negligible short-term impacts during construction with implementation of construction BMPs, the SWPPP, and regular monitoring and reporting. There would be no adverse long-term impacts on the floodplain and Carmel River flows. Floodplain functions and hydrologic connections would be restored and enhanced, which would be a moderate long-term beneficial effect. Floodplain restoration plantings would not impede flows during flood events. Post-storm maintenance and restoration would be limited to the established acreage of the trails, access roads, and the MFCAs, even if the location of the MFCAs changes during high-flow events. In addition, the project would reduce flood hazards and reduce the risk of injury and damage to the public, adjacent properties, historic buildings, and public infrastructure.

4.9. Vegetation

The project area is in the coastal Monterey Bay Plains and Terraces ecoregion, which occurs on the alluvial plains and terraces that wrap around Monterey Bay (Griffith et al. 2016). This ecoregion is characterized by soil temperature regimes that are isomesic (i.e., mean annual soil temperature ranges from 46 degrees Fahrenheit [°F]) to 59°F) near the ocean and thermic (mean annual soil temperature ranges from 59°F to 72°F) in inland areas. Soil moisture regimes within the ecoregion are largely xeric (i.e., characterized by moist winters and warm, dry summers) but can be aquic (i.e., saturated long enough to cause oxygen depletion) on floodplains. Vegetation communities in the project area are indicative of these varied growing conditions.

In the eastern work area—comprising the limits of work associated with floodplain restoration east of the causeway and causeway construction—four vegetation communities are present: riparian forest, ruderal/invasive weeds, non-native annual grassland, and coastal scrub. Riparian vegetation is found along the northern border of the eastern work area, where it overlaps with the Carmel River riparian corridor. Ruderal areas (i.e., areas that have been developed or have been subject to historical and ongoing anthropogenic disturbance and are devoid of vegetation or dominated by non-native and/or invasive weed species) occur throughout the eastern work area and include dirt roads, fill from levee and highway construction, and former and active agricultural fields. Non-native annual grassland is present in the easternmost portion of the eastern work area on property owned by MPRPD. The locations and areal extents of each of these vegetation communities within the eastern work area are depicted in Figure 2.3.1-1 in the Final EIR/EA, and a detailed description of each habitat type is provided in Section 2.3.1 Natural Communities of the Final EIR/EA (USFWS and Monterey County 2020).

In the western work area—comprising floodplain restoration west of the causeway, the State Parks Barn Complex, and the CAWD pipeline work area—existing vegetation communities include non-native annual grassland, riparian forest, riparian scrub, ruderal, invasive weeds, coastal scrub, emergent marsh, and emergent wetland. The area where floodplain restoration would occur west of the causeway consists of non-native annual grassland interspersed with patches of riparian forest, riparian scrub, and coastal scrub, as depicted in Figure 2.3.1-1 in the Final EIR/EA. Vegetation communities within the State Parks Barn Complex in the vicinity of the Creamery and Blacksmith Shop include riparian forest, riparian scrub, emergent marsh, disturbed herbaceous mosaic, non-native annual grassland, coastal scrub, invasive weeds, and ruderal. In the CAWD pipeline work area (CAWD work area), the predominant vegetation communities are valley foothill riparian and coastal scrub with some areas of saline emergent wetlands and freshwater emergent wetlands occurring along the Carmel Lagoon. The valley foothill riparian vegetation community dominates the central and eastern portion of the CAWD work area adjacent to the Carmel Lagoon, while the southwestern portion of the work area is dominated by coastal scrub. Seasonal wetlands occur throughout the central portion of the CAWD work area, and wetlands in the southwestern portion of the work area are predominately perennial wetlands that are reliant on hydrology associated with the lagoon. Additionally, there is a small, barren area where the CAWD plant entrance road and adjacent pullout intersects the eastern edge of the work area. The locations and areal extents of vegetation communities within CAWD work area are depicted in Figure 9 in the IS/MND, and a detailed description of each habitat type is provided in Section IV Biological Resources of the IS/MND (CAWD 2021).

Federally listed plant species with the potential to occur in the project area are discussed in Section 4.11.

Invasive Species

EO 13112 requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. Numerous invasive plant species, as identified by the California Invasive Plant Council (Cal-IPC) Inventory (Cal-IPC 2015), are known from the project area, including six species with an invasiveness rating of high: ice plant (*Carpobrotus edulis*), jubata grass (*Cortaderia jubata*), cape ivy (*Delairea odorata*), fennel (*Foeniculum vulgare*), French broom (*Genista monspessulana*), and Himalayan blackberry (*Rubus discolor*).

4.9.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, undergrounding the CAWD pipeline, constructing berms around or elevating structures within the State Parks Barn Complex, building the causeway, removing portions of the existing levee, and reconnecting the floodplain would not occur. BSLT would implement a modified restoration approach on a portion of the proposed floodplain restoration area along the Carmel River to maintain existing riparian vegetation and install native vegetation in lieu of agricultural uses. These actions would increase native plant species diversity and abundance in these restored areas, but the overall project area would continue to be largely dominated by non-

native plant species. Therefore, there would be minor long-term beneficial effect on vegetation under the No Action Alternative.

4.9.2. PROPOSED ACTION

Grading and vegetation removal associated with floodplain restoration activities (east and west of the causeway) and causeway construction would impact up to approximately 128 acres and 5.3 acres, respectively. **Table 4.3** provides a breakdown of the impact acreages by vegetation community for each of these project components.

Table 4.3. Acreage of Vegetation Types in the Floodplain Restoration and Causeway Areas

Vegetation Community	Floodplain Restoration (Acres)	Causeway (Acres)
Riparian Forest/Scrub	5.0	0.7
Ruderal/Invasive Weeds	98.5	1.6
Non-native Annual Grassland	19.1	0.9
Coastal Scrub	5.5	0.6
Developed	0.1	1.5
Total	**128.2**	**5.3**

Source: USFWS and Monterey County 2020

In the State Parks Barn Complex work area, approximately 1.7 acres of vegetation in proposed staging areas and access routes would be temporarily impacted. If berms are constructed around the State Parks Barn Complex, approximately 0.7 acres of vegetation would be permanently impacted. **Table 4.4** provides a breakdown of the anticipated temporary and permanent impact acreages by vegetation community. If the structures are elevated at the State Parks Barn Complex, construction is expected to involve minimal vegetation removal that would be limited to non-native annual grasses and/or landscape vegetation in previously disturbed areas directly adjacent to the Creamery and Blacksmith Shop.

Table 4.4. Impact Acreage by Vegetation Types in the State Parks Barn Complex Area

Vegetation Community	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Riparian Forest	0.06	0.16
Riparian Scrub	0.02	0.01
Disturbed Herbaceous Mosaic	0.004	0.0004
Non-native Annual Grassland	1.36	0.47
Invasive Weeds	0.25	0.08
Total	**1.69**	**0.72**

Source: Denise Duffy and Associates 2022

In the CAWD pipeline component work area, all vegetation in two 0.30-acre areas—one on each side of the lagoon—would need to be removed to accommodate HDD activities and associated

equipment. Existing vegetation in the HDD work area on the western side of the lagoon is dominated by ice plant with patches of coastal scrub, while vegetation in the HDD work area on the eastern side is dominated by willow (*Salix* spp.). An additional 0.02-acres would be cleared of vegetation adjacent to the Carmel Meadows Pump Station to accommodate the raw sewage force main tie-in to the existing Carmel Meadows Pump Station. Vegetation in this area primarily consists of poison oak.

To minimize impacts on existing vegetation communities, activities involving vegetation removal would be conducted in accordance with BMPs and AMMs, as described in Table 2 in the IS/MND (CAWD 2021) and Section 2.3.1, Natural Communities, of the Final EIR/EA. Implementation of these measures would include limiting disturbance or removal of vegetation to the minimum necessary to complete construction; revegetating areas of temporary disturbance with an assemblage of native species suitable for the area; protecting trees or vegetation not required for removal, but which are directly adjacent to construction activities, by installing protective fencing; and instituting an RMP to establish a mosaic of native habitats across the restored floodplain. With the implementation of these measures, construction activities under the Proposed Action would have moderate short-term impacts on vegetation within the project area.

In the long term, the Proposed Action would improve and expand native vegetation communities within the project area by restoring a substantial portion of the Carmel River floodplain. The restored floodplain would be replanted with native species, and natural recruitment would be actively managed to the extent necessary to support native recolonization. Ongoing maintenance activities, including mowing and removal of vegetation, would result in temporary, regular disturbance to some natural communities. However, the area of annual disturbance resulting from such maintenance activities would be minimal in the context of the increased habitat values that would be created under the Proposed Action. Therefore, the Proposed Action would have a major long-term beneficial effect on vegetation within the project area.

Under the Proposed Action, construction equipment would be (1) cleaned to remove mud or other debris that may contain invasive plants and/or seeds and (2) inspected to reduce the potential of spreading noxious weeds. Cleaning and inspection should occur before entering and leaving the construction site. Therefore, the spread of invasive plant species within the project area is not expected to occur as part of the Proposed Action.

4.10. Fish and Wildlife

Many of the habitat types present within the project area are characterized by varying degrees of past and ongoing anthropogenic disturbance. The eastern work area (i.e., the areas associated with floodplain restoration east of the causeway and causeway construction) consists of gently rolling hills to steep slopes dominated by areas of annual and native grasslands, coastal scrub, and riparian forest. Habitats in this portion of the project area have been significantly altered as a result of the hydrological separation of the Carmel River from its floodplain, as well as historical and continuing agricultural activities. The western work area (i.e., the areas associated with floodplain restoration west of the causeway, the State Parks Barn Complex, and the CAWD pipeline) is relatively flat, with the exception of the area along the western project boundary where there is a rapid increase in

elevation. As noted in Section 4.9, the area where floodplain restoration work would occur west of the causeway largely consists of non-native annual grassland. This area has historically been used for agriculture and was graded in 2004 as part of the CRLEP. The State Parks Barn Complex has been significantly disturbed owing to past development, which has likely led to the prevalence of non-native grassland and invasive weeds near existing buildings and structures. Outside of areas dominated by non-native vegetation, the State Parks Barn Complex work area includes patches of riparian and coastal scrub as well as portions of riparian forest that border the southern arm of the Carmel River Lagoon, a tidal estuary connected to the Pacific Ocean. The CAWD work area predominately consists of valley foothill riparian and coastal scrub habitat, saline emergent wetlands, and freshwater emergent wetlands and includes a portion of the southern arm of the Carmel River Lagoon.

Numerous animals have the potential to occur within the project area, including mammal and bird species such as Townsend's big-eared bat (*Corynorhinus townsendii*), Monterey dusky-footed woodrat (*Neotoma macrotis luciana*), ferruginous hawk (*Buteo regalis*), white-tailed kite (*Elanus leucurus*), yellow warbler (*Setophaga petechial* ssp. *brewsteri*), and California horned lark (*Eremophila alpestris actia*). Reptile and amphibian species that may use the project area include the federally proposed threatened southwestern pond turtle (*Actinemys pallida*), Coast Range newt (*Taricha torosa torosa*), and the federally threatened CRLF (*Rana draytonii*). Invertebrate species that may use the project area include the federally proposed threatened monarch butterfly (*Danaus plexippus*) and the federally endangered Smith's blue butterfly (SBB) (*Euphilotes enoptes smithi*). Federally listed species with the potential to occur in the project area are discussed in Section 4.11.

The Migratory Bird Treaty Act of 1918, as amended (16 United States Code [U.S.C.] 703–711), provides protection for migratory birds and their nests, eggs, and body parts from harm, sale, or other injurious actions. All native birds are protected by the MBTA and habitats throughout the project area have the potential to support a variety of native bird species, including Oak titmouse (*Baeolophus inornatus*), Lawrence's goldfinch (*Carduelis lawrencei*), olive-sided flycatcher (*Contopus cooperi*), and Nuttall's woodpecker (*Picoides nuttallii*) (USFWS 2022). The nesting season for migratory birds is generally February 15 through September 1, depending on the species.

The Bald and Golden Eagle Protection Act of 1940 prohibits the take, possession, sale, or other harmful action of any gold or bald eagle, alive or dead, including any part, nest, or egg (16 U.S.C. 668(a)). Based on the lack of suitable nesting habitat (i.e., old-growth trees, snags, cliffs, and rock promontories) and existing levels of development and human activity throughout the project area, neither bald eagles (*Haliaeetus leucocephalus*) nor golden eagles (*Aquila chrysaetos*) are expected to occur within the project area, and they are not discussed further in this EA.

Aquatic habitat within the project area consists of the lower-most reaches of the Carmel River and the Carmel Lagoon/Estuary. Surface flow in the section of the Carmel River Channel within the project area varies seasonally, with low-flow conditions generally corresponding to the dry season (i.e., May through October). Aquatic habitat provided by the Carmel Lagoon/Estuary also varies seasonally, contracting with fluctuating water surface elevation, which is dependent on the physical conditions of the sandbar that forms at the mouth of the lagoon. Habitat suitability for fish species

that may occupy the lagoon generally changes seasonally and is directly related to changes in water quality and depth, which are driven primarily by the timing of sandbar formation and both the volume and duration of freshwater inflow to the lagoon. Numerous fish species are known to inhabit waters within the project area, including native fishes such as threespine stickleback (*Gasterosteus aculeatus*), staghorn sculpin (*Leptocottus armatus*), and starry flounder (*Platichthys stellatus*) in addition to non-native species including hitch (*Lavinia exilicauda*, a California native but not native in the Carmel River), and striped bass (*Morone saxatilis*) (D.W. Alley and Associates 2014). The lower Carmel River and estuarine habitat in the Carmel Lagoon also provide habitat for the federally threatened South-Central California Coast (SCCC) steelhead (*Oncorhynchus mykiss*). This species is further discussed in Section 4.11.

4.10.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, undergrounding the CAWD pipeline, constructing berms around or elevating structures within the State Parks Barn Complex, building the causeway, removing portions of the existing levee, and reconnecting the floodplain would not occur. However, BSLT would implement a modified restoration approach on a portion of the proposed floodplain restoration area along the Carmel River to maintain existing riparian vegetation and install native vegetation in lieu of agricultural uses. These actions would result in some habitat improvement for wildlife; however, the benefit would be far less than what would be achieved under the Proposed Action. The No Action Alternative would not improve wildlife passage between the east and west sides of SR 1, as there would be no connectivity under the highway provided by a causeway. Further, under the No Action Alternative, there would be no benefits to aquatic species related to improved floodplain connectivity, such as reduced sediment contributions to the lagoon and improved groundwater levels.

4.10.2. PROPOSED ACTION

The Proposed Action has the potential to directly impact non-federally listed wildlife species within the project area through ground-disturbing activities that could: (1) result in noise and vibration that displaces individuals from preferred areas or temporarily disrupts their normal behavior; (2) harm or kill individuals through trampling, crushing, or entrapment; or (3) cause temporary or permanent habitat loss. Additionally, if frac-out were to occur during HDD associated with the CAWD pipeline component, resultant contamination could degrade habitat conditions in the vicinity. However, the Proposed Action would implement BMPs and AMMs, as described in Table 2 of the IS/MND (CAWD 2021) and Section 2.3.4, *Animal Species,* of the Final EIR/EA (USFWS and Monterey County 2020). Implementation of these measures would include carrying out a habitat restoration plan for areas of temporary disturbance in the CAWD component work area, instituting the RMP for the restored floodplain, implementing BMPs that would protect animals and their habitats from construction-related impacts and/or by-products and pollutants, and implementing stormwater pollution prevention and BMPs that would minimize construction-related impacts on water quality. Additionally, a frac-out plan would be implemented to reduce the potential for frac-out and identify response measures to minimize impacts on existing habitats, as described in Section 4.5. The Proposed Action would comply with all reasonable and prudent measures and terms and conditions set forth in the biological opinions that have been issued for the floodplain restoration, causeway,

and CAWD pipeline components, as described in Section 4.11 and summarized in Appendix B, which would also benefit non-federally listed species. Therefore, construction activities under the Proposed Action would have moderate short-term negative impacts on wildlife.

The Proposed Action could affect migratory birds if work were to occur during the breeding season. Construction activities such as vegetation removal or site grading could result in the incidental loss of eggs or nestlings or otherwise lead to nest abandonment within the project area. Further, project-related activities could produce sound levels that could disturb nesting birds near the project area. To minimize impacts on nesting birds, vegetation proposed for removal for construction and maintenance would, to the extent practicable, be removed prior to the nesting season (February 15 through September 1). If this is not possible, preconstruction surveys would be conducted prior to the commencement of construction activities. If nesting birds are identified during preconstruction surveys, an appropriate buffer would be imposed within which no construction activities or disturbance would take place (generally 300 feet in all directions). A qualified biologist would be on-site during reinitiation of work near the nest to ensure that the buffer is adequate and that the nest is not stressed and/or abandoned. No work would proceed near an active nest until all young are fledged or until after September 1 (when young are assumed fledged). Therefore, construction activities associated with the Proposed Action would have minor short-term negative impacts on migratory birds. However, given the potential for take of migratory birds to occur, the Proposed Action would be subject to the prohibitions of the MBTA and the Subapplicant would be responsible for obtaining and complying with federal and state laws for the protection of birds before initiating work.

In the long term, the Proposed Action would increase habitat availability and significantly improve habitat quality for wildlife species by restoring a substantial portion of the lower Carmel River floodplain. The Proposed Action would also improve wildlife passage by increasing connectivity between historical floodplain habitat east and west of SR 1 via construction of the causeway. Additionally, the Proposed Action would result in an increase in vegetation across the floodplain, which would provide protection for wildlife moving through the area and increased habitat for nesting, resting, and foraging. Although ongoing maintenance activities in the restored floodplain could disturb or harm wildlife, such activities would be carried out over a relatively small area and would be conducted in accordance with the AMMs described in Section 2.3.4 of the Final EIR/EA, which would minimize the potential for wildlife to be disturbed or harmed. Thus, maintenance activities are expected to have a negligible impact on wildlife. Therefore, the Proposed Action would have a major long-term beneficial impact on wildlife within the project area.

4.11. Threatened and Endangered Species and Critical Habitat

The Endangered Species Act (ESA) of 1973 gives USFWS and NMFS authority for the protection of threatened and endangered species. This protection includes a prohibition on direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat).

The ESA defines the action area as “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). Therefore, the action area where effects on listed species must be evaluated may be larger than the project area where

project activities would occur. The action area for this project encompasses the limits of construction activity (i.e., the project area) and surrounding areas potentially inhabited by federally listed species that would be subject to indirect, project-related disturbance. As such, the action area consists of all areas of anticipated direct impact; all areas where people and equipment would be working; material storage, stockpiling, and restoration areas; and aquatic habitats that may be affected indirectly by erosion and sedimentation following construction.

Based on the USFWS Information for Planning and Consultation tool, available information from NMFS, and previous ESA consultations completed for the floodplain restoration, causeway, and CAWD pipeline components of the Proposed Action, as described below, there are 12 federally listed species and two species that are proposed for listing with the potential to occur in the action area, as listed in **Table 4.5** (USFWS 2022). The likelihood of these 14 species to occur within the action area is briefly discussed below. Additionally, designated critical habitat for both CRLF and SCCC steelhead occurs within the project area.

Table 4.5. Federally Listed Species in the Project Area

Common Name	Scientific Name	Status
Amphibians and Reptiles		
California red-legged frog (CRLF)	*Rana draytonii*	Threatened
California tiger salamander – Central California distinct population segment	*Ambystoma californiense*	Threatened
Foothill yellow-legged frog – South Cost Distinct Population Segment	*Rana boylii*	Endangered
Southwestern pond turtle (SPT)	*Actinemys pallida*	Proposed Threatened
Fish		
South-Central California Coast (SCCC) steelhead	*Oncorhynchus mykiss*	Threatened
Insects		
Monarch butterfly (MB)	*Danaus Plexippus*	Proposed Threatened
Smith's blue butterfly (SBB)	*Euphilotes enoptes smithi*	Endangered
Plants		
Beach layia	*Layia carnosa*	Threatened
Coastal dunes milk-vetch	*Astragalus tener* var. *titi*	Endangered
Hickman's cinquefoil	*Potentilla hickmanii*	Endangered
Marsh sandwort	*Arenaria paludicola*	Endangered
Monterey gilia	*Gilia tenuiflora* ssp. *arenaria*	Endangered

Common Name	Scientific Name	Status
Monterey spineflower	*Chorizanthe pungens* var. *pungens*	Threatened
Yadon's piperia	*Piperia yadonii*	Endangered

Formal consultation has been completed with USFWS and NMFS for species and critical habitats identified as having the potential to be adversely affected by the floodplain restoration, causeway, and CAWD pipeline components of the Proposed Action (i.e., CRLF, SCCC steelhead, and their critical habitat). The USFWS's Wildlife and Sport Fish Restoration Program initiated formal consultation with USFWS in 2016 on the effects of these components on CRLF and its critical habitat. USFWS subsequently issued a biological opinion in 2018 (USFWS 2018). The Wildlife and Sport Fish Restoration Program also initiated formal consultation with NMFS in 2016 on the effects of the floodplain restoration and causeway components on SCCC steelhead and their critical habitat as well as essential fish habitat. The corresponding biological opinion was issued by NMFS in 2018 (NMFS 2018a). For the CAWD pipeline component, USACE originally initiated consultation with USFWS pursuant to CWA permitting in 2018 and requested that the project be covered under the *Programmatic Biological Opinion for Projects That May Affect the California Red-legged Frog, Authorized by the Corps Under Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act* (USFWS 2020). However, USACE withdrew the request in 2019 pending project redesign. In 2021, USACE submitted a revised request for formal consultation for activities consistent with those presented in this EA as the CAWD pipeline component. USFWS determined that the updated project (i.e., the CAWD pipeline component) was appropriate for inclusion under the programmatic biological opinion and issued their biological opinion in 2021 (USFWS 2021a).

USACE also initiated formal consultation with NMFS for the previous iteration of the CAWD pipeline component in 2018. This previous iteration involved extensive in-water work that would have resulted in substantial disturbance to lagoon substrates and would have required the capture and relocation of SCCC steelhead. NMFS issued their biological opinion on the previous iteration of the CAWD pipeline component in 2018 (NMFS 2018b). In 2021, NMFS confirmed that subsequent changes to the project design—consistent with the CAWD pipeline component—did not warrant reinitiation of consultation. Therefore, as confirmed by USFWS and NMFS, FEMA's obligation to comply with ESA section 7 for the floodplain restoration, causeway, and CAWD pipeline components has been satisfied provided that FEMA complies with all reasonable and prudent measures and terms and conditions set forth in the biological opinions (USFWS 2021b). Activities associated with construction of berms around or the elevation of structures within the State Parks Barn Complex have not been consulted on. However, because of compliance with all reasonable and prudent measures and the terms and conditions set forth in the biological opinions, there would be no impacts on federally listed species or designated critical habitat expected from berm construction or structural elevation for the State Parks Barn Complex. Therefore, further consultation is not necessary. An in-depth evaluation of effects of the floodplain restoration, causeway, and CAWD pipeline components on federally listed species is provided in the biological opinions referenced in this section.

California red-legged frog: CRLFs are known to breed in the action area within the lagoon, and all vegetated habitats in the action area provide suitable upland and/or dispersal habitat for the species. Therefore, CRLF juveniles and adults can be expected to occur throughout the action area, as their mobility facilitates unimpeded movement throughout the Carmel River corridor and adjacent uplands within the action area.

The entire action area is within designated critical habitat for CRLF (USFWS 2010) and contains the following features that are essential for the conservation of the subspecies: aquatic habitat for breeding and nonbreeding activities and upland habitat for foraging and dispersal activities.

California tiger salamander – Central California Distinct Population Segment: Although suitable habitat (i.e., grasslands adjacent to sufficiently deep freshwater seasonal wetlands and ponds) occurs within the action area, the species has not been observed within 1.2 miles (the maximum distance that individuals are typically expected to travel to or from breeding ponds) of the project and no ponds within 1.2 miles of the project are known to be used by the species for breeding or non-breeding purposes. All ponds within 1.2 miles of the project area have been surveyed multiple times, with no observations of the species (Denise Duffy and Associates 2016). Therefore, this species is not expected to occur in the action area and as such is not discussed further in this EA.

Foothill yellow-legged frog – South Coast Distinct Population Segment: Suitable habitat occurs within the action area; however, the species has not been observed within 5 miles of the action area within the last 110 years. Further, all observations within 5 miles of the action area, including an observation upstream of the project area within the Carmel River, are considered possibly extirpated by the CNDDB and extirpated by Lind (2005) and Jennings and Hayes (1994). Therefore, this species is not expected to occur in the action area and as such is not discussed further in this EA.

Southwestern pond turtle: The action area provides suitable habitat for this species and a 2001 CNDDB occurrence documented two individuals within the action area (CNDDB Occurrence No. 1108). Additionally, there are 3 other CNDDB occurrences of the SPT in the Carmel River within 5 miles of the action area. Therefore, the SPT can be expected to occur throughout the action area, as their mobility facilitates unimpeded movement throughout the Carmel River corridor and adjacent uplands within the action area.

South-Central California Coast steelhead: SCCC steelhead are known to use both riverine and estuarine habitats within the action area. Between late fall and early summer, when sufficient streamflow is maintained, the lower Carmel River channel is used by adult steelhead to migrate to and from spawning habitat in the upper watershed and by juveniles emigrating from the upper watershed to the lagoon, which functions primarily as rearing habitat for this species, before entering the ocean.

Critical habitat for SCCC steelhead within the action area is composed of two distinct habitat types: the lower Carmel River channel reach and estuarine habitat in the Carmel Lagoon. According to the definition of the lateral extent of critical habitat for steelhead, the ordinary high water mark within the Carmel River and extreme high water within the Carmel Lagoon bound the extent of critical habitat for SCCC steelhead within the action area.

Monarch butterfly: Suitable habitat for overwintering MBs occurs along the northeastern boundary of the project area (a row of eucalyptus trees acts as a windbreak immediately south of the CAWD wastewater treatment facility). However, this habitat would not be impacted by the Proposed Action. Proposed designated critical habitat for the MB occurs both north and south of the action area and there are 6 presumed extant CNDDB occurrences for MB within 5 miles of the action area, none of which overlap with the action area. MBs are not known to occur on or adjacent to the project area (CAWD 2021). However, because MB has been recorded near the action area (approximately 0.4 miles north), the action area is situated between two proposed units of designated critical habitat, and overwintering habitat is present, MB has some potential to occur within the action area.

Smith's blue butterfly: Coastal scrub areas within and adjacent to the action area provide suitable habitat for SBB and its obligate larval host plants (dune buckwheat [*Eriogonum parvifolium*] and seaside buckwheat [*Eriogonum latifolium*]), and several dune buckwheat plants were observed within the CAWD work area in 2020 (CAWD 2021). The nearest known occurrence of SBB is approximately 0.2 miles east of the action area on preserved land within the Palo Corona Regional Park (CDFW 2021), which is within the maximum distance that individuals are known to disperse (approximately 0.7 miles). For these reasons, SBB has some potential to occur within the action area.

Federally Listed Plant Species: Seven federally listed plant species—Beach layia, Coastal dunes milk-vetch, Hickman's cinquefoil, Marsh sandwort, Monterey gilia, Monterey spineflower, and Yadon's piperia—have the potential to occur in the portion of the action area associated with the CAWD pipeline component where suitable habitat is present. Although no occurrences of these species have been documented on or adjacent to the portion of the action area associated with the CAWD pipeline component, protocol-level rare plant surveys have not been completed for the entirety of this portion of the action area. Therefore, presence of these species within this portion of the action area cannot be ruled out.

Essential Fish Habitat: The Magnuson-Stevens Fisheries Conservation and Management Act (16 U.S.C. 1801 et seq.) designates Essential Fish Habitat (EFH) for certain commercially managed marine and anadromous fish species and is intended to protect the habitat of commercially managed fish species, including anadromous fish species, from being lost because of disturbance and degradation. Portions of the Carmel River and the Carmel River Lagoon are classified as EFH for finfish, krill, coastal pelagic species, and groundfish. The upstream/landward boundary of EFH within the action area extends to the mean higher high water level or the upriver extent of saltwater intrusion, which corresponds to a point approximately 1,000 feet upstream of SR 1.

Marine Mammal Protection Act: The Marine Mammal Protection Act (MMPA) establishes a federal responsibility to conserve marine mammals, with management vested in NMFS for cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals and sea lions, with the exception of walrus) and USFWS for all other marine mammals (e.g., sea otters). The MMPA of 1972 prohibits the "take" of any marine mammal within U.S. waters and/or by U.S. citizens on the high seas, as well as the importation of marine mammals and marine mammal products into the U.S. Pursuant to the MMPA, "take" is defined as the act of hunting, killing, capture, and/or harassment of any marine mammal,

or the attempt at such. Protections afforded by the MMPA extend to species without listing under ESA or the California Endangered Species Act. Exceptions are established for incidental take of small numbers of marine mammals where the take would be limited to harassment. An authorization for incidental take of marine mammals is called an Incidental Harassment Authorization. A single marine mammal species has the potential to occur within the project area: Pacific harbor seal (*Phoca vitulina*). This species has been observed within the open waters of the Carmel Lagoon next to the above-water portion of the existing pipelines. No other marine mammals have been documented within the project area.

4.11.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, undergrounding the CAWD pipeline, constructing berms around or elevating structures within the State Parks Barn Complex, constructing the causeway, removing portions of the existing levee, and reconnecting the historical floodplain would not occur. Although BSLT would implement a modified restoration approach to maintain existing riparian vegetation and install native vegetation in lieu of agricultural uses on a portion of the proposed floodplain restoration area along the Carmel River, resultant habitat improvements for threatened and endangered species would be far less than what would occur under the Proposed Action. The No Action Alternative would not improve passage for threatened and endangered species between the east and west sides of SR 1, as there would be no connectivity under the highway provided by a causeway. Further, under the No Action Alternative, there would be no benefits to SCCC steelhead related to improved floodplain connectivity, such as reduced flow velocities and scour potential in the Carmel River channel, reduced sediment contributions to the lagoon, and improved groundwater levels.

4.11.2. PROPOSED ACTION

CRLFs and SPTs could be adversely affected by construction activities associated with the Proposed Action where such activities are conducted in areas that support suitable CRLF or SPT habitat. Thus, CRLF and SPT would not be expected to be impacted if the structures are elevated at the State Parks Barn Complex because associated activities would be limited to areas lacking suitable CRLF and SPT habitat. For the floodplain restoration, causeway, berm construction, and CAWD pipeline components, injury or mortality could occur from CRLFs, SPTs, or SPT nests being crushed by heavy equipment, vehicles, debris, and worker foot traffic, and activities such as grading and vegetation clearing. Indirect impacts on CRLF and SPT may result from temporary habitat loss and reduced water quality due to erosion from disturbed portions of the action area during construction. Additionally, the Proposed Action would temporarily impact approximately 135.7 acres of CRLF critical habitat and may permanently impact approximately 1.7 acres of CRLF critical habitat as a result of a change in allowable land use from agricultural to Caltrans right-of-way and an additional approximate 0.7 acres if the earthen berms are constructed around the State Parks Barn Complex. However, any loss of CRLF critical habitat would be balanced by an expansion of CRLF critical habitat under the open portion of the causeway and the enhancement of existing critical habitat within the action area through floodplain restoration. Because expected impacts on CRLF would be considered “take” under the ESA, formal consultation with USFWS was conducted for the floodplain restoration, causeway, and CAWD pipeline components, as discussed above. Although ground disturbing

activities associated with berm construction were not evaluated during formal consultation for the floodplain restoration and causeway components of the Proposed Action, the State Parks Barn Complex is within the action area that was considered for these components and related construction activities are within the range of those assessed in the corresponding biological opinion. Therefore, it is expected that implementation of the measures stipulated in the biological opinion would sufficiently minimize potential adverse effects on CRLF that may result from berm construction. As such, all components of the Proposed Action would be conducted in compliance with all applicable reasonable and prudent measures and terms and conditions set forth in the biological opinions, as described in Appendix B. With the implementation of these measures and terms and conditions, construction activities under the Proposed Action would have minor short-term adverse impacts on CRLF and its critical habitat. Additionally, with the implementation of AMMs as described in Table 2 of the IS/MND (CAWD 2021) and Section 2.3.4, *Animal Species,* of the Final EIR/EA (USFWS and Monterey County 2020) animals and their habitats would be protected from construction-related impacts and by-products and pollutants. Implementing stormwater pollution prevention measures and BMPs that minimize construction-related impacts on water quality. With these measures, construction activities under the Proposed Action would have minor short-term adverse impacts on SPT.

Stressors associated with the floodplain restoration, causeway, and CAWD pipeline components of the Proposed Action could adversely affect SCCC steelhead and/or their critical habitat. Stressors caused by the floodplain restoration component would include fish stranding (mortality) that may occur on the restored floodplain, the removal of riparian vegetation along the Carmel River at the levee breaching locations as well as erosion and sedimentation that could temporarily degrade water quality. Stressors caused by the causeway component would include increased underwater sound during pile installation associated with causeway construction. Activities related to the CAWD pipeline component, including HDD and removal of the existing pipelines and supporting piles, are expected to have minimal impacts on SCC steelhead because work would be conducted in accordance with AMMs intended to minimize impacts on SCCC steelhead and their habitat. AMMs would include restricting in-water work to between May 31 and October 15, using turbidity curtains to enclose work areas, installing debris containment measures, having a biologist (with the authority to stop work) on-site during all in-water work, and implementing a frac-out plan during HDD. Activities related to berm construction or structural elevations are not expected to impact SCCC steelhead because these activities would be performed over 200 feet from the water's edge and would incorporate erosion control measures that would minimize the potential for sedimentation from overland flow of rainwater over disturbed soils to be introduced to the lagoon. Given the potential for the floodplain restoration and causeway components to adversely affect SCCC steelhead and their critical habitat, formal consultation with NMFS was completed in 2018 for both components, as discussed above. Because the USFWS's Wildlife and Sport Fish Restoration Program is no longer funding these components of the proposed action, the take statement associated with the biological opinion may no longer be relevant; however, the Proposed Action would still be conducted in compliance with all reasonable and prudent measures and terms and conditions set forth in the biological opinion, as described in Appendix B. With the implementation of these measures, terms,

and conditions, construction activities under the Proposed Action would have minor short-term adverse impacts on SCCC steelhead and their critical habitat.

Direct effects on MB and SBB in the form of harm, harassment, and mortality could occur in the action area as a result of vegetation clearing and general construction activities. Suitable habitat for MB occurs throughout the action area but would be most prevalent within the foothill riparian vegetation community that dominates the central and eastern portion of the CAWD work area adjacent to the Carmel Lagoon. Suitable habitat for SBB within the action area is limited to the coastal scrub vegetation community west of the lagoon. Construction activities proposed in suitable MB or SBB habitat include HDD, pipeline laydown, staging for pipeline removal and material management, and general construction access. The potential for construction-related impacts would be minimized for MB by implementing BMPs and AMMs as described in Table 2 of the IS/MND (CAWD 2021) and Section 2.3.4, *Animal Species,* of the Final EIR/EA (USFWS and Monterey County 2020). Implementation of these measures would include carrying out a habitat restoration plan for areas of temporary disturbance in the CAWD component work area, instituting the RMP for the restored floodplain, implementing BMPs that would protect animals and their habitats from construction-related impacts and by-products and pollutants. The potential for construction-related impacts would be minimized for SBB through the implementation of the SBB-specific AMMs described in Appendix B. These AMMs would include having a qualified biologist on-site during work activities to monitor for the presence of SBBs during the flight season (i.e., June 15 to September 15), conducting a training session to inform all project personnel about the potential presence of the species, and establishing a protective buffer around SBB host plants in areas where vegetation clearance would occur. With the implementation of all these measures, construction activities under the Proposed Action would have a negligible impact on MB and SBB.

In the absence of protocol-level rare plant surveys, the CAWD pipeline component of the Proposed Action has the potential to negatively impact the aforementioned federally listed plant species where ground disturbance occurs in suitable habitat. However, the potential for construction-related impacts on federally listed plant species that may occur in the portion of the action area associated with the CAWD pipeline component would be minimized through the implementation of the Mitigation Measure BIO-2: Special-Status Plants, as described in Section IV of the IS/MND (CAWD 2021). Implementation of this measure would entail conducting protocol-level rare plant surveys prior to initiation of the CAWD pipeline component and implementing avoidance buffers where special-status plant species, including those listed under the ESA, are observed. With the implementation of this measure, construction activities under the Proposed Action would have a negligible impact on federally listed plant species.

Impacts on EFH within the action area may occur if construction activities result in erosion and sedimentation to adjacent aquatic habitats or if the removal of the existing pipelines spanning the lagoon and supporting piles results in the suspension of sediments, thereby increasing turbidity. Additionally, post-construction flood flows could impair EFH if water flowing over the restored floodplain were to carry excessive amounts of sediment to the Carmel Lagoon. However, the Proposed Action includes specific design features and proposes extensive revegetation and other AMMs, as described in Section IV of the IS/MND (CAWD 2021) and Section 2.3.5 Threatened and

Endangered Species of the Final EIR/EA (USFWS and Monterey County 2020). These AMMs would avoid or minimize potential adverse effects on EFH. Therefore, construction activities under the Proposed Action would have a negligible impact on EFH.

Marine mammals, such as the Pacific harbor seal, rely on auditory cues for foraging, navigating, and communicating, and are sensitive to noise-related effects generated by construction activities. Project-related activities would not result in elevated in-water and/or airborne sound levels that would disturb marine mammals and result in incidental harassment and/or take. Additionally, turbidity curtains, such as those that would be used to isolate the in-water work area associated with removal of the pipeline, generally do not hinder marine mammal movement. Therefore, construction activities under the Proposed Action would have a negligible impact on species protected under the MMPA.

In the long term, the Proposed Action would increase habitat availability and significantly improve habitat quality for threatened and endangered species by restoring a substantial portion of the lower Carmel River floodplain. Additionally, where ongoing maintenance activities are required to support floodplain restoration, such activities would be conducted in compliance with the AMMs described in Section 2.3.5 of the Final EIR/EA to minimize potential impacts on federally listed species (USFWS and Monterey County 2020). Therefore, the Proposed Action would overall have a major long-term beneficial impact on federally listed species.

4.12. Cultural Resources

This section provides an overview of potential environmental effects on cultural resources, including historic properties. Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470f), requires that activities using federal funds undergo a review process to consider potential effects on historic properties that are listed in or may be eligible for listing in the NRHP. Cultural resources include prehistoric or historic archaeological sites; historic standing structures; historic districts; objects; artifacts; cultural properties of historic or traditional significance, referred to as Traditional Cultural Properties (TCPs) that may have religious or cultural significance to federally recognized Native American tribes; or other physical evidence of human activity considered to be culturally important for scientific, traditional, religious, or other reasons. To be eligible for the NRHP, a cultural resource must meet one of four criteria outlined under 36 CFR 60.4:

- **Criterion A:** It is associated with events that have made a significant contribution to the broad patterns of our history.
- **Criterion B:** It is associated with the lives of persons who are significant in our past.
- **Criterion C:** It embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction.

- **Criterion D:** It has yielded, or may be likely to yield, information important in prehistory or history.

A property must also retain sufficient integrity to demonstrate its significance. Seven aspects of integrity that are considered include location, design, setting, materials, workmanship, feeling and association.

This analysis was informed by cultural resources studies completed for the project under the direction of the respective lead implementing agencies for different components of the project. Monterey County, in cooperation with USFWS and State Parks, led studies and consultation for the floodplain restoration, causeway expansion and replacement, and State Parks Barn Complex components of the project, while CAWD, in cooperation with USACE and State Parks, led studies and consultation for the pipeline replacement component of the project. The studies included records searches of the California Historical Resources Information System, a search of the Caltrans Cultural Resource Database, research at the Monterey County Public Library and other local repositories, Native American consultation, archaeological and built environment surveys, evaluation and impact assessments, and proposed mitigation measures to reduce impacts on cultural resources within the Proposed Action project area. The studies are summarized in the Final EIR/EA (USFWS and Monterey County 2020) and Draft IS/MND (CAWD 2021). The entire Area of Potential Effects (APE) for the project has been studied.

There are three historical cultural resources and one prehistoric cultural resource within or adjacent to the APE that have been previously identified. The resources include one historical archaeological site (Fish Ranch Adobe), one prehistoric archaeological site (P-27-000150), and two historic districts (the Carmel River Floodplain Historic District and the Carmel-San Simeon Highway Historic District).

The Fish Ranch Adobe site is adjacent to the APE. No statement of eligibility was provided for the Fish Ranch Adobe site in any of the literature and studies reviewed for the Proposed Action. While not explicitly stated in the literature, USFWS correspondence with the California State Historic Preservation Officer (SHPO) indicates that the resource was assumed eligible for the NRHP for purposes of analysis for the project.

The prehistoric archaeological site (P-27-000150) extends beyond the boundaries of the current APE. A portion of the site outside the current APE was studied in 2009 and recommended eligible for the California Register of Historical Resources (CRHR). For the purposes of this project, it was determined by CAWD and State Parks that the portion of the site within the APE should also be considered eligible for the CRHR and by USACE to be eligible for the NRHP.

The Carmel River Floodplain Historic District consists of 13 buildings, structures, and/or landscape features within and adjacent to the APE. A number of historic buildings that contribute to the Carmel River Floodplain Historic District are located within State Parks property on the west side of SR 1. These buildings are associated with the former Odello property and compose the State Parks Barn

Complex: a barn, the Blacksmith Shop, the Creamery, and the former residence.[4] The western portion of the barn collapsed in 2003 after a series of thunderstorms damaged the barn, but the Creamery and the Blacksmith Shop remain standing. During NHPA Section 106 consultation between USFWS and the SHPO in 2017, the SHPO concurred that the Carmel River Floodplain Historic District is eligible for the NRHP under Criterion A for the theme of development of local commercial agriculture in Monterey; Criterion B for its long association with the Odello family and their independent ownership of a successful artichoke business; and Criterion C as a district with an area of contiguous resources united historically by physical development and use as functionally related properties.

The Carmel-San Simeon Highway Historic District was determined eligible for listing in the NRHP in 1996 (updated 2006). The Carmel-San Simeon Highway Historic District extends approximately 75 miles along SR 1 in Monterey and San Luis Obispo Counties and includes 241 contributing resources, including seven concrete arch bridges, 234 stone masonry walls, fountains, and culvert headwalls. One of the contributing culvert headwalls falls within the APE for the causeway component of the Proposed Action. The culvert headwall, while a contributor to the Carmel-San Simeon Highway Historic District, is not a contributor to the Carmel River Floodplain Historic District.

Native American Consultation

The County contacted the Native American Heritage Commission (NAHC) in 2015 with a request to review the Sacred Lands File for information regarding Native American cultural resources in the floodplain restoration, causeway, and State Parks Barn Complex portions of the project APE. CAWD contacted NAHC again in 2017 to review the CAWD portion of the project APE. The NAHC responded to both requests stating that their search did not indicate the presence of recorded Native American cultural resources in the APE and provided a list of Native American individuals and organizations who may have knowledge of potential cultural resources in the project area.

The County's consulting archaeologist sent letters and emails requesting information about potential Native American concerns regarding the floodplain restoration and causeway project components to all tribes on the list provided by NAHC in 2015, including the Ohlone/Costanoan-Esselen Nation (OCEN); the Amah Mutsun Tribal Band; the Amah Mutsun Tribal Band of Mission San Juan Bautista; the Indian Canyon Mutsun Band of Costanoan; the Costanoan Rumsen Carmel Tribe; and the Trina Marine Ruano Family (Ohlone/Miwok). The Amah Mutsun Tribal Band responded with information on the location of known villages in the region and suggested that the Esselen people are the best representatives of the project location. The Amah Mutsun Tribal Band of Mission San Juan Bautista responded and recommended cultural sensitivity training for the construction crew and the presence of trained archaeological and Native American monitors during construction.

USFWS also initiated consultation on the floodplain restoration and causeway project components in 2015 through direct mail with the Native American tribes on the same list provided to the County by

[4] The names recorded for the Carmel River Floodplain Historic District and State Parks Barn Complex are slightly different but refer to the same structures. For example, the barn of the State Parks Barn Complex refers to the Odello Barn west of the Carmel River Floodplain Historic District.

the NAHC, including OCEN; the Amah Mutsun Tribal Band; the Amah Mutsun Tribal Band of Mission San Juan Bautista; the Indian Canyon Mutsun Band of Costanoan; the Costanoan Rumsen Carmel Tribe; and the Trina Marine Ruano Family (Ohlone/Miwok). USFWS received no responses.

Between 2015 and 2020, the County consulted further with OCEN and the Esselen Tribe of Monterey County (ETMC) in accordance with Assembly Bill 52 and its implementing California Public Resources Code (PRC) on the floodplain restoration and causeway project components. As a result, the County developed a set of mitigation measures with OCEN and ETMC to avoid and minimize impacts to tribal cultural resources that were included in the Final EIR/EA (USFWS and Monterey County 2020). USFWS concluded Section 106 consultation and the County concluded Assembly Bill 52 consultation with the publication of the Final EIR/EA (USFWS and Monterey County 2020).

CAWD sent letters and emails to all tribes on the list provided by the NAHC in 2017. No responses were received. In 2020, State Parks and CAWD consulted with representatives of the ETMC, OCEN, Kakun Ta Ruk Band of Ohlone-Costanoan Indians of Big Sur (Kakun Ta Ruk), Costanoan Rumsen Carmel Tribe, Xolon Salinan, and Costanoan Ohlone Rumsen-Mutsun Tribe regarding the potential for the CAWD component of the project to affect cultural resources on State Parks property. ETMC, Kakun Ta Ruk, and Costanoan Rumsen Carmel Tribe responded. As a result, CAWD developed avoidance and mitigation measures that were incorporated into the Draft IS/MND (CAWD 2021).

4.12.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, the existing conditions at the SR 1 embankment and levees between the main river channel and the floodplain upstream of the highway would remain unchanged. Analysis of existing flood conditions at the State Parks Barn Complex by Balance Hydrologics concluded that the buildings that compose the complex are located within the 100-year floodplain and are currently at some risk under existing conditions. Under this alternative, the Creamery and the Blacksmith Shop would not be protected and would remain at a slight risk for flooding. Under this alternative, the mitigation component to underground the CAWD pipeline also would not occur, and cultural resources identified within that project area would not be impacted. Despite the slight potential for flooding historic structures currently located within the floodplain, the No Action Alternative would have negligible impacts and no adverse effects to cultural resources.

4.12.2. PROPOSED ACTION

USFWS determined that the Fish Ranch Adobe is located outside of the floodplain and there would be no short- or long-term or operational impacts or effects on the resource resulting from the project. USFWS also determined that the Carmel River Floodplain Historic District is eligible for listing in the NRHP under Criteria A, B, and C, as described above. The SHPO concurred with these findings during initial NHPA Section 106 consultation between USFWS and the SHPO on August 3, 2016. The SHPO requested additional information regarding the Carmel-San Simeon Highway Historic District before commenting on the USFWS finding of effect. USFWS provided the SHPO with a Caltrans study that analyzed the impact of demolishing a contributing feature (culvert and headwall) and the removal of a section of roadway and its replacement with a 360-foot-long elevated causeway on August 5, 2016. USFWS found that the Caltrans study supported a finding of no adverse effect to historic

properties, and the SHPO concurred with a no adverse effect to historic properties determination for the floodplain and causeway components of the Proposed Action on August 30, 2016 (Appendix D).

Additional NHPA Section 106 consultation between USFWS and SHPO in 2017 concluded that indirect, operational impacts on the Carmel River Floodplain Historic District/State Parks Barn Complex could potentially result from an increase in flood elevations that may occur as a result of the installation of the causeway, removal of the levee, and associated grading to connect the floodplain with the south arm of the Carmel Lagoon. To mitigate this effect, USFWS proposed that either berms would be constructed on the southwest and northeast sides of the State Parks Barn Complex to protect the structures or that the Creamery and Blacksmith Shop would be raised and placed on concrete foundations. On March 2, 2017, the SHPO concurred with a finding of no adverse effect to historic properties associated with elevating the structures (Appendix D). Similarly, it is expected that the construction of protective berms would cause no adverse effect to historic properties. On November 5, 2024, FEMA sent letters to OCEN and ETMC to solicit their comments on potential berm construction. No responses were received. On November 6, 2024, FEMA initiated consultation with the SHPO, recommending a no adverse effect to historic properties with conditions determination for the construction of berms as a protective measure. The SHPO concurred with the determination on December 12, 2024 (Appendix D).

CAWD and USACE determined that ground-disturbing activities within the pipeline HDD work area would occur within site P-27-000150. The work area would be cleared of vegetation, and trenching would be completed to a depth of approximately 6 feet for the drill entry and exit pits and tie-ins to existing pipelines. In some portions of the CAWD work area, the ground was previously disturbed and excavated during prior construction in the 1950s and again in the 1970s. Considering the previous disturbance, the limited amount of proposed excavation within the site boundaries, and the results of consultation with State Parks and tribal representatives, CAWD proposed protection measures and monitoring as appropriate treatment for potential impacts and effects to the resource. An archaeological monitoring plan was designed to prevent the loss of unanticipated and important archaeological data and cultural values through site protection measures and archaeological and Native American monitoring of ground-disturbing activities within the known site area.

USACE transmitted the archaeological monitoring plan (Pacific Legacy 2021) to the SHPO on July 23, 2021, to satisfy NHPA Section 106 requirements as part of their issuance of a Nationwide Permit (File #2017-00521S) for the CAWD component of the project. USACE determined that the project would have no adverse effect on historic properties based on the requirement to prepare and implement the archaeological monitoring plan and the presence of tribal and archaeological monitors during construction. USACE provided follow-up documentation regarding the eligibility of site P-27-000150 and project effect findings to SHPO on October 25, 2021. In a letter dated November 23, 2021, the SHPO requested clarity on the application of the criteria of adverse effects for the resource within the APE but did not provide concurrence on the finding of effect.

During subsequent consultation between SHPO and USACE, SHPO recommended incorporating provisions from the archaeological monitoring plan into a Historic Property Treatment Plan (HPTP). In 2023, USACE conducted additional investigations within proposed areas of ground disturbance,

including shovel test pits and radiocarbon dating. Following the additional investigations, USACE drafted a Memorandum of Agreement (MOA) outlining requirements for the CAWD component of the project, including implementation of a HPTP, avoidance and protective measures, and monitoring activities. USACE transmitted the draft MOA and HPTP to SHPO on February 28, 2024, and consultation continued between USACE and SHPO. During the ongoing consultation, SHPO provided additional input and USACE agreed to add data recovery to the MOA and HPTP. Consistent with the SHPO's recommendation, USACE submitted a revised MOA and HPTP to the SHPO on May 16, 2024, that requires the implementation of data recovery prior to construction to mitigate adverse effects to site P-27-000150. The SHPO concurred with all revisions on October 9, 2024, and the MOA was signed on October 11, 2024, by USACE and SHPO.

Mitigation measures were developed by USFWS and the County to avoid or reduce potential effects and impacts on cultural resources within the floodplain restoration, causeway, and State Parks Barn Complex components of the project. The measures were developed in consultation with the USFWS, Caltrans, State Parks, the County, BSLT, and Native American tribes. USFWS determined that implementation of the measures would reduce project impacts to a negligible level and that there would be no adverse effects to historic properties under the NHPA. The mitigation measures are listed in the Final EIR/EA (USFWS and Monterey County 2020) and are included in Appendix C.

In addition, mitigation measures were developed to avoid or minimize potential impacts on cultural resources within the CAWD pipeline component of the project. The measures were developed in consultation with USACE, State Parks, CAWD, and Native American tribes and implementation of those measures would avoid and minimize potential impacts such that there would be no adverse effects to historic properties for the CAWD component. The mitigation measures are listed in the Draft IS/MND (CAWD 2021) and are also included in Appendix C. The MOA and HPTP developed by USACE in consultation with the SHPO, CAWD, and Native American tribes to mitigate adverse effects to site P-27-000150 for the CAWD pipeline component of the project, are also included in Appendix C, Attachment A.

USFWS and USACE, in consultation with the SHPO, tribes, and other consulting parties, developed measures to avoid, minimize, or resolve adverse effects to historic properties within the APE pursuant Section 106 of the NHPA, and implementation of these measures would result in negligible impacts on cultural resources for the Proposed Action.

4.13. Socioeconomics

Demographic information is used to determine the characteristics of the population in the areas potentially affected by the range of project alternatives. The study area included in this analysis is where project-related impacts would occur, potentially causing an adverse effect on neighboring populations. Therefore, the study area for socioeconomic analysis includes the populations within the two U.S. Census Bureau (USCB) tracts that encompass the project area: Monterey County Census Tract 117 and Monterey County Census Tract 116.04.

The project area west of Highway 1 is within Monterey County Census Tract 117 with a total population of 3,793; the project east of Highway 1 is within is within Monterey County Census Tract

116.04 with a total population of 2,043 (USCB 2020). Census Tract 117 has a total land area of 2.0 square miles and a population density of 1,857; Census Tract 116.04 has a total land area of 36.9 square miles and a population density of 2,043. In Census Tract 117, the U.S. Census Bureau (2020) reported approximately 81.1 percent of the population was over 18 years old, with 34.4 percent of the population being over 65 years old. In Census Tract 116.04, the USCB (2020) reported approximately 90 percent of the population was over 18 years old, with 49.1 percent of the population being over 65 years old.

Monterey County comprises 3,281.7 square miles and has an average population density of 115 persons per square mile. According to the U.S. Census Bureau, Monterey County was reported to have 439,035 residents in 2020. An estimated 72.12 percent of those residents were high school graduates and approximately 25.7 percent were college graduates. The per capita income as of 2020 was $31,647 with the median household income being $77,514. This was lower than the state average of $39,393 and $80,440, respectively. The U.S. Census Bureau reported the racial makeup of the community as: approximately 59.37 percent Hispanic or Latino; 29.14 percent of the population White; 5.82 percent Asian; 2.58 percent of the population Black or African American; 0.17 percent Native Hawaiian and Other Pacific Islander; 0.14 percent American Indian and Alaskan Native; and 0.23 precent other (USCB 2020). Approximately 50.73 percent of the population were women and 49.27 percent were men. The closest city to the proposed project area is Carmel by the Sea with a population of 14,239 (USCB 2020).

4.13.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no construction activity that could produce noise or reduce air quality from equipment emissions. Thus, there would be no short-term impact. In the long term, the risk of flooding and associated damage would not be reduced. Continued flooding would be unlikely to result in disproportionate impacts on local populations because they are not present within or near the project area. Therefore, the No Action Alternative would not result in adverse impacts.

4.13.2. PROPOSED ACTION

Under the Proposed Action, construction noise and activity would not be expected to affect local populations because they are not present within or near the project area. Similarly, there would be no effect on local populations after construction; although, the increased reliability of SR 1 could be considered to provide a benefit to populations in the County beyond the project area. Therefore, there would be no disproportionately high and adverse impacts on local populations.

4.14. Hazardous Materials

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act. The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, which was further amended by the Hazardous and Solid Waste amendments, defines hazardous wastes. In general, both hazardous materials and waste include substances that, because of their quantity, concentration, physical, chemical, or infectious

characteristics, may present substantial danger to public health or to the environment when released or otherwise improperly managed.

An Initial Site Assessment was conducted in 2015 (Environmental Investigation Services, Inc. 2015) of the floodplain restoration and causeway work areas. Past uses that could have contributed to environmental concerns in the project area include agricultural activities (pesticides and other chemicals) and SR 1 for aerially deposited lead. The Initial Site Assessment concluded after an investigation for the presence of underground or aboveground storage tanks, naturally occurring asbestos, radon, and hazardous waste storage and disposal sites that none of these items are present within the project area or the Caltrans easement (SR 1). Three leaking underground storage tank sites; one documented spills, leaks, investigations, and cleanup site; and one voluntary cleanup site were identified within 0.5 mile of the project area. There were two incidents of leaking underground storage tanks at the CAWD treatment plant. The tanks were removed, and the site was remediated and closed in April 2003 by the SWRCB (CAWD 2021). It was concluded that these sites no longer present environmental concerns.

Lead was detected in eight soil samples that were evaluated and reported to be below RWQCB, EPA, and Caltrans thresholds. The four samples did not exceed Caltrans or California regulated hazardous waste limits for soluble lead. The four samples did have lead concentrations exceeding the Monterey County Action Level of 50 parts per million. The County Health Board ruled that they would accept lead thresholds established by Caltrans (USFWS and Monterey County 2020).

Current uses within the project area include the CAWD pump station and wastewater pipelines that carry raw wastewater and treated wastewater to and from the adjacent CAWD wastewater treatment plant. Hazardous materials are used and stored at the plant to support operations.

4.14.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, existing conditions would not change, and the agricultural preserve would not be elevated above the 100-year floodplain. Agricultural operations in the floodplain could continue to use pesticides and fertilizers, which could enter nearby surface waters. Use of hazardous materials including pesticides or fertilizers during agricultural activities would likely adhere to applicable laws and regulations regarding their use. Weed management activities would occur along existing maintenance roads and other areas within the BSLT restoration areas and may include chemical treatment. An accidental release of hazardous materials has the potential to cause a moderate effect to the Carmel River and lagoon. However, the risk of an accidental release would not change. Therefore, there would be no impact related to hazardous materials under the No Action Alternative.

4.14.2. PROPOSED ACTION

Under the Proposed Action, the known hazardous sites within a 0.5-mile radius of the project area would likely not present an environmental concern for project implementation because they are either remediated or would not be directly affected by the proposed work.

The Proposed Actions would include the temporary use of hazardous materials such as fuel, oil, solvents, and paint during construction. The accidental release of these hazardous substances into the environment could pose a threat to the Carmel River and Carmel Lagoon. The short-term duration of the use of equipment at any individual component area and the use of equipment in good condition would reduce any potential effect to an insignificant level. All equipment and project activities would adhere to local regulations to reduce the risk of leaks and spills. Any spills during implementation would be immediately contained and cleaned up in accordance with a spill prevention and pollution control plan as described in Section 4.5, Water Quality.

Additional measures to avoid or reduce the potential for adverse impacts related to hazardous materials would include removing paint striping or thermoplastic paint in accordance with Caltrans special provisions and preparing a Lead Compliance Plan as well as disposing of treated wood and paint at a solid waste facility permitted to accept such waste. Maintenance, cleaning, and refueling of equipment would not occur within riparian areas or near other environmentally sensitive areas. Monitoring of equipment to identify leaks and to ensure proper operation and storage would occur at regular intervals during construction. The contractor would secure equipment and materials storage areas and keep equipment in good condition to prevent polluted runoff from entering the environment. Construction BMPs would be implemented to reduce the risk of a hazardous materials release. All hazardous materials or soil in need of disposal would be handled in accordance with all applicable state and federal regulations. Thus, there would be a negligible short-term impact from the temporary use of hazardous materials during construction.

After construction is completed, agricultural activities in the preserve may use pesticides and fertilizers; however, the agricultural preserve would be elevated above the floodplain and there would be less risk of hazardous materials, including pesticides and fertilizers, reaching surface waters. Weed management activities for ongoing maintenance of the floodplain restoration area may include chemical treatments. An accidental release of the chemicals into the environment could pose a threat to the river and the lagoon. There would be some use of hazardous materials during maintenance of SR1, the State Parks Barn Complex, and the CAWD pipeline. Use of hazardous materials, pesticides, or fertilizers would adhere to applicable laws and regulations regarding their use. Herbicides used in the floodplain restoration area must be registered for use in California near aquatic environments and must be applied by a qualified applicator under the direction of a pest control advisor (USFWS and Monterey County 2020). There would be a negligible long-term impact from the accidental release or use of hazardous materials during operations at the agricultural preserve.

4.15. Noise

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are considered noise. Noise events that occur during the night (10 p.m. to 7 a.m.) are more annoying than those that occur during normal waking hours (7 a.m. to 10 p.m.). Assessment of noise impacts includes the proximity of the Proposed Action to sensitive receptors. A sensitive receptor is an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches, hospitals, nursing homes, and libraries. The project area is

generally surrounded by open space to the south, west, and east. Sensitive receptors near the project area consist of a recreational use structure (located at the Palo Corona Regional Park) located approximately 100 feet south of the project area, residences approximately 50 to 120 feet south of the project boundary (both nearest to the CAWD pipeline), and commercial development and residences greater than 415 feet from the boundary of the project (northwest of the project area, nearest to the SR 1 causeway). Junipero Serra School and Carmel River Elementary School are both located more than 0.25-mile north of the CAWD pipeline component.

A significant factor in the ambient noise conditions of the project area is the noise associated with SR 1. The project area is zoned as agricultural, which also generates ambient noise.

Monterey County's noise ordinance establishes a maximum noise level standard of 85 dBA (an expression of the relative loudness of sound in air as perceived by the human ear) at 50 feet for non-transportation noise sources. The County also has nighttime restrictions between the hours of 10 p.m. and 7 a.m., where noise levels must not exceed 45 dBA Leq (equivalent sound pressure level over a given period of time) or 65 dBA Lmax (maximum sound level during a single noise event), measured at the property line of the noise source. Ambient noise levels in the project area are estimated to be between 45 and 75 dBA, depending on where the measurements are taken, with louder areas associated with SR 1. Periodically, the ambient noise generated in the project area can reach approximately 85 to 90 dBA at 50 feet, such as when a diesel truck is present on SR 1 or when farm equipment is active on the site. Noise levels associated with natural phenomenon such as ocean waves and wind may also be somewhat higher in the CAWD pipeline component area as compared to inland agricultural areas.

4.15.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, the existing conditions at the SR 1 embankment and levees between the main river channel and the floodplain upstream of the highway would remain unchanged. Also under the No Action Alternative, the mitigation components to underground the CAWD pipeline and construct berms around or elevate structures within the State Parks Barn Complex would not occur. Thus, there would be no short-term impact on noise levels. In the long term, the risk of flooding would not be reduced. Floodwater would continue to overtop SR 1, requiring road closures and detours and damaging private property. Vehicles and equipment used for flood-related repairs and road detours would generate noise that could have the potential to adversely affect sensitive receptors. There would be negligible, recurring, short duration, impacts on existing noise levels from equipment used for flood-related repairs and road detours that could affect sensitive receptors in the project area over the long term.

4.15.2. PROPOSED ACTION

Most of the construction would use typical construction equipment and generate moderate levels of noise. The construction of the SR 1 causeway would require pile driving, which can result in particularly high noise levels. However, there are no sensitive receptors close enough to the SR 1 causeway component of the project to be adversely affected. Noise levels could be as high as 101 dBA at 50 feet if an impact pile driver is used. The nearest receptor is approximately 360 feet from

the pile driving, and because construction generated noise levels decline as a function of the distance from the source, the resulting potential noise levels from pile driving at the nearest sensitive receptor would be approximately 85 dBA.

Noise levels associated with other construction activities such as HDD for the CAWD pipeline undergrounding component, asphalt removal, site preparation, grading, and foundation construction would likely range from 84 dBA to 88 dBA at 50 feet from the source. The loudest equipment anticipated for the CAWD component would be the HDD drill rig, reaching noise levels of up to 83-90 dBA at 50 feet. HDD entry on the western side of the project area would also involve driving a steel pipe casing larger than the new pipes into the ground at a depth of 15 feet along the pipeline alignment, using a pipe ram. The pipe ram is expected to be used on two days for approximately two hours each day. A temporary noise barrier would be installed between the location of the pipe casing ramming activity and residents to the west of the project area. The height and location of the temporary noise barrier shall be determined based on the size and location of the pipe ram to be used, but temporary noise barriers typically provide a 5 to 10 dBA attenuation. Stationary construction equipment that causes substantial noise would be located as far away from sensitive residences as necessary to reduce noise and/or be equipped with engine-housing enclosures. Noise impacts on wildlife, migratory birds, and threatened and endangered species are discussed in Section 4.10 and Section 4.11.

While nearly all of the construction would occur during the day, paving of a limited section of SR 1 would occur at night: four times over the course of the two-year construction duration, with each occurrence lasting from one to three nights. The predicted range of noise generated during the nighttime paving would be 83 to 88 dBA at 50 feet.

Monterey County's noise ordinance establishes a maximum noise level standard of 85 dBA at 50 feet for non-transportation noise sources. The majority of the construction activities would not impact the sensitive receptors; however, implementation of a Construction Noise Mitigation Plan, consistent with the County of Monterey Noise Control Ordinance, would reduce any potential adverse effects to a short-term moderate effect during construction.

The operation of the project would not result in a permanent increase in ambient noise levels as it would not include any increases in traffic or creation of new permanent noise sources. Therefore, there would be no long-term operational noise impacts.

4.16. Transportation

Major access into the project area is via SR 1 and various paved and unpaved roads that intersect SR 1. The driveway to the CAWD wastewater treatment plant and a partially overgrown unpaved maintenance road on California State Parks property on the western side of the project area is accessible at the north end of the SR 1 causeway project area. Several trails and paved and unpaved roads that provide access to Palo Corona Regional Park and the Odello East Property (State Parks Barn Complex and the floodplain restoration site) are accessible via a driveway on the east side of the central portion of the SR 1 causeway project area. The residential area, Carmel Meadows,

is located at the southern end of the SR 1 causeway project area, where Calle La Cruz and unpaved access roads and trails provide access to the western side of the project area.

4.16.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no construction and the existing conditions at SR 1 would remain unchanged. Thus, there would be no short-term impact on transportation. In the long term, the risk of flooding would not be reduced. Floodwater would continue to overtop SR 1, requiring short-term road closures and detours. Vehicles and equipment used for flood-related repairs and road detours would generate intermittent additional traffic and congestion in the area. There would be minor long-term impacts on transportation in the project area.

4.16.2. PROPOSED ACTION

Causeway

The Proposed Action would generate temporary increases in trips to the causeway component of the project area but would result in little to no increases in traffic resulting from construction. The project has been designed to avoid traffic impacts, mainly by construction of the temporary detour road. The project would generate approximately 20-70 daily automobile trips for project construction workers, and up to an additional 5-10 truck trips per day for materials and equipment delivery during the construction period. This level of additional trips would not materially affect traffic on SR 1 or any other local streets. Project-related construction of the SR 1 causeway would include construction of a temporary detour road, demolition of existing culverts and paving, two phases of utility relocation, pile driving, bridge construction, paving, signage and striping, and removal of the temporary detour road. Visual impacts on SR 1, a state-designated scenic highway, are discussed in Section 4.3. Changes in profile grade and construction of the temporary detour road may result in minor modifications and temporary impacts to the four driveways located along the length of the SR 1 causeway. Contractor staging areas for the causeway component would be located on both sides of SR 1 so that construction could occur with minimal movement of construction equipment across the highway. During construction, the proposed temporary detour road would accommodate bike traffic along eight-foot-wide shoulders; however, a separated bike path is not proposed as part of the final project. Construction of the causeway component would result in temporary lane closures and could temporarily result in reduced emergency access during construction. However, because the temporary detour road would be essentially the same length, capacity, and location of the existing roadway, the reduced access would be minimal and short-lived. After the causeway and associated SR 1 work is complete, the temporary detour road would be removed and the area under the causeway would become a temporary construction road used to move soil from the west side of SR 1 to the east. Once the project is complete, the temporary road would then become part of the proposed trail system/maintenance access system.

Floodplain Restoration

All construction for the floodplain restoration component would be performed without any temporary road closures or detours. As part of the floodplain restoration component, a new trail connection

would provide a recreational crossing under SR 1 and provide public access from the Palo Corona Regional Park to the Carmel River State Beach property.

CAWD and State Parks Barn Complex

To facilitate construction access and staging for the CAWD pipeline undergrounding and State Parks Barn Complex berm construction or structural elevation, portions of existing access roads and adjacent upland areas on the east and west sides of the lagoon would need to be mowed, hand trimmed, or cleared and grubbed, stabilized, and widened to accommodate vehicular access, equipment and material storage, and pipeline lay-down. This portion of the project would include one staging area east of the lagoon, one staging area west of the lagoon, and one staging area at the existing CAWD wastewater treatment plant. The majority of the trails north of Carmel Meadows would remain open for the duration of the project; however, one trail would close for the duration and two others would remain open with flagger-managed delays.

Under the Proposed Action there would be no long-term or operational impacts on traffic circulation. Nearby businesses and amenities would remain open and accessible during the duration of the project. Additional potential benefits of the project would include the construction of trails/access roads that connect with existing neighboring trails. Trail and access road improvements within the project area would modify existing roads and trails, provide additional connections to existing trails and access roads adjacent to the project area, and provide increased public access (Appendix A, Figure 5).

4.17. Public Services and Utilities

Underground and overhead utilities are within or near the SR 1 causeway work area and on State Parks property that could be affected by the floodplain restoration, causeway construction, and construction of the earthen berms or Creamery and Blacksmith Shop building elevation. There are existing overhead electric lines along the south bank levee. Utilities include AT&T telecommunication lines; Pacific Gas and Electric overhead electric lines, poles, and gas main; Comcast overhead cable television line; a California American Water Company (CalAm) water main; and a well and electric service panel owned and operated by State Parks. Other wells in the area would be protected in place. The CAWD wastewater treatment plant is to the west of the project area. The CAWD sewer force main pipeline and treated wastewater pipeline cross through the project area within an easement that connects the Carmel Meadows Pump Station, treatment plant, and treated wastewater outfall to the Pacific Ocean.

First responders for the project area include the California Highway Patrol, California Department of Forestry and Fire Protection (CALFIRE), Cypress Fire Protection District, Monterey County Sheriff's Office, State Parks Rangers, and private emergency medical transportation services. SR 1 is an emergency access route for the County as identified in the Monterey County General Plan. There are many fire, police, and medical transport service providers with facilities within 10 miles of the project area.

The pipeline alignment, State Parks Barn Complex, and a portion of the floodplain restoration and causeway work areas are within the Carmel River State Beach. Some floodplain restoration work would occur on and adjacent to the Palo Corona Regional Park (Appendix A, Figure 3), which is owned by the MPRPD. Both public parks are protected by the Park Preservation Act, which prohibits acquisition of property that is in use as a public park unless sufficient compensation, or land, or both is paid for the property. A sufficient amount of compensation would enable the parks agency to replace the park land and associated facilities. Multiple existing maintenance and public access roads and recreational trails exist within the Palo Corona Regional Park and Carmel River State Beach. There are also public access roads and recreational trails adjacent to the project area.

4.17.1. NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no construction or alteration of utilities and roadways within the project area. There would be no effects to emergency service capacity or access through the area. Under the No Action Alternative, there would be no adverse impacts on Carmel River State Beach or Palo Corona Regional Park because no work would occur on park lands.

4.17.2. PROPOSED ACTION

As part of the floodplain restoration component, a new trail connection would provide a recreational crossing under SR 1 and provide public access from the Palo Corona Regional Park to the Carmel River State Beach property. Work would occur on MPRPD and State Parks property, and an access agreement would be established with the project proponents for long-term maintenance. Trail and access road improvements within the project area would modify some existing agriculture roads and establish some new trails and maintenance roads. These trails and access roads would provide connections to existing trails and access roads adjacent to the project area (Appendix A, Figure 5). Temporary construction easements would be obtained from both park agencies before construction. During construction of access road and trail improvements, there could be temporary public access restrictions on MPRPD property. However, signs would inform the public of these restrictions for safety purposes during construction. Therefore, there would be negligible short-term impacts during construction.

The land to be used for the project on park property would remain under the ownership of MPRPD and the state. Therefore, the Proposed Action would be in compliance with the Park Preservation Act. Moderate long-term benefits would be provided by the access road and trail improvements (Appendix A, Figure 5) and expanded public access to areas that are currently not accessible, and by connecting the two parks with a new public trail.

Under the Proposed Action, the SR 1 roadway and associated utilities would be reconstructed in essentially the same locations as they currently exist and the CAWD wastewater pipelines would be relocated slightly. All existing underground utilities would be relocated to casings within the proposed causeway bridge deck, or another location not conflicting with the proposed causeway, as part of the Proposed Action. All existing overhead utilities along SR 1 would be relocated underground within the SR 1 right-of-way. Existing utilities at the State Parks Barn Complex would not need to be relocated or modified.

During construction there could be temporary service interruptions and outages to some utility services. Some utilities would be temporarily relocated during the construction of the temporary detour road to minimize impacts. Relocated utilities would include telecommunication and cable lines, electric transmission lines, a gas main, and a water main. There would be a short service interruption while service is switched to the temporary utility lines and a second brief interruption would occur during the switch from the temporary to the permanent utility lines. Relocation and construction designs would be reviewed and approved by each utility owner before construction to minimize negative effects to infrastructure and service. Service users would be notified in advance of the potential for temporary interruptions and outages. Therefore, there would be minor short-term adverse impacts on utility services. The placement of overhead utilities underground and construction of the causeway itself would have a moderate long-term beneficial effect because the risk of damage to utilities from flooding and wind in the right-of-way would be substantially reduced.

Emergency access routes and response times would be maintained on SR 1 during construction via the temporary detour road in accordance with a construction transportation management plan. After construction, the new section of SR 1 would provide the same capacity for service and response times as under existing conditions. There would not be any increase in demand for emergency services after construction and no adverse impacts on emergency services would occur.

The causeway construction would require additional right-of-way within the Carmel River State Beach boundary. State Parks would transfer jurisdiction of the additional right-of-way (approximately 1 acre) to Caltrans. The ownership of the property would remain with the state.

The new CAWD pipeline would be installed outside of the existing easement and would follow a straight trajectory (Appendix A, Figure 6). The CAWD wastewater treatment plant would not be affected by the project. During construction there could be temporary service interruptions and outages to wastewater services. Therefore, there would be minor short-term adverse impacts on utility services. In addition to protecting the pipelines from increased risk of erosion and scour due to the floodplain restoration and causeway components, the Proposed Action would also increase the resilience of the pipelines against other natural hazards such as earthquakes. Therefore, the Proposed Action would have a moderate long-term beneficial effect on the CAWD utility service.

4.18. Summary of Effects and Mitigation

Table 4.6 provides a summary of the potential environmental effects from implementation of the Proposed Action, any required agency coordination efforts or permits, and any applicable proposed mitigation or BMPs.

Table 4.6. Summary of Impacts and Mitigation

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Geology, Topography, Soils, and Farmland Soils	Minor short-term adverse impact on soils and farmland soils; minor long-term impact on topography; minor long-term benefit on soils and farmland soils by reducing the risk of flooding and elevating agricultural preserve. No effect on geology.	Monterey County Grading Permit	• All ground-disturbing activity would be subject to erosion control requirements for water quality. • Erosion Control Plan would be developed in accordance with Chapter 16.08 of the Monterey County Code, Section 16.08.340.
Visual Quality and Aesthetics	Minor short-term adverse impact from construction activity; minor long-term benefit from reduced risk of flooding.	Not applicable (N/A)	N/A
Air Quality	Minor short-term adverse impact; negligible long-term benefit from reduced risk of flooding and associated roadway closure and detours.	N/A	• The County would comply with all federal, state, and local air quality regulations and water would be applied to the project area and equipment as necessary to control fugitive dust emissions (USFWS and Monterey County 2020).

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Water Quality	Negligible short-term adverse impact; moderate long-term beneficial effect to surface water and groundwater beneficial uses and water quality by increasing groundwater storage, sediment, and nutrient filtration.	• USACE CWA Section 404 • RWQCB CWA Section 401 WQ Cert. • RWQCB NPDES General Construction Permit • CDFW 1602 Lake and Streambed Alteration Agreement • Monterey Peninsula Water Management District River Work Permit	• Install temporary water quality BMPs during grading activities and around stockpiles and staging areas. • SWPPP Development, Implementation, Monitoring and Reporting. • Use a turbidity curtain and monitor water quality during construction within the lagoon. • Schedule levee and SR 1 embankment removal to avoid flooding during construction. • Provide construction monitoring during levee removal by the engineer. • Frac-Out Contingency Plan implementation.
Coastal Resources	Negligible short-term adverse impact; minor long-term beneficial effect by maintaining access to recreational and visual resources and protecting lands of agricultural value.	• Federal Consistency Review • California Coastal Commission, Coastal Development Permit	• Subapplicant would comply with all requirements of water quality permits. • Subapplicant would develop and Erosion Control Plan.

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Wetlands	Minor short-term adverse impacts; moderate long-term beneficial effect because of wetland habitat expansion and improvement to floodplain function from floodplain restoration.	• USACE CWA Section 404 • RWQCB CWA Section 401 WQ Cert.	• Vegetation removal must not exceed the minimum necessary. • Ground disturbance within 100-foot buffer from Carmel River Lagoon is restricted between June 1 and October 31 (CAWD Pipeline Only). • Monitoring by a qualified biologist during construction. • Place construction mats over wetlands where temporarily impacted (CAWD Pipeline Only) and restore with native vegetation after construction. • Install protective fencing to keep construction vehicles and personnel out of wetlands. • RMP implementation. • Frac-Out Contingency Plan implementation.
Floodplains	Negligible short-term adverse impacts; moderate long-term beneficial effects on floodplain function, hydrologic connection of the river to the floodplain, and flood risk damage reduction to public, infrastructure, adjacent properties and historic buildings.	• FEMA CLOMR • FEMA LOMR	• RMP implementation. • Complete CLOMR and LOMR.

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Vegetation	Moderate short-term adverse impacts; major long-term beneficial effects from the improvement and expansion of native vegetation communities in the restored floodplain.	N/A	• To minimize impacts on existing vegetation communities, activities involving vegetation removal activities would be conducted in accordance with applicable BMPs and AMMs described in Table 2 in the IS/MND (CAWD 2021) and Section 2.3.1, Natural Communities, of the Final EIR/EA (USFWS and Monterey County 2020).
Fish and Wildlife	Moderate short-term adverse impacts on wildlife in general; minor short-term adverse impacts on migratory birds specifically; major long-term beneficial effect on wildlife, including migratory birds, from increased habitat availability and significantly improved habitat quality associated with floodplain restoration.	N/A	• To minimize impacts on wildlife, the Proposed Action would implement BMPs and AMMs described in Table 2 of the IS/MND (CAWD 2021) and Section 2.3.4, Animal Species, of the Final EIR/EA (USFWS and Monterey County 2020). • To minimize impacts on nesting birds, vegetation removal would be conducted in accordance with the measures described in Section 4.10.

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Threatened and Endangered Species	The project would have no impact on the California tiger salamander – Central California distinct population segment. The project would have minor short-term negative impacts on CRLF, SCCC steelhead and their critical habitats but would have a major long-term beneficial impact on both species because of increased habitat availability and significantly improved habitat quality associated with floodplain restoration. The project would have a negligible impact on SBB, federally listed plant species, EFH and species protected under the MMPA.	USFWS and NMFS Formal Consultation	Measures to protect CRLFs, SCCC steelhead and SBB would be implemented and are described in detail in Appendix B.
Cultural Resources	No Adverse Effects to Historic Properties with mitigation measures.	N/A	Mitigation measures developed by USFWS, the County, USACE, CAWD, and consulting parties are discussed in Section 4.12 as they appear in the Final CRFREE EIR/EA and in an MOA for the CAWD pipeline component.
Socioeconomics	No disproportionately high and adverse impacts on local populations.	N/A	N/A

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Hazardous Materials	Negligible short-term adverse impact from hazardous materials, vehicle and equipment use; negligible long-term impact from the accidental release or use of hazardous materials during operations at the agricultural preserve.	N/A	• Construction BMPs would be implemented to minimize impacts from the use of hazardous materials during construction. • Implement RMP for pesticide and fertilizer use. • Equipment would be kept in good condition. • Any spills or leaks from equipment would be contained and cleaned up in accordance with a spill prevention and pollution control plan. • All equipment, use of hazardous materials and project activities would adhere to applicable regulations to reduce the risk of hazardous leaks and spills. • A Lead Compliance Plan would be required for paint removal activities. • Hazardous materials and soil must be disposed of in accordance with all applicable state and federal regulations.
Noise	Minor temporary adverse impacts from increased noise within the project area and the immediate vicinity of the work; no long-term noise impacts.	N/A	• A temporary noise barrier would be installed between the location of the pipe casing ramming activity and residents to the west of the project area. • Stationary construction equipment that causes substantial noise would be located as far away from sensitive residences as necessary to reduce noise and/or be equipped with engine-housing enclosures.

Affected Resource Area	Impacts	Agency Coordination or Permits	Mitigation/BMPs
Transportation	No short-term impact because of construction of the temporary detour road. Minor long-term beneficial effect by the construction of trails/access roads that connect with existing neighboring trails.	Caltrans District 5 - Encroachment Permit	• The transportation management plan would provide information related to public awareness, temporary traffic control measures, safety measures, and construction notification information.
Public Services and Utilities	Negligible short-term adverse impacts from construction activities to park access. Minor short-term impacts on utility services. No adverse effects to emergency access routes and response times. Moderate long-term beneficial effect by improving trails and public access, replacing overhead utilities and the CAWD pipeline underground.	State Parks – Right of Entry / Easement	• Contractor would prepare a transportation management plan to include provisions for emergency vehicle access through the project area during construction. • Utility owners must review and approve of all utility relocation plans and interruptions of service before construction. • Signage would be placed along public access and trail segments restricting access to the public during construction.

SECTION 5. Cumulative Impacts

This section addresses the potential cumulative impacts associated with the implementation of the Proposed Action. Cumulative impacts can be defined as the impacts of a proposed action when combined with impacts of past, present or reasonably foreseeable future actions undertaken by any agency or person. FEMA's Instruction 108-1-1 for implementing NEPA requires an assessment of cumulative effects during the decision-making process for federal projects. Cumulative impacts can result from individually minor but collectively significant actions.

Table 5.1 identifies completed, ongoing, and proposed projects within the study area. Based on the analysis provided in this EA, the Proposed Action may have a beneficial cumulative impact on water quality, coastal resources, wetlands, floodplains, and public services and utilities. Impacts on all other resources are not considered cumulatively considerable as they are short-term construction-related impacts that would be fully mitigated to a less-than-significant level through the incorporation of mitigation measures identified in this EA.

Table 5.1. Completed, Ongoing, and Proposed Projects in and Near the Project Area

Completed Projects	
Project	**Description**
Carmel River Lagoon Enhancement Project, State Parks	The first phase of restoration was completed in 2004 and included restoration of the south arm of the Carmel Lagoon on State Parks property.
Carmel River Mitigation Bank, Caltrans	Caltrans and State Parks cooperatively funded the CRMB, a 43-acre area in the Odello West field, previously used for agricultural production of artichokes, adjacent to and east of the mouth of the Carmel River. The CRMB was originally developed in 1996 for off-site mitigation for the Hatton Canyon Scenic Highway project, but the project was never built. The site was restored instead to mitigate for future wetland and riparian habitat impacts associated with transportation projects in the Monterey area. Under the restoration plan, 37 acres of woody riparian species and 6 acres of freshwater wetland species were planted from 1996 to 1998.
CAWD Wastewater Treatment Plant Access Road	Relocated road designed to function as an overflow weir during 10-year or greater floods, allowing flood waters from the Carmel River to pass through culverts under the road or over "at grade" sections to the floodplain surrounding the south arm of the Carmel Lagoon.

Completed Projects	
Project	**Description**
Aquifer Storage and Recovery	The Aquifer Storage and Recovery project allows excess winter flows from the Carmel River to be diverted through CalAm facilities and injected into the Seaside Groundwater Basin for later extraction to reduce the amount of unauthorized pumping from the Carmel River during summer and fall. The Monterey Peninsula Water Management District began the Aquifer Storage and Recovery Project in 2001 with one test well. A permanent well was constructed and operated in 2009, followed by a second well in 2010, and third and fourth wells in 2016.
Carmel River Notch	In 2004, a small section of the south levee was removed to alleviate flooding on the north bank of the Carmel River.
Palo Corona Parking Lot	A 57-car parking lot was constructed in 2015 for recreationists at Palo Corona Regional Park.
Eastwood Water Rights Petition	In 2015, Water Rights License 13868 was split into two new licenses, 13868A and 13868B, maintaining existing and authorizing new points of diversion, places of use, and purposes of use for one license (85 acre-feet per year), and dedicating a portion of water under the original license to instream uses (46 acre-feet per year).
Rancho Cañada Forbearance	The Trust for Public Land and CalAm executed an interim water use forbearance for three years through 2019. A total of 300 acre-feet per year water would not be pumped from the Carmel River system during this time period as a result of ceasing irrigation of the former 36-hole Rancho Cañada golf course.
San Clemente Dam Removal and Carmel River Reroute	Removal of the San Clemente Dam and reroute of a segment of the Carmel River was completed in 2015 to alleviate seismic safety concerns, restore habitat, and improve anadromous fish access to the watershed. The dam was downstream of the Carmel River and San Clemente Creek confluence south of Carmel Valley.

Ongoing and Proposed Projects	
Project	**Description**
County Service Area 50 Flood Control Program	The 2014 County Service Area 50 Final Lower Carmel River Stormwater Management and Flood Control Report identifies several potential flood control improvement projects to reduce the risk of flood in County Service Area 50. County Service Area 50 encompasses 173 acres along the north bank of the Carmel River.
Carmel Area State Parks General Plan	Open-space land uses in State Park areas in the Carmel Area are managed under the 2021 Carmel Area State Parks General Plan.
Carmel Lagoon Ecosystem Protective Barrier, Scenic Road Protection Structure, and Interim Sandbar Management Plan Project	This project includes construction of a protective barrier and armoring of bluffs adjacent to Scenic Road to provide a long-term solution to the annual mechanical breaching and improve natural habitat conditions in the Carmel Lagoon. The Final EIR for the project was released in August 2024.
Monterey Peninsula Water Supply Project	This project includes construction of a desalination facility in the City of Marina and associated improvements to CalAm's distribution system intended to provide additional supply to help reduce CalAm's pumping from the Carmel River. The California Coastal Commission approved the project in November 2022.
Pure Water Monterey Groundwater Replenishment Project	This project includes injection of advanced treated recycled water into the Seaside Groundwater Basin for later extraction to help reduce CalAm's pumping from the Carmel River. The project will produce up to 3,500 acre-feet per year of new water by recycling wastewater.
Rancho Cañada Village Specific Plan	This project includes the development of an approximately 76-acre area within the former West Course at Rancho Cañada Golf Club. The project site will be a mix of residential and recreational use, with residential units and a restored riparian open-space corridor.

The Proposed Action would result in short-term moderate adverse impacts on vegetation and fish and wildlife from construction. The Proposed Action would also result in short-term negligible to minor adverse impacts on topography, soils and farmland soils, visual quality and aesthetics, air quality, water quality, coastal resources, wetlands, floodplains, threatened and endangered species, hazardous materials, noise, transportation, and public services and utilities from construction. The Proposed Action would result in negligible to major long-term benefits on soils and farmland soils, visual quality and aesthetics, air quality, water quality, coastal resources, wetlands, floodplains,

vegetation, fish and wildlife, threatened and endangered species, transportation, and public services and utilities.

If any of the projects identified in Table 5.1 are constructed at the same time as the Proposed Action, there may be adverse cumulative short-term impacts from construction. However, all of the cumulative projects considered would implement BMPs and mitigation measures to reduce impacts to the maximum extent practicable. In the long term, the Proposed Action, in conjunction with most of the projects identified in Table 5.1, would restore hydrologic connectivity with the upper and lower reaches of the Carmel River, improve surface water flow, and improve existing sensitive habitats and habitat for special-status species. Therefore, there would be a long-term beneficial cumulative impact from the Proposed Action and the cumulative projects considered.

SECTION 6. Agency Coordination, Public Involvement, and Permits

This section provides a summary of the agency coordination efforts and public involvement process for the proposed CRFREE project including coordination efforts and public involvement processes leading up to the development of this Draft EA for the Proposed Action. In addition, an overview of the permits that would be required under the Proposed Action is included.

6.1. Previous NEPA/California Environmental Quality Act Evaluations

The Proposed Action alternative analyzed in this Draft EA includes project components that were analyzed for environmental impacts within two separate environmental impact studies. The CRFREE EIR/EA is a combined NEPA/California Environmental Quality Act (CEQA) document, and it analyzed the environmental impacts of the floodplain restoration and causeway components. The IS/MND is a CEQA document, and it analyzed the environmental impacts of the CAWD pipeline undergrounding component. These documents and the public involvement processes for each are described below.

6.1.1. CRFREE EIR/EA

Prior to preparation of this Draft EA, the USFWS and Monterey County prepared the CRFREE Draft EIR/EA and Final EIR/EA in accordance with CEQA Guidelines (14 CCR § 15000 et seq.) and NEPA (40 CFR §1501 of the CEQ Regulations). The CRFREE Draft EIR/EA was completed and circulated for public review in 2019, and the Final EIR/EA was completed in 2020. The Final EIR/EA includes the comments received on the Draft EIR/EA and provides responses to the comments. The chronology of the Draft and Final EIR/EA public review process includes the following:

- March 6, 2018 – CEQA Notice of Preparation distributed to State Clearinghouse
- March 26, 2018 – CEQA Scoping Meetings (2), recording of verbal comments, and distribution/submittal of comment sheets
- March 7, 2019 – CEQA Notice of Availability to State Clearinghouse and published in the Monterey County Weekly newspaper and County's website.
- March 8 to April 22, 2019 – Public comment period
- April 16, 2019 – County Service Area (CSA)-50 Draft EIR/EA public meeting.

The CRFREE project and Mitigation Monitoring and Reporting Plan was approved by the County of Monterey Board of Supervisors June 15, 2021 (Monterey County 2021). A CEQA Notice of Determination was issued on June 17, 2021, from the CDFW and Monterey County and it was determined that the project would not have a significant effect on the environment. Mitigation measures were made a condition of approval, and a mitigation program including avoidance, minimization, and mitigation measures was adopted for the project. The EIR/EA analysis resulted in the CEQA findings that the CRFREE Project would not result in significant impacts on the

environment with implementation of mitigation measures stated in the EIR/EA.[5] It was also determined that the CRFREE project may result in overall beneficial cumulative effect on hydrology, water quality, and biological resources and impacts on other resources are not considered cumulatively considerable. A NEPA FONSI was issued by the USFWS in October of 2020 (Monterey County 2024).

6.1.2. CRFREE MITIGATION PIPELINE UNDERGROUNDING PROJECT IS/MND

Potentially significant impacts related to the CAWD outfall and sewer force main were identified in the EIR/EA and mitigation measures were identified requiring the replacement of the outfall and force main underground and removal of the existing above ground pipelines. The pipeline replacement is required to be completed prior to changes to the floodplain by the CRFREE project. Subsequently, CAWD, as the lead agency, started planning and designing the CRFREE Mitigation Pipeline Undergrounding Project and prepared a Draft IS/MND and Final IS/MND in accordance with CEQA Guidelines (14 CCR § 15000 et seq.). The Draft IS/MND was completed in 2020 and circulated for public review from June 25 through July 26, 2021. The Final IS/MND was completed in 2021 and includes comments received and responses to those comments. CAWD issued a Notice of Determination on August 26, 2021, and determined that the project would not have a significant effect on the environment. Mitigation measures were made a condition of approval, and a mitigation monitoring and reporting program was adopted for the project.

6.2. Agency Consultation and Coordination

6.2.1. FLOODPLAIN RESTORATION, CALTRANS CAUSEWAY, AND STATE PARKS HISTORIC BUILDINGS MITIGATION

During the preparation of the Final EIR/EA, coordination included the scoping process (Notice of Preparation and scoping meetings), consultation and coordination with public agencies and tribal governments, and public participation. This process is detailed in Section 4 of the Final EIR/EA (USFWS and Monterey County 2020).

Formal consultation with USFWS to address potential effects on CRLF was concluded with issuance of a USFWS biological opinion in 2018 (Appendix D). The USFWS biological opinion determined that the project is not likely to result in the destruction or adverse modification of CRLF critical habitat and included an incidental take permit for construction of the project. Re-initiation of formal consultation would be required if CRLF take exceeds the incidental take limits established in the USFWS biological opinion. USFWS initiated consultation with NMFS to address potential effects on SCCC steelhead. A NMFS biological opinion was issued in 2018 and an Erratum letter was issued about a month later. The NMFS biological opinion concluded that the project is not likely to jeopardize the continued existence of SCCC steelhead, nor is it likely to result in the destruction or adverse modification of designated critical habitat. The NMFS biological opinion included an

[5] Available at: https://www.countyofmonterey.gov/government/departments-a-h/housing-community-development/planning-services/library-current-major-projects/carmel-river-free

incidental take permit and reinitiation of formal consultation would be required if the take exceeds the limits established in the NMFS biological opinion.

The Natural Resources Conservation Service was consulted with regard to compliance with the Farmland Protection Policy Act. A Farmland Conversion Impact Rating form (Form AD 1006, Part I and III) was completed as part of that consultation. Consultation was completed in 2016 and then re-initiated in 2018 with an updated Farmland Conversion Impact Rating form.

Under the National Historic Preservation Act, USFWS consulted with SHPO and addressed potential impacts on historic properties. SHPO concurred with USFWS's finding of no adverse effect on historic properties in a memo issued on August 30, 2016. In 2017, USFWS re-initiated consultation with SHPO due to newly identified impacts. SHPO concurred with the finding of no adverse effect with the implementation of mitigation measures on March 2, 2017, including elevating the Creamery and Blacksmith Shop within the State Parks Barn Complex. Similarly, it is expected that the construction of berms would cause no adverse effect to historic properties. On behalf of USFWS, FEMA initiated consultation with the SHPO on November 6, 2024, recommending a no adverse effect to historic properties with conditions determination for construction of the berms. The SHPO concurred with the determination on December 12, 2024. Caltrans consulted with the SHPO regarding the permanent removal of the culvert headwall for the causeway construction. The SHPO concurred with Caltrans' finding that the Proposed Action would have no adverse effect on historic properties.

Tribal consultations were initiated by USFWS in December of 2015 in accordance with Section 106 of the NHPA. Letters were sent to tribes and other individuals with interests in the area identified by the Native American Heritage Council. No responses to the letters were received and the consultation was concluded. Monterey County initiated consultation with OCEN in December of 2015 in accordance with Assembly Bill 52. The County proposed mitigation based on coordination and communication during the consultation. OCEN did not provide a formal response to the proposed mitigation and the consultation was closed in October 2018. The ETMC requested a formal consultation in a comment letter to the Draft EIR/EA. The County initiated consultation with ETMC in December 2019 and met with an ETMC staff member in January of 2020. Mitigation measures that were proposed in the Draft EIR/EA (CUL-1 through CUL-5, CUL-7 and CUL-10) were modified in the Final EIR/EA. Consultation was closed in January of 2020.

Caltrans District 5 Public Resources Code 5024 Compliance – Consultation concluded August 2016.

6.2.2. CAWD PIPELINE UNDERGROUNDING AND REPLACEMENT

Activities related to the pipeline undergrounding were not included in the Final EIR/EA coordination. For this component of the project, USFWS completed formal consultation in accordance with Section 7 of the ESA, on July 22, 2021 (2021-F-0462). On September 2, 2021, USFWS concluded that FEMA's ESA Section 7 obligation to consult on the Proposed Action with USFWS has been satisfied because the portions of the project proposed for funding by FEMA are covered by the relevant biological opinions (Appendix D). FEMA will comply with all reasonable and prudent measures and terms and conditions set forth in the biological opinions (USFWS 2021b). NMFS completed consultation with USACE on the CAWD pipeline undergrounding in 2018 (Appendix D). In 2021,

NMFS also confirmed with USACE that project changes proposed after consultation did not warrant reinitiation of consultation.

CAWD consulted with State Parks about cultural resources within the pipeline undergrounding area beginning in February 2018, and additional consultation was conducted in August 2020 regarding monitoring for the geotechnical bores conducted during preparation of the Draft IS/MND. The work was monitored by Native American representatives from the Kakoon-Ta-Ruk Band of Ohlone-Costanoan Indians and completed in November 2020. It was determined in December 2020 that an existing cultural resource in the project area was eligible for listing in the NHRP. Mitigation measures and construction controls to protect the resource, and monitoring during construction by a Native American representative would be implemented during construction. An archaeological monitoring plan for the known resource would be prepared and reviewed by State Parks prior to construction start. Several avoidance measures to reduce impacts on the site during construction were also discussed. USACE agreed that preparation of an archaeological monitoring plan was appropriate and that there would be no adverse effect to the resource with implementation of the plan and associated mitigation measures (Pacific Legacy 2021).

Following additional investigation and consultation, USACE submitted an MOA to the SHPO on February 28, 2024, outlining requirements for the CAWD component of the project, including implementation of an HPTP, avoidance and protective measures, and monitoring activities. During subsequent consultation, SHPO provided additional input and USACE agreed to include provisions for data recovery at site P-27-000150 in the MOA and HPTP. USACE submitted a revised MOA and HPTP to the SHPO on May 16, 2024, that requires the implementation of data recovery at site P-27-000150 prior to construction and outlines measures to avoid, minimize, or mitigate adverse effects to historic properties. The MOA was signed by USACE and the SHPO on October 11, 2024.

USACE completed tribal consultations to satisfy Section 106 requirements as part of the issuance of Nationwide Permit 58 (File #2017-00521S) for the Proposed Action (USACE 2022).

CAWD contacted interested tribal representatives and individuals identified by the Native American Heritage Commission in February 2021. Formal consultation was conducted with the ETMC, Kakoon Ta Ruk, and Costanoan Rumsen Carmel Tribe. All three tribes requested monitoring during construction by Native American representatives with 1 designated primary monitor and rotation of secondary monitors to allow for multi-tribe involvement. The mitigation measures discussed with the Native American representatives were incorporated into the archaeological monitoring plan prepared for the CAWD component of the Undertaking (Pacific Legacy 2021).

6.2.3. FEMA CONSULTATIONS

FEMA is adopting the previous consultations described above for compliance with the ESA and NHPA and will ensure measures identified through those consultations are implemented. Therefore, FEMA agrees with the conclusions of those consultations as well as the effects determinations and mitigation measures identified. Section 4.18 provides a summary of potential environmental effects from implementation of the Proposed Action, required agency coordination efforts or permits, and proposed mitigation or BMPs.

6.3. CRFREE EA

In accordance with NEPA, this draft EA will be released to the public and resource agencies for a 30-day public review and comment period. Comments on this draft EA will be incorporated into the final EA, as appropriate. This draft EA reflects the evaluation and assessment of the federal government—the decision maker for the federal action. However, FEMA will take into consideration any substantive comments received during the public review period to inform the final decision regarding grant approval and project implementation. If no substantive comments are received from the public and/or agency reviewers, this draft EA will be assumed to be final and a FONSI will be issued by FEMA consistent with the findings presented in Section 4.18 and Section 5.

As discussed in Section 4.18, the Proposed Action would result in short-term moderate adverse impacts on vegetation and fish and wildlife from construction. The Proposed Action would result in short-term negligible to minor adverse impacts on topography, soils and farmland soils, visual quality and aesthetics, air quality, water quality, coastal resources, wetlands, floodplains, threatened and endangered species, hazardous materials, noise, transportation, and public services and utilities from construction. The Proposed Action would result in negligible to major long-term benefits on soils and farmland soils, visual quality and aesthetics, air quality, water quality, coastal resources, wetlands, floodplains, vegetation, fish and wildlife, threatened and endangered species, transportation, and public services and utilities.

As discussed in Section 5, If any of the projects identified in Table 5.1 are constructed at the same time as the Proposed Action, there may be adverse cumulative short-term impacts from construction. All of the cumulative projects considered, however, would implement BMPs and mitigation measures to reduce impacts to the maximum extent practicable. In the long term, the Proposed Action, in conjunction with most of the projects identified in Table 5.1, would restore hydrologic connectivity with the upper and lower reaches of the Carmel River, improve surface water flow, and improve existing sensitive habitats and habitat for special-status species. Therefore, there would be a long-term beneficial cumulative impact from the Proposed Action and the cumulative projects considered.

Monterey County will make the draft EA available on their website at: https://www.countyofmonterey.gov/government/departments-a-h/housing-community-development/planning-services/library-current-major-projects/carmel-river-free.

The draft EA will also be available on FEMA's website at: https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository.

Hard copies of the draft EA will be made available at the Monterey County Government Center Permit Desk at 1441 Schilling Place, 2nd floor, Salinas, CA 93901. The comment period for the draft EA will start when the public notice of EA availability is published and extend for 30 days.

Comments on the draft EA may be submitted to fema-rix-ehp-documents@fema.dhs.gov (include "CRFREE" in the subject line). Comments may also be submitted via mail to the FEMA Region IX Environmental Officer at FEMA, 1111 Broadway, Suite 1200, Oakland, California 94607.

6.4. Permits

The permits and approvals shown in **Table 6.1** have been issued or would be required for construction of the Proposed Action.

Table 6.1. Permits and Approvals Status

Agency	Permit/Approval	Status
Floodplain Restoration and Causeway		
U.S. Army Corps of Engineers	CWA Section 404 Nationwide Permit 27 (Aquatic Habitat Restoration)	Authorized on November 14, 2019, Re-authorized June 3, 2022.
FEMA	CLOMR and LOMR	CLOMR has been processed by Monterey County and the LOMR will be processed after construction.
California Coastal Commission	Coastal Development Permit	Issued July 29, 2022.
Caltrans District 5	Encroachment Permit	Permit application will be submitted once final plans are completed.
California RWQCB Central Coast Region	CWA Section 401 Water Quality Certification	Issued March 25, 2022.
California RWQCB Central Coast Region	NPDES General Construction Stormwater Permit	Notice of Intent and SWPPP will be submitted prior to construction.
CDFW	Section 1602 Streambed Alteration Agreement	Issued August 2, 2022.
California Department of Parks and Recreation	Right of Entry	Issuance prior to construction.
Monterey Peninsula Water Management District	River Work Permit	Issued July 21, 2020.
Monterey County	Grading Permit	Issuance prior to construction.
Monterey County	Administrative Design Approval	Issuance prior to construction.
Monterey Peninsula Regional Park District	Encroachment Permit	Issuance prior to construction.
CAWD Pipeline Undergrounding and Replacement		
U.S. Army Corps of Engineers	CWA Section 404 Nationwide Permit 58 (Utility Line Activities for Water and Other Substances)	Authorized on January 11, 2022.
California RWQCB Central Coast Region	CWA Section 401 Water Quality Certification	Certification issued on November 23, 2021.
California Department of Parks and Recreation	Right of Entry (Easement)	Issuance prior to construction.
California Coastal Commission	Coastal Development Permit	Issued April 9, 2021.

Agency	Permit/Approval	Status
California RWQCB Central Coast Region	NPDES General Construction Stormwater Permit	Submit Notice of Intent (NOI) prior to construction.
CDFW	Section 1602 Streambed Alteration Agreement	Issued on September 23, 2021.

SECTION 7. List of Preparers

The following is a list of preparers who contributed to the development of the CRFREE draft EA for FEMA. The individuals listed below had principal roles in the preparation of this document. Many others, including senior managers, administrative support personnel and technical staff contributed, and their efforts were no less important to the development of this EA.

Federal Emergency Management Agency

Reviewers	Role in Preparation
Jeffrey Smyly (Regional Environmental Officer)	Technical Review and Approval
Holm, Lisa	Technical Review and Approval
Klatzker, Adam	Technical Review and Approval
Cohen, David	Technical Review and Approval

CDM Smith/SWCA Environmental Consultants

Preparers	Experience and Expertise	Role in Preparation
Bankston, Sam (CDM Smith)	Biologist	NEPA Documentation
Cimino, Stephanie (SWCA)	Senior Project Manager	NEPA Documentation
Fogler, Wilson (CDM Smith)	Biologist	NEPA Documentation
Grimsley, Donielle (CDM Smith)	Environmental Scientist	NEPA Documentation, Task Leader
Hansen, Heather (CDM Smith)	GIS Specialist	GIS
Roberts, Jessica (CDM Smith)	Environmental Engineer	NEPA Documentation
Stenberg, Kate (CDM Smith)	PhD, Senior Biologist, Senior Planner	Project Technical Lead, Technical Review
Weddle, Annamarie (CDM Smith)	Environmental Planner	NEPA Documentation
Wilkins, Suzanne (CDM Smith)	Environmental Planner	NEPA Documentation

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Appendix A. Project Figures

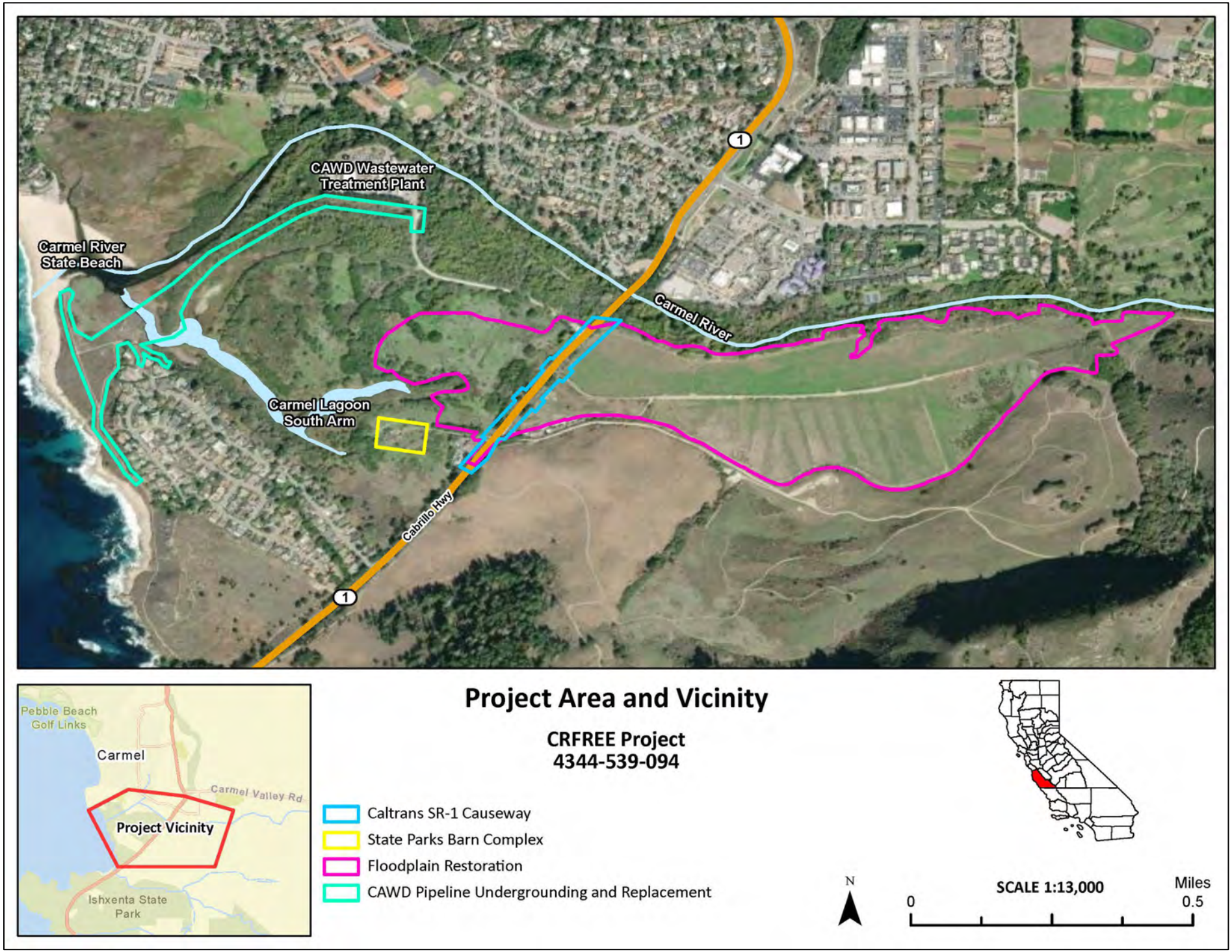


Figure 1. Project Area and Vicinity

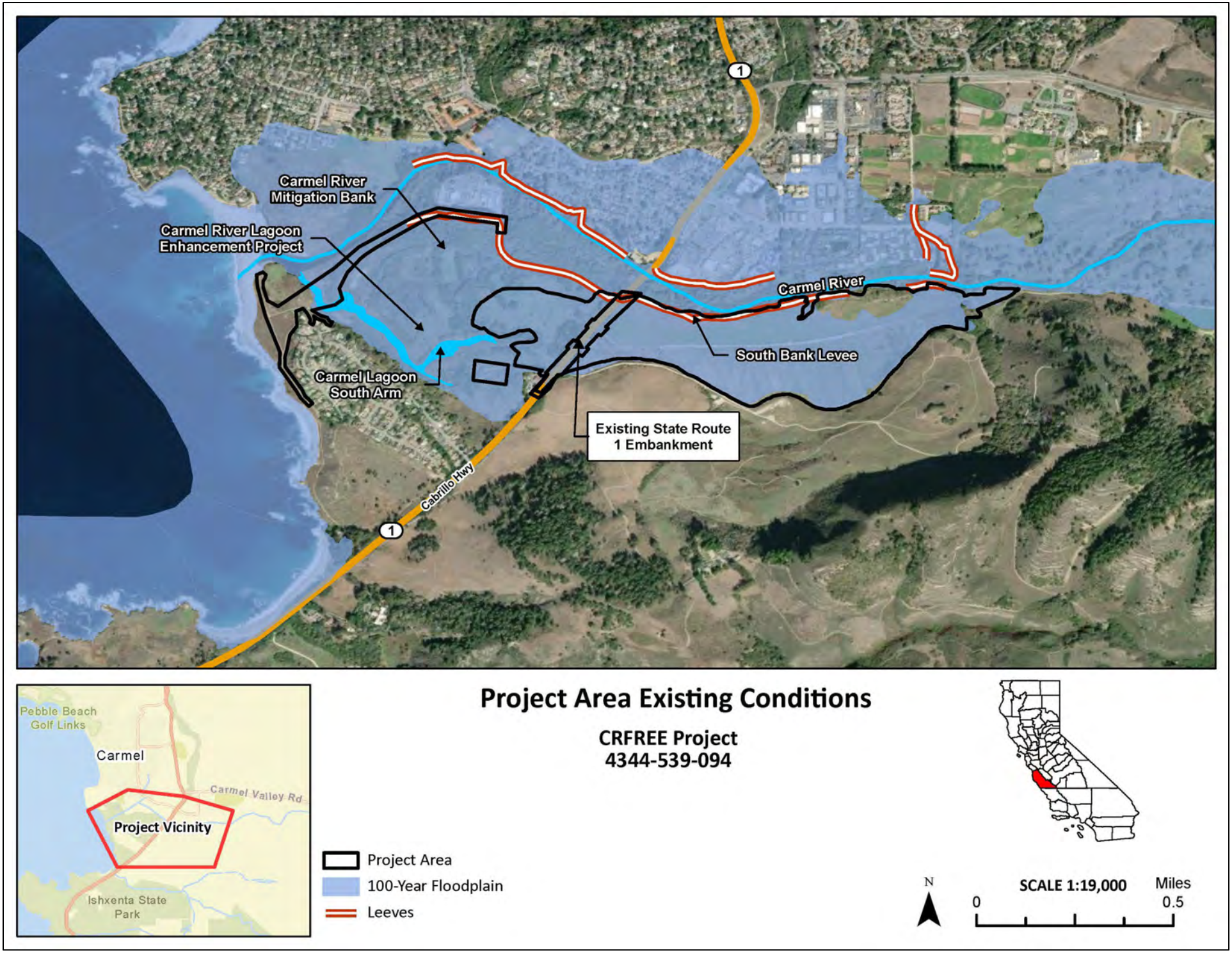


Figure 2. Project Area Floodplain

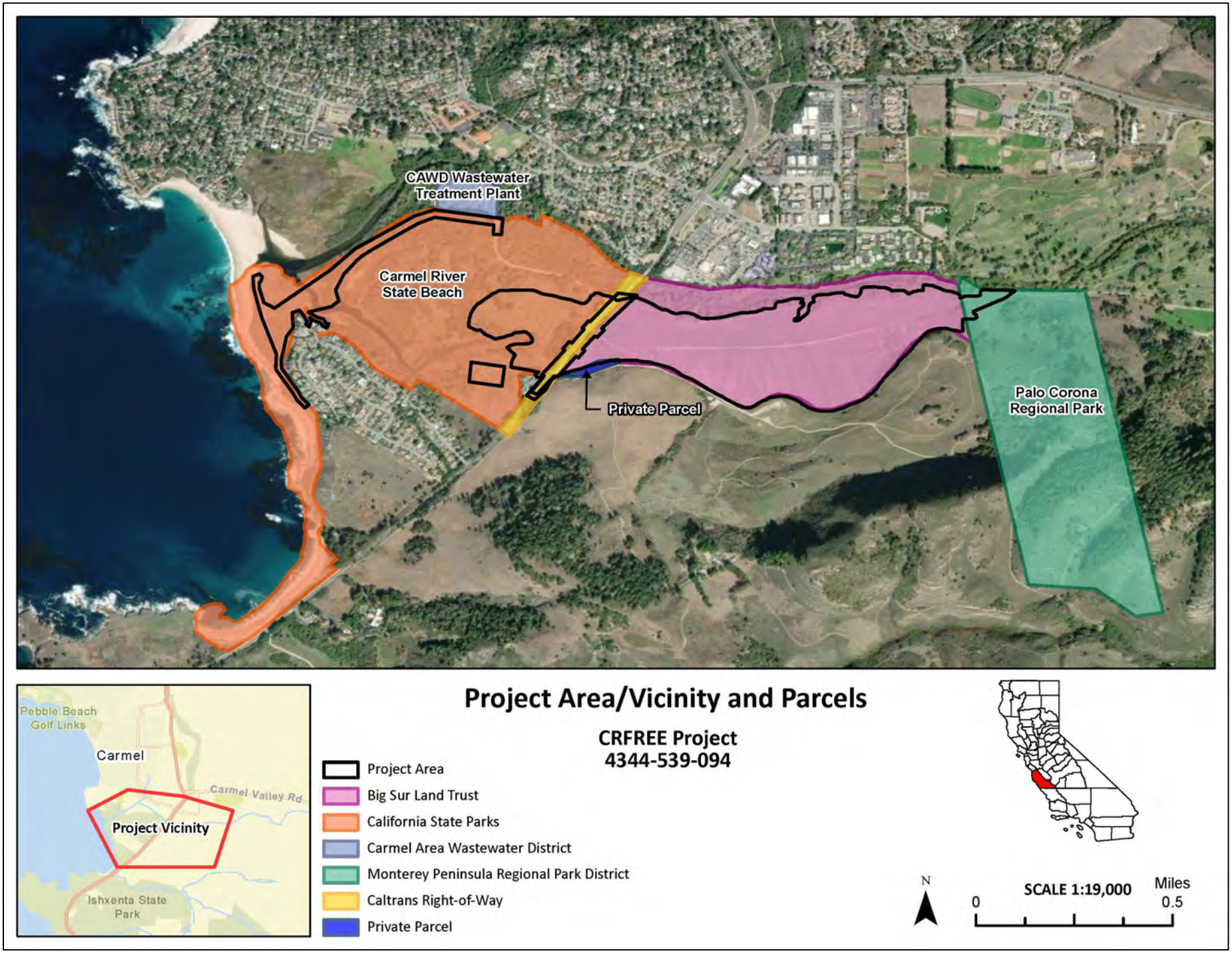


Figure 3. Property Ownership

Figure 4. Temporary Detour Road

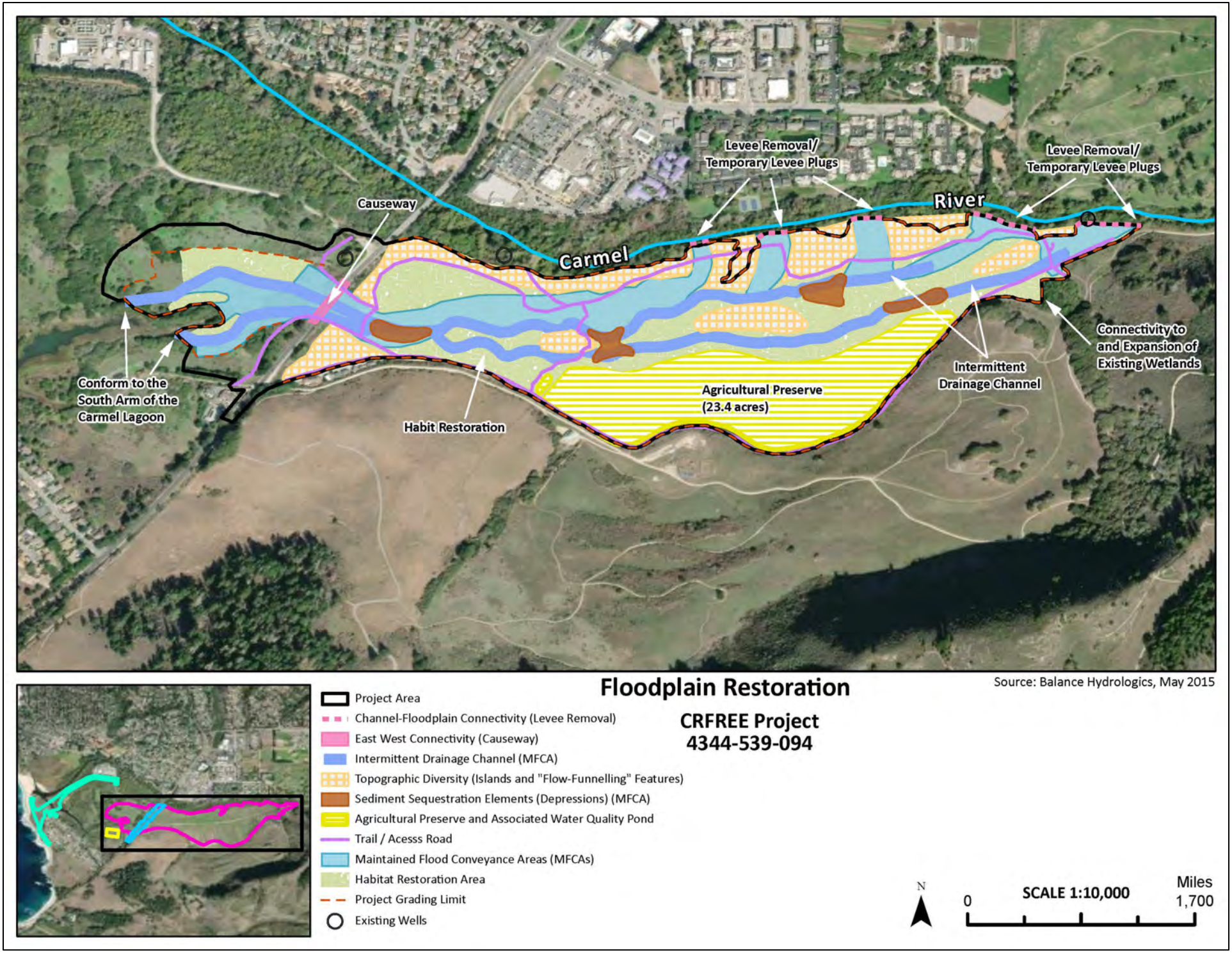


Figure 5. Floodplain Restoration

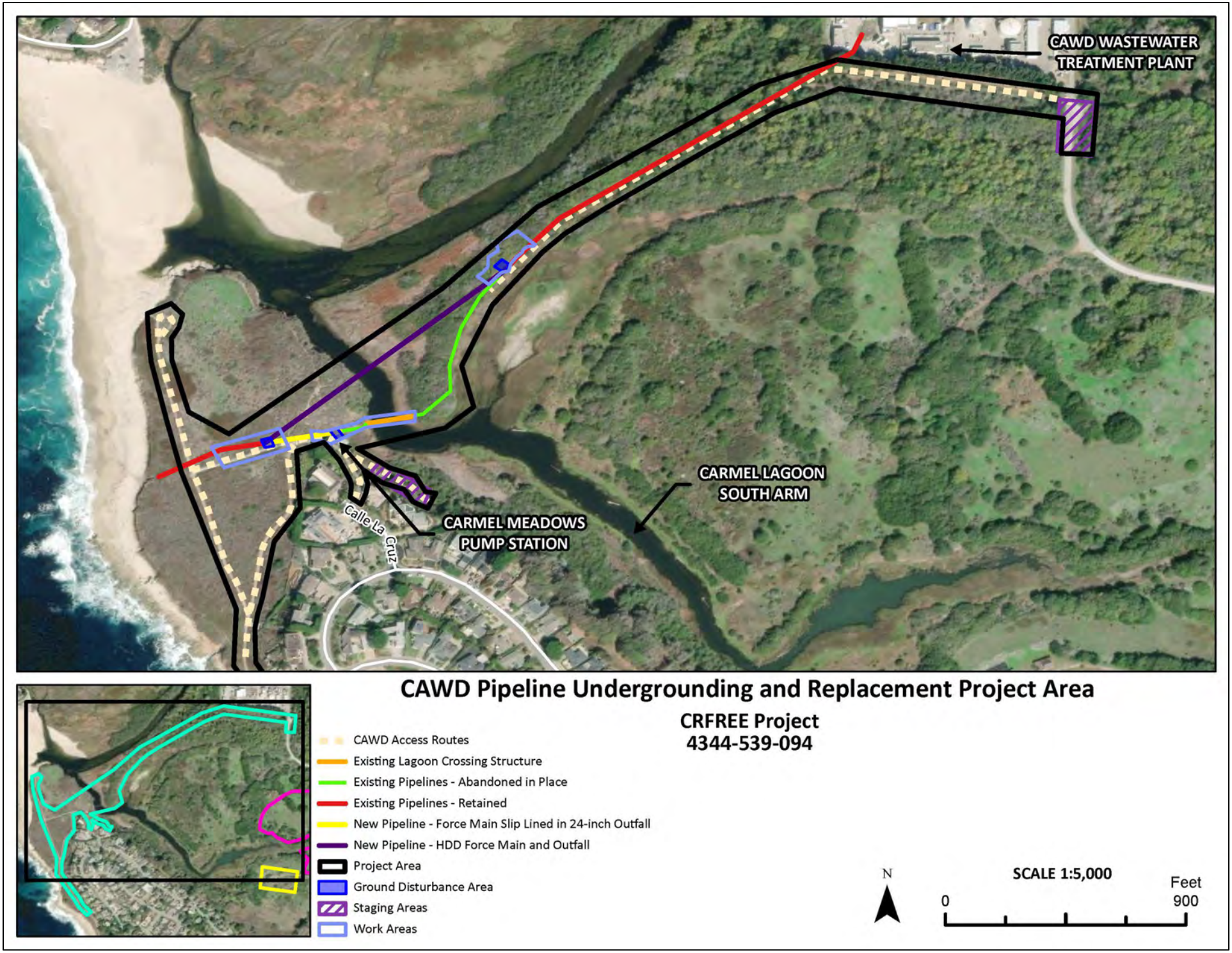


Figure 6. CAWD Pipeline Undergrounding and Replacement Project Area

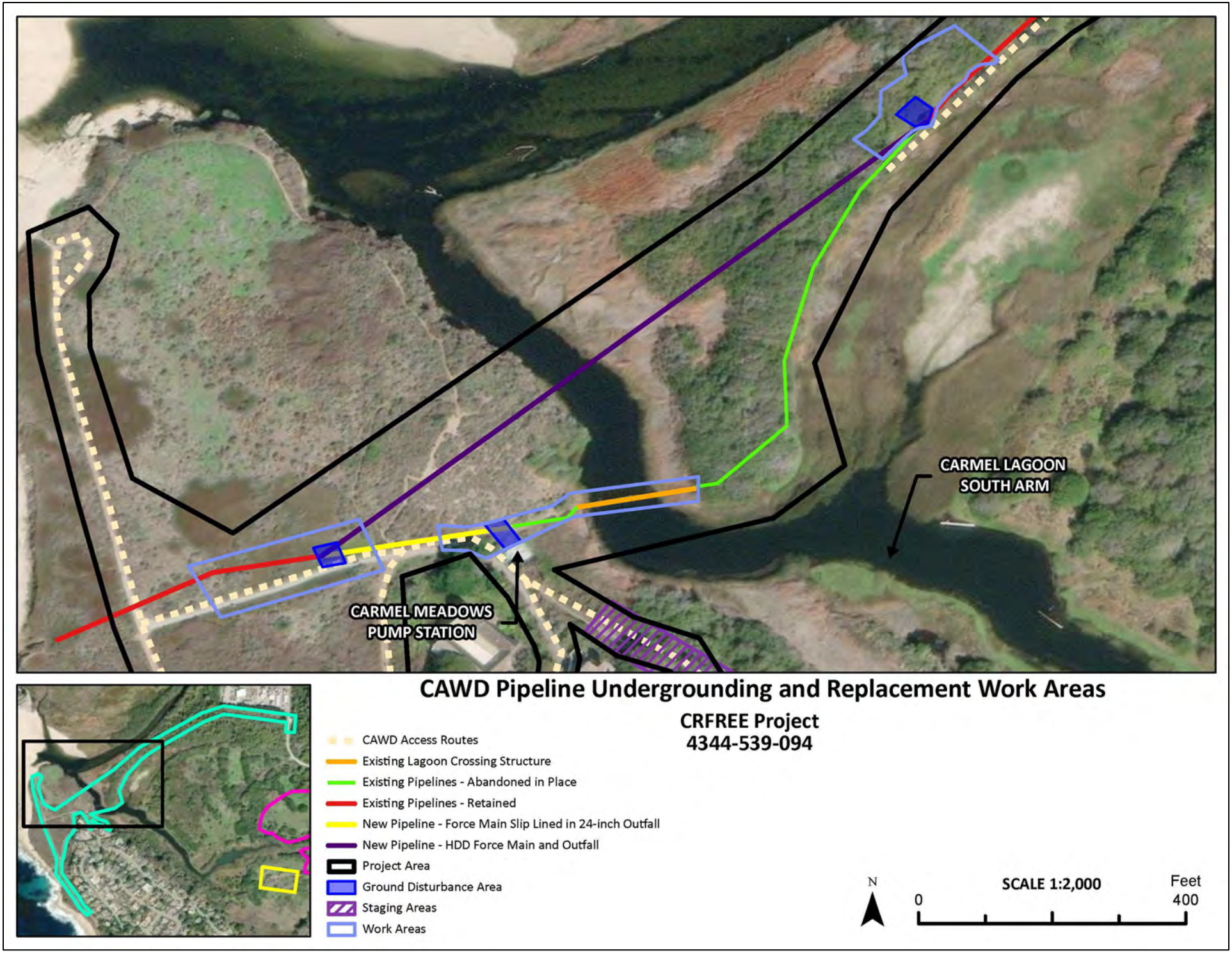
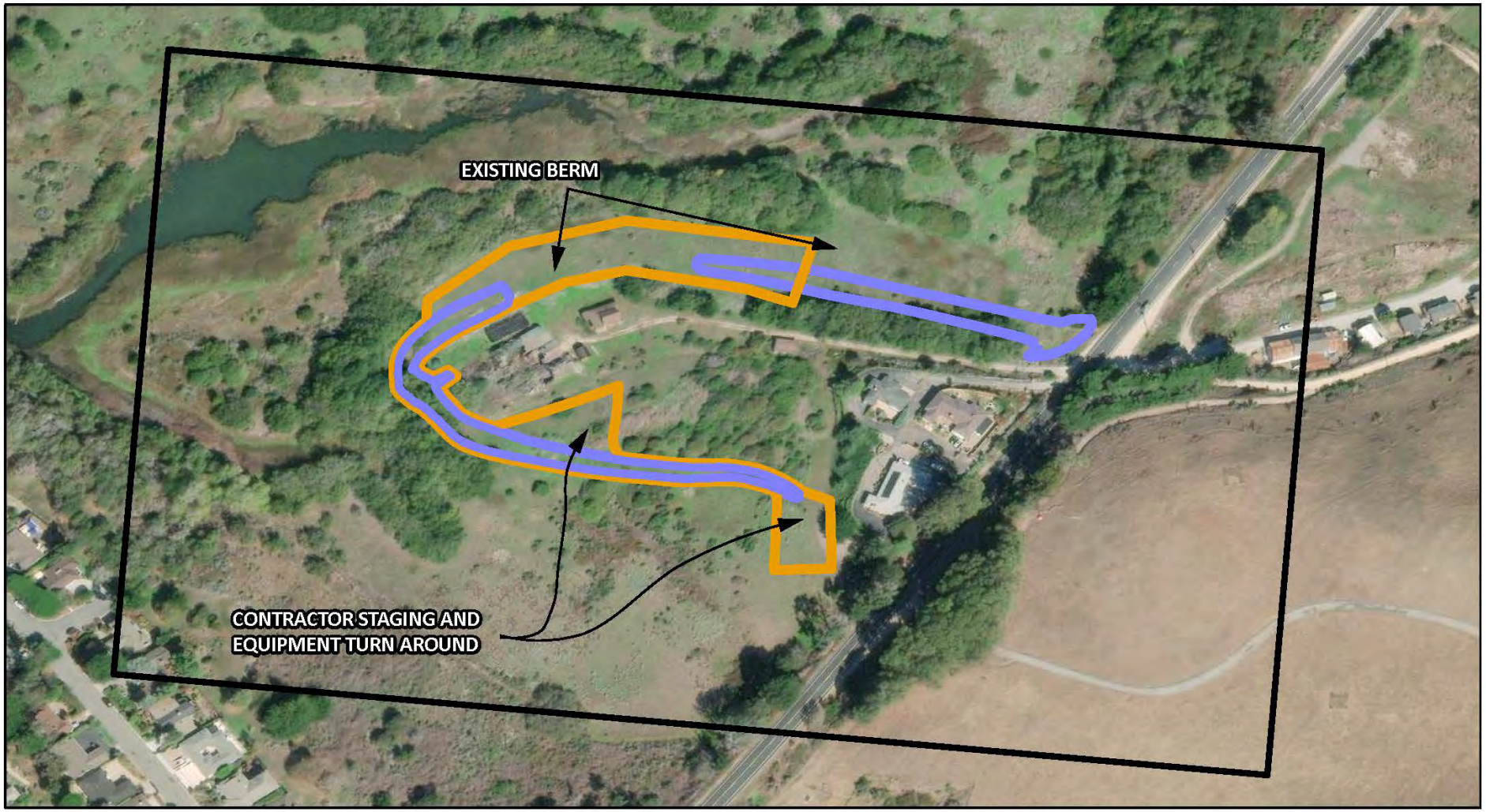


Figure 7. CAWD Pipeline Undergrounding and Replacement Work Areas



State Parks Complex Berm Construction

CRFREE Project
4344-539-094

Project Area
Grading and Berm Placement
Temporary Impact Area

N

SCALE 1:3,000

0 Feet 600

Figure 8. State Parks Barn Complex – Berm Option

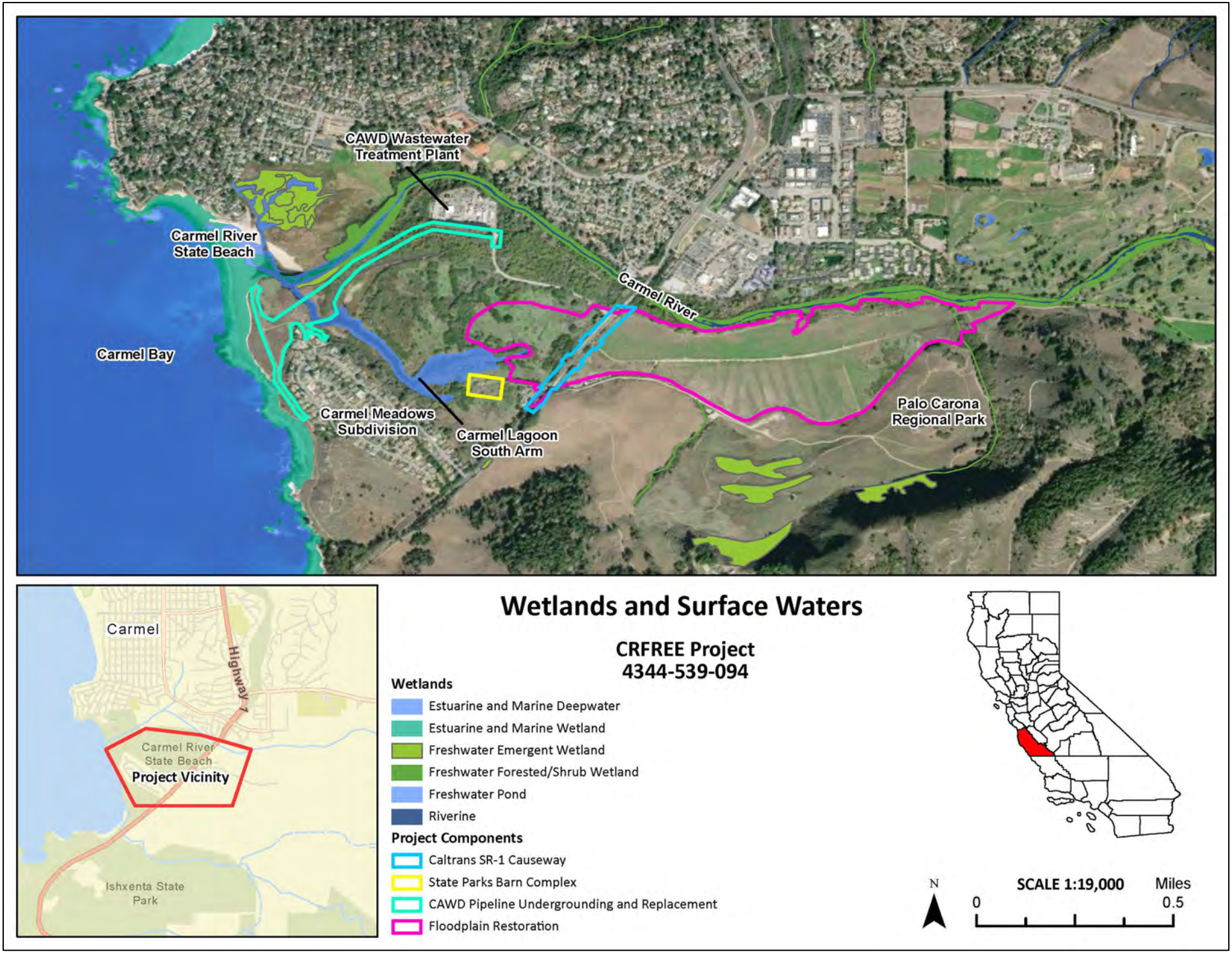


Figure 9. Wetlands and Surface Waters

Appendix B. Avoidance and Minimization Measures for Federally Listed Species

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	California red-legged frog (CRLF) Protection	Minimization of Adverse Effects	1	For any project with permanent impacts to suitable aquatic or upland California red-legged frog habitat within the Corps' permit area, the Corps, through the applicant, will submit an appropriate habitat compensation proposal (described in Mitigation of Adverse Effects below). If appropriate, this may include a restoration, monitoring, and management plan, which will be developed in coordination with the Service. The proposal must be approved by the Service prior to initial ground disturbance.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	2	Only Service-approved biologists will participate in activities associated with the capture, handling, and monitoring of California red-legged frogs. The applicant will not begin ground disturbance until they receive written approval from the Service that the biologist is qualified to conduct the work. Biologists approved under this biological opinion do not need to re-submit their qualifications for subsequent projects conducted pursuant to this biological opinion, unless we have revoked their approval at any time during the life of this biological opinion.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	3	A Service-approved biologist will survey the project site no more than 48 hours before the onset of work activities. If the Service-approved biologist finds any life stage of the California red-legged frog and these individuals are likely to be killed or injured by work activities, the applicant will allow the Service-approved biologist sufficient time to move them from the site before work begins. The Service-approved biologist will relocate the California red-legged frogs the shortest distance possible to a location that contains suitable habitat and that will not be affected by activities associated with the proposed project. The relocation site should be in the same drainage to the extent practicable.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	4	Before any activities begin on a project, a Service-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the California red-legged frog and its habitat, the specific measures that are being implemented to conserve the California red-legged frog for the current project, and the boundaries within which the project may be accomplished. The Service-approved biologist may use brochures, books, and briefings in the training session, provided that a qualified person is on hand to answer any questions.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	5	A Service-approved biologist will be present at the work site until all California red-legged frogs have been relocated out of harm's way, workers have been instructed, and disturbance of habitat has been completed. After this time, the Service-approved biologist will designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist will ensure that this monitor receives the training outlined in measure 4 above and in the identification of California red-legged frogs. If the monitor or the Service-approved biologist recommends that work be stopped because California red-legged frogs would be affected in a manner not anticipated by the Corps and the Service during review of the proposed action, they will notify the resident engineer (the engineer that is directly overseeing and in command of construction activities) immediately. The resident engineer will either resolve the situation by eliminating the adverse effect immediately or require that all actions causing these effects be halted. If the engineer stops work, the Service will be notified as soon as possible.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	6	During project activities, the applicant will properly contain all trash that may attract predators by removing it from the work site and disposing of it regularly. Following construction, the applicant will remove all trash and construction debris from work areas.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	7	Prior to the onset of work, the Corps will ensure that a plan is in place for prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures should a spill occur.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	8	The applicant will conduct all refueling, maintenance, and staging of equipment and vehicles at least 60 feet from aquatic or riparian habitat and not in a location from where a spill would drain directly toward aquatic habitat. The Service-approved biologist or biological monitor will ensure contamination of aquatic or riparian habitat does not occur during such operations by implementing the spill response plan described in measure 7.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	9	The applicant will limit the number of access routes, size of staging areas, and the total area of the activity to the minimum necessary to achieve the project goals. The applicant will delineate Environmentally Sensitive Areas to confine access routes and construction areas to the minimum area necessary to complete construction, and minimize the impact to California red-legged frog habitat; this goal includes locating access routes and construction areas outside of wetlands and riparian areas to the maximum extent practicable.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	10	The Corps will encourage applicants to schedule work activities for times of the year when impacts to the California red-legged frog would be minimal. For example, work that would affect large pools that may support breeding will take place between May 1 and October 31, to the maximum extent practicable, in order to avoid the breeding season of the California red-legged frog. The applicant will avoid isolated pools that are important to maintain California red-legged frogs through the driest portions of the year, to the maximum degree practicable, during the late summer and early fall. Habitat assessments, surveys, and coordination between the Corps and the Service during project planning will be used to assist in scheduling work activities to avoid sensitive habitats during key times of the year.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	11	The Service-approved biological monitor will inspect all holes and trenches each morning. A Service-approved biologist will relocate any California red-legged frogs found in a hole or trench.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	12	To control sedimentation during and after project implementation, the Corps will require the applicant to implement best management practices outlined in any authorizations or permits issued under the authorities of the Clean Water Act that it receives for the specific project. If best management practices are ineffective, as determined by the Service-approved biologist or biological monitor, the Corps will require the applicant to remedy the situation immediately, in coordination with the Service.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	13	If a work site is to be temporarily dewatered by pumping, the applicant will completely screen intakes with wire mesh not larger than 0.2 inch to prevent California red-legged frogs from entering the pump system. The applicant will release or pump water downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, the applicant will remove any diversions or barriers to flow in a manner that would allow flow to resume with the least disturbance to the substrate. The applicant will minimize alteration of the stream bed to the maximum extent possible and remove any imported material from the stream bed upon completion of the project.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	14	Unless approved by the Service, the applicant will not impound water in a manner that may attract California red-legged frogs.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	15	Any biologist approved by the Service to conduct activities under this biological opinion will also permanently remove any individuals of non-native species, such as bullfrogs (*Rana catesbeiana*), signal and red swamp crayfish (*Pacifasticus leniusculus*; *Procambarus clarkii*), and centrarchid fishes from the project area, to the maximum extent possible. The Service-approved biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code (https://fgc.ca.gov/Regulations/Current).
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	16	To ensure that diseases are not conveyed between sites, the Service-approved biologist, will follow the fieldwork code of practice developed by the Declining Amphibian Populations Task Force at all times. A copy of the code of practice is enclosed (Appendix B) and will be provided by the Corps with any authorization it issues under this biological opinion.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	17	The applicant will develop a habitat restoration plan for areas of temporary disturbance and submit it to the Corps and the Service at least 14 days prior to project initiation. This plan will be developed in coordination with the Service. The applicant will revegetate areas of temporary disturbance within the project site with an assemblage of native riparian, wetland, and upland vegetation suitable for the area. The applicant will use locally collected plant materials to the extent practicable. The applicant will control invasive, exotic plants to the maximum extent practicable. The applicant will monitor the success of revegetation efforts and submit documentation of revegetation success to the Corps and the Service within three years from project initiation. If restoration is not successful after three years, the Service and the Corps will require the applicant to provide compensatory mitigation as a permanent loss, as detailed below in Mitigation of adverse effects. This measure will be implemented in all areas disturbed by activities associated with the project, unless the Corps and the Service determine that it is not feasible or practical.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	18	The applicant will return habitat contours to their original configuration at the end of project activities in all areas that have been temporarily disturbed by activities associated with the project, unless the Corps and the Service determine that it is not feasible or modification of original contours would benefit the California red-legged frog.
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	19	The Corps' authorization will prohibit the use of herbicides as the primary method used to control invasive, exotic plants; however, if the applicant convinces the Corps and the Service that the use of herbicides is the only feasible method for controlling invasive plants at a specific project site, the applicant will implement the following additional protective measures for the California red-legged frog:

Source	Category	Sub-Category	Measure	Mitigation/BMPs
				The applicant will not use herbicides during the breeding season for the California red-legged frog. The applicant will conduct surveys for the California red-legged frog immediately prior to the start of any herbicide use. If found, a Service-approved biologist will relocate the California red-legged frogs to suitable habitat far enough from the project area that no direct contact with herbicides would occur. Any use of glyphosate or glyphosate-based products will be done without polyoxyethyleneamine (POEA) surfactants. Formulations that lack a surfactant include Rodeo® and Aquamaster®, which have been approved by the U.S. Environmental Protection Agency (EPA), through their registration process, for aquatic use. The applicant will apply all herbicides at half the maximum rate indicated on the product label, and must maintain a Hazard Quotient of less than or equal to 1. Hazard Quotients can be determined using the Herbicide Risk Charts in the California Invasive Plant Council and Pesticide Research Institute's Best Management Practices (download at https://www.cal-ipc.org/ resources/library/ publications/herbicidesandwildlife, see pp. 22-32). The Service has provided a copy of the practices to the Corps, and the Corps will provide the practices with any authorization it issues under this biological opinion for which herbicides will be used. For assessing risk to amphibians, small birds are used as a surrogate for amphibians in terrestrial phase, and fish as a surrogate for amphibians in egg and larval phase (in accordance with EPA risk assessments). The Hazard Quotient must be less than or equal to 1 for both surrogates. The applicant will cut and haul out giant reed *(Arundo donax*) and other invasive plants by hand and paint the stems with glyphosate or glyphosate-based products, such as Aquamaster® or Rodeo®. Licensed and experienced personnel or a licensed and experienced contractor will use a hand-held sprayer for foliar application of Aquamaster® or Rodeo® where large monoculture stands of non-native vegetation occur at an

Source	Category	Sub-Category	Measure	Mitigation/BMPs
				individual project site. The applicant will take all precautions to ensure that no herbicide is applied to native vegetation. The applicant will not apply herbicides on or near open water surfaces (no closer than 60 feet from open water). The applicant will not apply herbicides within 24 hours of forecasted rain. Application of all herbicides will be done by qualified personnel or contractors to ensure that overspray is minimized, that all application is made in accordance with label recommendations (with the one exception of applying at half the maximum application rate, as indicated above in measure 18d), and with implementation of all required and reasonable safety measures. A safe dye will be added to the mixture to visually denote treated sites. Application of herbicides will be consistent with the EPA's Office of Pesticide Programs, Endangered Species Protection Program county bulletins found at: https://www.epa.gov/endangered-species. The applicant will store, pour, and refill all herbicides, fuels, lubricants, and equipment at least 60 feet from riparian habitat or water bodies in a location where a spill would not drain directly toward aquatic habitat. The Corps will require the applicant to ensure that contamination of habitat does not occur during such operations. Prior to the onset of work, the Corps will ensure that the applicant has a plan in place for a prompt and effective response to accidental spills. The applicant will inform all workers of the importance of preventing spills and of the appropriate measures to take should a spill occur.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2020	CRLF Protection	Minimization of Adverse Effects	20	The activities the Service evaluated under this biological opinion are those that would not cause ecosystem-scale changes and are not likely to contribute to the decline of the California red-legged frog. These activities would also not preclude any of the potentially affected critical habitat units from providing the physical and biological features necessary to support the essential life history functions (i.e., reproduction, feeding, and sheltering) of the California red-legged frog.
USFWS 2020	CRLF Protection	Reasonable and Prudent Measures	1	The Service-approved biologist(s) must identify suitable habitat to receive relocated California red-legged frogs prior to the onset of project activities.
USFWS 2020	CRLF Protection	Terms and Conditions	1	The following terms and conditions implement reasonable and prudent measure 1: Prior to the onset of grading and construction activities, a Service-approved biologist must identify appropriate areas to receive relocated California red-legged frog adults, juveniles, tadpoles, and egg masses in the action area. These areas must be in proximity to the capture site, outside of any area likely to be adversely impacted by construction activities, provide suitable habitat, and be free of exotic predatory species (e.g., bullfrogs, crayfish) to the best of the Service-approved biologist's knowledge. If the affected aquatic habitat includes a creek or river system, the relocation site must be within the same drainage. If the affected aquatic habitat includes a pond or other isolated water body, the Corps must receive the Service's approval, in writing, prior to relocating any California red-legged frogs.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Aquatic Resource Protection	Estuary Protection	1	To protect water quality during pipeline removal activities, permeable turbidity curtains long enough to enclose the work area while not dragging on the bottom of the lagoon would be installed around the pipeline removal work locations. To maintain fish passage and water flow, turbidity curtains would not be installed across the entire lagoon. Rather, curtains would be moved as dismantling activities progress, encircling the work location. Curtains would not be moved until silt settles out of the water column and the water column returns to pre-construction conditions.
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Aquatic Resource Protection	Wetland Protection	2	The perennial and seasonal wetlands on the maintenance road east of the lagoon would be protected using 2-inch-thick perforated HDPE mats (see specifications in Appendix C). The proposed mats would be open-celled and interlocking. These mats would protect wetlands and facilitate vehicular access.
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Aquatic Resource Protection	Site Stabilization	3	During pipeline removal activities, the pedestrian trail on the west side of the lagoon would be stabilized with plywood, or similar material.
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Aquatic Resource Protection	Remove Temporary Fills	4	Upon construction completion, all temporary fills would be removed in their entirety.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Biological Resource Protection	ESA Fencing	5	Prior to the date of initial ground disturbance within the Action Area, equipment staging areas and work areas would be identified, surveyed by the USFWS-approved biologist, and clearly identified with 3-foot-tall bright orange silt fencing that is trenched into the soil to a depth of 6 inches, and installed such that it angles away from the Action Area in an approximately 30 percent angle (either the entire fence profile or the top 12 inches). All construction access roads would be delineated with construction flagging. The fencing and flagging would be inspected by the approved biologist immediately after installation and maintained daily by the project proponent until the last day that construction equipment is at the project.
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Biological Resource Protection	Vegetation Removal for Wildlife Observation	6	All vegetation which obscures the observation of wildlife movement within the impact areas will be completely removed by hand just prior to the initiation of ground moving activities to remove cover that might be used by listed species. The Service-approved biologist will survey these areas immediately prior to vegetation removal to find, capture and relocate any observed listed species, as approved by the Service.
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Biological Resource Protection	Smith's blue butterfly (SBB) Protection	7	Temporary protective fencing or flagging would be installed around any SBB host plants if found within vegetation clearing areas. To the extent practical, fencing would be installed to create a buffer of 20 feet around each plant. The approved biologist would monitor installation of protective fencing/flagging prior to clearing of vegetation.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
Johnson Marigot Consulting, LLC 2020 as cited in USFWS 2021a	Biological Resource Protection	SBB Protection	8	If construction activities are scheduled to occur during the June 15 to September 15 flight season, the approved biologist will conduct SBB surveys at the beginning and end of flight season. Additionally, the project biologist would survey for SBB during preconstruction surveys, monitor for SBB during all activities that occur within 300-feet of a SBB host plant during the flight season, and stop any work that may result in take of SBB.
NMFS 2018	South-Central California Coast (SCCC) steelhead protection	Terms and Conditions	1.a.	The USFWS or the project applicants will ensure a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids is available to conduct surveys during flood events capable of inundating the restored floodplain area. The USFWS or project applicants will ensure that all biologists working on the project are qualified to identify steelhead and conduct fish collections in a manner which minimizes all potential risks to steelhead.
NMFS 2018	SCCC steelhead protection	Terms and conditions	1.b.	The biologists will monitor the floodplain area to determine if steelhead (carcasses or live fish) are present. If live fish are encountered on the floodplain that are isolated and at risk of dying, the biologists will capture and relocate these fish to suitable habitat in the Carmel River or Carmel Lagoon.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
NMFS 2018	SCCC steelhead protection	Terms and conditions	1.c.	Steelhead will be handled with extreme care and kept in water to the maximum extent possible during rescue activities. All capture fish must be kept in cool, shaded, and aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish will not be removed from this water expect when released. To avoid predation, the biologists will have at least two containers and segregate small, or young, juvenile fish from larger, or older age-classes, and other potential predators. Captured steelhead will be relocated as soon as possible to a suitable instream location in which suitable habitat conditions are present to allow for adequate survival for transported fish and fish already present.
NMFS 2018	South-Central California Coast (SCCC) steelhead protection	Terms and conditions	1.d.	If any salmonids are found dead or injured, the biologists will contact NMFS biologist, Joel Casagrande, by phone immediately at (707) 575-6016 or the NMFS North Central Coast Office [Santa Rosa, California] at (707) 575-6050. The purpose of the contact is to review the activities resulting in take, determine if additional protective measures are required, and to ensure appropriate collection and transfer of steelhead mortalities and tissue samples. All steelhead mortalities will be retained. Tissue samples are to be acquired from each salmonid mortality per the methods identified in the NMFS Southwest Fisheries Science Center Genetic Repository protocols (contact the above NMFS staff for directions) and sent to: NOAA Coastal California Genetic Repository; Southwest Fisheries Science Center; 110 McAllister Way; Santa Cruz, California 95060.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
NMFS 2018	South-Central California Coast (SCCC) steelhead protection	Terms and conditions	1.e.	The steelhead mortalities (following acquisition of genetic sample material) are to be retained, placed in an appropriately sized sealable plastic bag, labeled with the date and location of collection, and fork length, and be frozen as soon as possible. Frozen steelhead mortalities will be retained by the biological monitor until specific instructions are provided by the NMFS contact named above. Tissue samples are to be stored at ambient temperature. The biological monitor may not transfer steelhead mortalities to anyone other than the NMFS contact named above without obtaining prior written approval from NMFS' Central Coast Branch Chief. Any such transfer will be subject to such conditions as NMFS deems appropriate.
NMFS 2018	South-Central California Coast (SCCC) steelhead protection	Terms and conditions	2.a.	Annual Fish Capture and Relocation - On January 15th of each year, a report must be submitted, including the number of steelhead found and their disposition; a description of the location from which steelhead were located and their subsequent release site (if applicable) including photographs; the date and time; a description of the general environmental conditions at the site during the time of detection; and a description of the equipment and methods used to collect, hold, and transport steelhead.
NMFS 2018	South-Central California Coast (SCCC) steelhead protection	Terms and conditions	2.b.	Annual Post Construction Site Conditions - On January 15th of each year following construction, a report must be submitted to NMFS which will include a comprehensive summary of the work completed the previous year, a description of any unforeseen project impacts (if applicable), measures taken to resolve these unforeseen impacts (if applicable), installation of erosion control or other BMPs, and a brief summary of anticipated activities scheduled for the next year (if applicable). Each report will include photos of constructed facilities, which may serve as established photo sites used to track change in conditions over time.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2018	CRLF Protection	Conservation Measures	1	Before project activities begin, a qualified biologist will conduct an Employee Education Program for all construction personnel. Training will include: a) a review of the project boundaries including staging areas and access routes; b) information on the ecology of the California red-legged frog, its identifying characteristics and habitat requirements, status of the species and its protection under the Act; c) the conservation measures that must be followed; and d) the proper procedures to follow if a special status species is observed within an area to be impacted.
USFWS 2018	CRLF Protection	Conservation Measures	2	At least 30 days prior to the start of construction the project proponents will submit to the VFWO for approval the names and credentials of biologists proposed to work as Service- approved biologists on the project. Project activities will not begin until this approval is received.
USFWS 2018	CRLF Protection	Conservation Measures	3	A Service-approved biologist will survey areas of suitable habitat daily, prior to and concurrent with ground disturbing and vegetation removal activities. Daily, prior to construction activities, a qualified biologist or biological monitor will survey all staging areas within the action area. The entire staging area including under and around all equipment, vehicles and construction materials must be surveyed. Daily survey reports that document survey times, observations, and relocations of California red-legged frogs will be prepared.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2018	CRLF Protection	Conservation Measures	4	Excavated holes and trenches will be covered with plywood or similar material or provided with escape ramps to facilitate escape of trapped animals at the close of each working day. All excavated holes and trenches left open overnight will be inspected each morning for California red-legged frogs and other stranded animals which will be relocated to safe locations. Stored pipes, culverts, or similar structures will be inspected for animals before being moved, buried, or capped.
USFWS 2018	CRLF Protection	Conservation Measures	5	If any life stage of the California red-legged frog is observed, by anyone, in an area to be impacted or traversed at the project area, all work that could disturb the individual(s) shall cease and the Service-approved biologist immediately notified. The Service-approved biologist will capture and relocate the individual(s) the shortest distance possible to an area that contains suitable habitat and will not be affected by project activities. The Service-approved biologist will maintain detailed records of any individuals that are moved (e.g., size, coloration, distinguishing features, photographs) to assist in determining whether translocated animals are returning to the project area.
USFWS 2018	CRLF Protection	Conservation Measures	6	After ground disturbing and vegetation removal activities within suitable habitat are complete, the Service-approved biologist, in coordination with the project proponents, may designate a biological monitor to oversee daily compliance with all conservation measures. The Service-approved biologist will ensure that the biological monitor is sufficient in the identification of California red-legged frogs.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2018	CRLF Protection	Conservation Measures	7	The Service-approved biologist and biological monitor will have the authority to stop work if there is a threat of harm to California red-legged frogs or if any measures are not being fulfilled, and will notify the VFWO within one working day of any work stoppage. The Service-approved biologist and/or biological monitor will complete a daily log summarizing activities and environmental compliance throughout the duration of the proposed project.
USFWS 2018	CRLF Protection	Conservation Measures	8	The number of access routes, number and size of staging areas, and total work area will be limited to the minimum necessary. Access routes and the limits of the work area will be clearly marked and located outside of riparian and wetland areas to the extent practicable. No work will occur outside marked work areas.
USFWS 2018	CRLF Protection	Conservation Measures	9	Prior to the initiation of construction activities, protective fencing will be installed to inform workers of the boundaries of the work area. Protective fencing will be installed under the supervision of a Service-approved biologist. Orange cyclone fencing or other materials that can entrap wildlife will not be used. Protective fencing will be maintained weekly to ensure its functionality.
USFWS 2018	CRLF Protection	Conservation Measures	10	If any work area is to be temporarily dewatered by pumping, intakes will be screened with wire mesh not larger than 5 millimeters to prevent California red-legged frogs from entering the pump system.
USFWS 2018	CRLF Protection	Conservation Measures	11	The Declining Amphibian Populations Task Force's Fieldwork Code of Practice (Appendix A) will be followed to minimize the possible spread of chytrid fungus (*Batrachochytrium dendrobatidis*) and other amphibian pathogens and parasites. This measure is applicable to all construction personnel and equipment as well as to biologists.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2018	CRLF Protection	Conservation Measures	12	All trash that may attract predators will be properly contained and regularly removed from the work site. After construction, all trash and construction debris will be removed from work areas.
USFWS 2018	CRLF Protection	Conservation Measures	13	Cleaning and refueling of equipment and vehicles shall occur only within designated staging areas. All equipment and vehicles will be checked and maintained on a daily basis to ensure proper operation in order to avoid potential leaks or spills. No debris, soil, or pollutants shall be allowed to enter into or placed where they may be washed by rainfall or runoff into riparian or aquatic habitats. All construction related spills of hazardous materials will be reported to the project biologist and be incorporated into the daily log.
USFWS 2018	CRLF Protection	Conservation Measures	14	Best Management Practices (BMPs), in satisfaction of County erosion control guidelines, will be employed by the project contractor to reduce the transport of sediment from the site into adjacent riparian vegetation and other sensitive habitats. If silt fencing is required, only high-quality silt fencing shall be used and will be installed in coordination with the Service- approved biologist in a way that does not, to the greatest extent feasible, inhibit movement of the California red-legged frog.
USFWS 2018	CRLF Protection	Reasonable And Prudent Measures	1	Biologists must be authorized by the VFWO before they capture and move California red-legged frogs in the action area.
USFWS 2018	CRLF Protection	Reasonable And Prudent Measures	2	Effects to the California red-legged frog must be minimized.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS 2018	CRLF Protection	Terms and Conditions	1	The following term and condition implements reasonable and prudent measure 1: WSFR or the project proponents must request our approval of any biologists that they or their contractors employ to conduct capture and relocation activities associated with the California red-legged frog pursuant to this biological opinion. Such requests must be in writing and be received by the VFWO at least 30 days prior to any such activities being conducted. Please be advised that possession of a section 10(a)(1)(A) permit for the covered species does not substitute for the implementation of this measure. Authorization of Service-approved biologists is valid for this project only.
USFWS 2018	CRLF Protection	Terms and Conditions	2	The following terms and conditions implement reasonable and prudent measure 2: To ensure effects to the California red-legged frog and its critical habitat are minimized the WSFR and its contractors must follow and implement all of the conservation measures specified above under the Description of the Proposed Action. If any of these measures are not followed at any time work must immediately cease and the VFWO promptly contacted to determine the best procedure to continue minimizing adverse effects to the species. Prior to the onset of any project related activities, the Service-approved biologist must identify appropriate locations to receive California red-legged frogs from the project area in the event that they need to be relocated. These locations must be in proximity to the project site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species (i.e., bullfrogs, crayfish) to the best of the approved biologist's knowledge.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	Special-Status Wildlife	Avoidance, Minimization, and/or Mitigation Measures	AS-1	Prior to construction activities the Project Biologist shall conduct an Employee Education Program for the construction crew. The Project Biologist shall meet with the construction crew at the Project site at the onset of construction to educate the construction crew on the following: a) a review of the Project boundaries including staging areas and access routes; b) the special-status species that may be present, their habitat, and proper identification; c) the specific minimization and avoidance measures that will be incorporated into the construction effort, d) the general provisions and protections afforded by the Service and CDFW; and e); the proper procedures if a special-status animal is encountered within the construction area. Each employee that receives the training shall sign a sign-in sheet provided by the Project Biologist that shall be included in the daily log.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	Special-Status Wildlife	Avoidance, Minimization, and/or Mitigation Measures	AS-2	The Project Biologist shall monitor ground disturbing construction activities (i.e., vegetation removal, grading, excavation, or similar activities) to protect any special-status species encountered. The Project Biologist shall remain available to come to the site if a special-status species is identified until all ground disturbing activities are completed. Any handling and relocation protocols of special-status wildlife species shall be conducted by a qualified biologist with an appropriate scientific collection permit. After ground disturbing and vegetation removal activities are complete, or earlier if determined appropriate by the Project Biologist, the qualified biologist will designate a construction biological monitor to oversee on-site compliance with all avoidance and minimization measures. The Project Biologist shall ensure that this construction biological monitor receives the sufficient training in the identification of special-status species. The Project Biologist shall ensure the construction biological monitor is satisfactorily implementing all appropriate mitigation protocols by conducting site visits approximately weekly or when necessary as dictated by the Project activities, proximity to sensitive resources, or other reasons at the discretion of the Project Biologist. Both the Project Biologist and the construction biological monitor shall have the authority to stop and/or redirect Project activities to ensure protection of resources and compliance with all environmental permits and conditions of the Project. The Project Biologist and the construction biological monitor shall include in the daily log any special-status wildlife species observed and relocated.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	Special-Status Wildlife	Avoidance, Minimization, and/or Mitigation Measures	AS-3	All trash that may attract predators shall be properly contained, removed from the construction site, and disposed of regularly by the Project Contractor. Following construction, all trash and construction debris shall be removed from work areas. The Project Biologist and construction biological monitor shall monitor the Project site to ensure trash removal is implemented and shall include any trash-related issues and resolutions in the daily log.
USFWS and Monterey County 2020	Monterey Dusky-footed Woodrat Protection	Avoidance, Minimization, and/or Mitigation Measures	AS-4	The Project Applicants shall retain a qualified biologist to conduct pre-construction surveys in suitable Monterey dusky-footed woodrat habitat proposed for construction, ground disturbance, or staging within three days prior to construction and maintenance activities for woodrat nests within the Project area and in a buffer zone 25 feet out from the limit of disturbance. All woodrat nests will be flagged for avoidance of direct construction impacts, where feasible. Nests that cannot be avoided will be manually deconstructed prior to land clearing activities to allow animals to escape harm. If a litter of young is found or suspected, nest material will be replaced, and the nest shall be left alone for 2-3 weeks before a re-check to verify that young are capable of independent survival before proceeding with nest dismantling. For the construction phase only, the qualified biologist shall prepare a pre-construction survey report that documents the survey dates and results that shall be provided to the County prior to construction. If nest monitoring is necessary during construction, the qualified biologist shall prepare a construction monitoring report that documents the monitoring dates, activities, and results.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	Nesting and Special-Status Raptors, Riparian Avian Species, Special-Status Ground-Dwelling Avian Species, and Other Special-Status Avian Species Protection	Avoidance, Minimization, and/or Mitigation Measures	AS-5	To avoid impacts to nesting birds, vegetation proposed for removal for construction and maintenance will be removed prior to the nesting season (February 15 through September 1). If this is not possible, pre-construction surveys shall be conducted for nesting raptors, riparian avian species, or other special-status avian species in all areas that may provide suitable nesting habitat that exist in or within 300 feet of the Project boundary by a qualified biologist within 15 days prior to the commencement of construction activities. If nesting birds are identified during pre-construction surveys, an appropriate buffer will be imposed within which no construction activities or disturbance will take place (generally 300 feet in all directions). A qualified biologist shall be onsite during work re-initiation in the vicinity of the nest offset to ensure that the buffer is adequate and that the nest is not stressed and/or abandoned. No work may proceed in the vicinity of an active nest until such time as all young are fledged, or until after September 1 (when young are assumed fledged). For the construction phase only, the qualified biologist shall prepare a pre-construction survey report that documents the survey dates and results that shall be provided to the County prior to construction. If nest monitoring is necessary during construction, the qualified biologist shall prepare a construction monitoring report that documents the monitoring dates, activities, and results.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	Coast Range Newt, California Legless Lizard, and Western Pond Turtle Protection	Avoidance, Minimization, and/or Mitigation Measures	AS-6	A qualified biologist shall conduct pre-construction and maintenance surveys for coast range newts, California legless lizards, and western pond turtles and their nests within three days prior to the commencement of activities. If an individual is found in any areas prior to or during these surveys, a qualified biologist shall relocate the individual from the site to a suitable location. If a western pond turtle nest is found during the survey, it will be monitored and avoided until the eggs hatch. For the construction phase only, the qualified biologist shall prepare a pre-construction survey report that documents the survey dates and results that shall be provided to the County prior to construction. If western pond turtle nest monitoring is necessary during construction, the qualified biologist shall prepare a construction monitoring report that documents the monitoring dates, activities, and results.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	CRLF Protection	Avoidance, Minimization, and/or Mitigation Measures	TE-1	Prior to issuance of a grading permit, the Project Applicants shall retain a Service-Approved Biologist. The Service-Approved Biologist shall survey appropriate areas of the construction site daily before the onset of work activities for the presence of CRLF. The Service-Approved Biologist shall remain available to come to the site if a CRLF is identified until all ground disturbing activities are completed. If any life stage of the CRLF is found and these individuals are likely to be killed or injured by work activities, the Service-Approved Biologist shall be contacted and work shall stop in that area until the CRLF is relocated. The Service-Approved Biologist shall relocate the CRLF the shortest distance possible to an area that contains suitable habitat and will not be affected by construction activities. The Service-Approved Biologist shall maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs) to assist him or her in determining whether translocated animals are returning to the original point of capture. Only Service-Approved Biologists shall participate in activities associated with the capture, handling, and monitoring of CRLF. The Service-Approved Biologist shall prepare a pre-construction survey report that documents the survey dates and results that shall be provided to the County prior to construction. The Service-Approved Biologist shall also prepare a construction monitoring report that documents the monitoring dates, activities, and results following construction completion.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	CRLF Protection	Avoidance, Minimization, and/or Mitigation Measures	TE-2	After ground disturbing and vegetation removal activities are complete, or earlier if determined appropriate by the Service-Approved Biologist in coordination with the Service, the Service-Approved Biologist will designate a construction biological monitor to oversee on-site compliance with all avoidance and minimization measures. The Service-Approved Biologist shall ensure that the construction biological monitor receives the sufficient training in the identification of CRLF. The construction biological monitor and the Service-Approved Biologist are authorized to stop work if the avoidance and/or minimization measures are not being followed. If work is stopped, the Service shall be notified. The Service-Approved Biologist and the construction biological monitor shall complete a daily log summarizing activities and environmental compliance throughout the duration of the Project.
USFWS and Monterey County 2020	CRLF Protection	Avoidance, Minimization, and/or Mitigation Measures	TE-3	To prevent inadvertent entrapment of CRLF during the Project construction, all excavated, steep-walled holes or trenches more than two feet deep will be covered by the Project Contractor at the close of each working day with plywood or similar materials. Before such holes or trenches are filled, they will be thoroughly inspected by the Service-Approved Biologist or construction biological monitor for trapped animals.

Source	Category	Sub-Category	Measure	Mitigation/BMPs
USFWS and Monterey County 2020	CRLF Protection	Avoidance, Minimization, and/or Mitigation Measures	TE-4	Prior to the initiation of maintenance activities which include mowing and removal of vegetation, as described in Section 1.4 Project Alternatives, the Project Applicants shall retain a Service-Approved Biologist. The Service-Approved Biologist shall survey appropriate areas before the onset of work activities for the presence of CRLF. If any life stage of the CRLF is found the Service-Approved Biologist shall relocate the CRLF the shortest distance possible to an area that contains suitable habitat and will not be affected by maintenance activities. The Service-Approved Biologist shall maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs) to assist him or her in determining whether translocated animals are returning to the original point of capture. Only Service-Approved Biologists shall participate in activities associated with the capture, handling, and monitoring of CRLF. The Service-Approved Biologist shall also prepare a maintenance monitoring report that documents the monitoring dates, activities, and results following construction completion.
USFWS and Monterey County 2020	SCCC steelhead protection	Avoidance, Minimization, and/or Mitigation Measures	TE-5	All applicable measures outlined in the attached CDFW Avoidance and Minimization Measures (Appendix I) shall be implemented.

Appendix C. Mitigation Measures on Cultural Resources

The ten measures developed by the USFWS and the County, are presented below as they appear in the Final CRFREE EIR/EA (USFWS and County of Monterey 2020).

CUL-1 The final grading plan for activities shall be prepared in consultation with a qualified archaeologist, an OCEN representative, and an ETMC representative. The Monterey District State Parks archaeologist shall review the final grading plan for activities on State Parks property.

CUL-2 Cultural resource sensitivity training will be provided for grading crews prior to the initiation of construction with the Project Archaeologist and Native American monitor(s). Native American monitor(s) means a reasonably trained or otherwise qualified monitor who is also a descendant of OCEN or ETMC. Cultural resource sensitivity training shall be provided by the State Parks archeologist for grading activities on State Parks property. During this training, the construction contractor, Project Archaeologist, State Parks archeologist, and Native American monitor(s) will agree on a communication plan and initial steps to implement Mitigation CUL-4 if potentially significant cultural resources are encountered.

CUL-3 A professional archaeologist shall be on call to quickly assess any potentially significant cultural materials, archaeological resources, or human remains that might be uncovered during project excavations. At least one Native American monitor, and up to one Native American monitor per excavation activity, shall be on site during excavation west of SR 1. Additionally, at OCEN's and ETMC's discretion, up to one Native American monitor per excavation activity is optional east of SR 1. The Project Archeologist shall communicate and coordinate with the Native American monitor(s) in regard to all data collection and the evaluation of all artifacts. Prior to the issuance of any grading permit for the Floodplain Restoration Component, the Project Applicants shall submit evidence to the County demonstrating that an on-call professional archaeologist and the Native American monitor(s) have been retained. The Project Archeologist and the Native American monitor(s) shall be provided contact, access, and schedule information sufficient to facilitate their monitoring efforts.

CUL-4 If, at any time during Project construction, potentially significant cultural resources are encountered, work shall cease within 50 feet of the find until the Project Archaeologist, Native American monitor(s), and the State Parks archeologist (for discoveries within State Parks property) can evaluate the discovery. If the find is determined to be significant, steps shall be taken to protect the find from further damage or disruption. The Service's Regional Historic Preservation Officer (RHPO) and the County will be notified. Additionally, an appropriate mitigation plan shall be developed and implemented with the concurrence of the Lead Agencies and in consultation with an OCEN representative and an ETMC representative.

CUL-5 The Project Archaeological and Native American monitor(s) shall closely coordinate the recovery of any significant cultural materials that may be found in the excavated soil. If determined appropriate and necessary by the monitors, they shall selectively screen soil samples through 1/8" mesh to facilitate data recovery. The property owner, in consultation with the County, shall determine how best to proceed with all

materials remaining in the screen and recovered artifacts of interest. Removal of any/all cultural deposits or features on State Parks property shall not occur unless the State Parks archaeologist has been contacted and has been on site to determine how best to proceed.

CUL-6 In accordance with California PRC Sections 5097 and 7050.5, if, at any time, human remains are discovered, the Monterey County Coroner and Service's RHPO must be notified. For discoveries of human remains within State Parks property, the State Parks archeologist shall also be notified. If the Coroner determines that the remains are likely to be Native American, the Native American Heritage Commission will be notified and will appoint a Most Likely Descendent (MLD) to provide recommendations for the disposition of the remains and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating and disposing of, with appropriate dignity, the human remains and any associated grave goods, as provided in California PRC 5097.98.

CUL-7 A Final Technical Report detailing the results of all analyses shall be completed within six months following the completion of monitoring work. This report shall be submitted to the Lead Agencies, the Northwest Information Center, Sonoma State University, the Chairperson of the OCEN and the Chairperson of the ETMC. The report shall also be submitted to the State Parks archaeologist for any and all findings on the State Parks portion of the Project.

CUL-8 Installation of exclusionary fencing around the Fish Ranch Adobe shall be installed prior to the initiation of construction by the contractor under the supervision of the Project Archeologist. The purpose of the exclusionary fencing is to ensure construction activities avoid all impacts on this historic resource. Documentation of the installation of the fencing will be provided to the County prior to construction. Construction-phase monitoring will be conducted on weekly basis to ensure the exclusionary fencing is maintained during construction of the Project. The County will be notified immediately in the case that the fences are not being properly maintained.

CUL-9[3] The Creamery and Blacksmith Shop will be raised and placed on concrete foundations prior to the levee plugs being removed (approximately three to five years following construction). It is anticipated that the buildings will be elevated between six to eight inches and then placed on concrete perimeter or pier foundations. Existing engineering plans, which were originally prepared by State Parks, shall be updated prior to implementation of this measure to reflect any changed conditions or changes in building codes since the original preparation. The State Parks historian shall be contacted prior to construction work on the Creamery and Blacksmith Shop.

[3] This measure would only apply if elevation of the structures is the selected method to mitigate future potential flooding of the Creamery and Blacksmith Shop at the State Parks Barn Complex. If elevation of the structures is not the selected method, two earthen berms would be constructed around the State Parks Barn Complex instead to mitigate future potential flooding.

The County intends to enter into a MOU with State Parks prior to the initiation of construction that outlines the details of this effort, including cost sharing. The MOU shall include the minimum experience requirements of the contractor(s) who bid for the lifting, cribbing, and moving of the structures and the foundation repair. The MOU shall have concurrence by the State Parks historian with regard to writing specifications for qualified contractor to raise each building, prior to executing a contract. Additionally, any required consultation with SHPO for raising of the buildings shall be conducted prior to construction.

CUL-10 Prior to issuance of the grading permit for the project, BSLT, project co-applicant, shall enter into an agreement with the County that provides the following:

- Documented evidence that BSLT has offered a location on BSLT property to OCEN for reinternment of Native American human remains, should any be found at the during construction of the Project;
- BSLT statement of intent to provide post project construction access at the Project site to OCEN members to collect native materials for cultural purposes, and a date-certain by which BSLT will provide documented evidence that BSLT has offered a mechanism to provide said access to OCEN; and
- BSLT statement of intent to work with OCEN to collaboratively develop interpretive information and materials about the history of the OCEN people at the Project site.
- A provision indicating that the BSLT will consider requests from OCEN, ETMC, and other tribes for cultural and educational activities at the Project site.

The mitigation measures developed by USACE and the CAWD are presented below as they appear in the Draft IS/MND (CAWD 2021).

Mitigation Measure CULT-1: Preparation and Implementation of an Inadvertent Discovery and Monitoring Plan

CAWD in consultation with State Parks has determined that monitoring with agreed upon site protection measures during construction would be an appropriate mitigation measure to reduce the effect to P-47-000150 to less-than-significant. As part of the mitigation, CAWD has agreed to prepare an Inadvertent Discovery and Monitoring Plan which will outline the procedures, responsibilities, and thresholds for the need for further study. The plan will be subject to State Parks review and approval. If during construction, finds determined to be significant by the qualified cultural resource specialist the cultural resource specialist in consultation with Native American representatives will implement appropriate procedures such that the integrity of the find is protected and ensure that no additional features of the resource which make in eligible for the CRHR are affected. The approved inadvertent discovery and monitoring plan shall be implemented at the instruction of State Parks. Methods and procedures may include the following:

- Using existing paths/travel which have existing decomposed granite overlaying midden deposits to minimize surface disturbance.
- Place filter fabric or construction matting down in laydown and work areas.
- Confine mobilization areas to existing roadway and decomposed granite except for boring equipment (HDD work area).
- Hand cut brush for access to work areas.
- Place signage for fencing adjacent to work areas designating Environmentally Sensitive Areas (ESA where construction equipment and personnel cannot go into (e.g., signage or fencing adjacent to trails, roadways within site boundaries).
- Construction crew training.
- Protection measures included in contract specifications.
- Monitoring during all ground-disturbing activities by a qualified archaeologist and Native American representative within the boundaries of P-47-000150.
- Periodic monitoring by a qualified archaeologist and Native American representative during construction on the west terrace to ensure that no inadvertent damage to site deposits occurs during construction activities.

Mitigation Measure CULT-2: Previously Undocumented Archaeological Resources

During construction activities, there is the potential for discovery of previously undocumented archaeological resources. This is mainly applicable to the east side of the lagoon. Prior to initiating ground-disturbing activities associated with the Project area, construction personnel should be alerted to the possibility of encountering buried prehistoric or historic period cultural material. A qualified archaeologist shall conduct cultural sensitivity training prior to the start of construction activities. Personnel should be advised that, upon discovery of buried archaeological deposits, work in the immediate vicinity of the find should cease and a qualified archaeologist should be contacted immediately if one is not already present.

In the event any cultural deposits are located, the State Park archaeologist shall be contacted immediately (for the staging area clearing and dredging/excavation). In addition, the final disposition of archaeological, historical, and paleontological resources recovered on State lands under the jurisdiction of the California State Lands Commission shall be subject to Commission approval.

If a find is identified, plans for the treatment, evaluation, and mitigation of impacts on the find shall be developed if it is found to be California Register of Historical Resources eligible. Potential cultural materials include prehistoric and historic period artifacts and remains. These may consist of, but are not limited to:

- Historic period artifacts, such as glass bottles and fragments, tin cans, nails, ceramic and pottery sherds, and other metal objects;
- Historic period features such as privies, wells, cellars, foundations or other structural remains (bricks, concrete, or other building materials);
- Flaked-stone artifacts and debitage, consisting of obsidian, basalt, and/or chert;
- Groundstone artifacts, such as mortars, pestles, and grinding slabs;
- Dark, almost black, soil with a "greasy" texture that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire-affected rock; and,
- Human remains.

Mitigation Measure CULT-3: Human Remains
If human remains are encountered during construction, work in that area shall cease and the Monterey County Coroner must be notified immediately. If the remains are determined to be Native American, the NAHC shall be notified within 48 hours as required by Public Resources Code 5097. The NAHC shall notify the designated Most Likely Descendant, who shall in turn provide recommendations for the treatment of the remains within 24 hours after notification.

In addition to the mitigation measures outlined in the Draft IS/MND, construction of the CAWD pipeline component must comply with the requirements outlined in the MOA, including implementation of the HPTP, avoidance and protective measures, and monitoring activities. The MOA and HPTP were developed by USACE in consultation with the SHPO, CAWD, and Native American tribes to mitigate adverse effects to site P-27-000150 for the CAWD pipeline component of the project. Prior to construction, environmentally sensitive areas and archaeological monitoring areas would be established and the data recovery provision of the HPTP would be implemented. During construction all monitoring provisions of the HPTP would be implemented. The MOA and HPTP are include in Attachment A.

Appendix C. Mitigation Measures on Cultural Resources

Attachment A. Memorandum of Agreement and Historic Property Treatment Plan

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, SAN FRANCISCO DISTRICT
AND
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING
THE CALLE LA CRUZ WASTEWATER PIPELINE REPLACEMENT PROJECT
CARMEL, MONTEREY COUNTY, CALIFORNIA

WHEREAS, This Memorandum of Agreement (MOA) is entered into between the California State Historic Preservation Officer (SHPO) and the U.S. Army Corps of Engineers, San Francisco District (USACE); and

WHEREAS, the USACE retains lead federal agency status and responsibility for the implementation of this MOA, pursuant to 36 C.F.R. §§ 800.1 *et seq*., to achieve the goal of consultation to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties; and

WHEREAS, the USACE administers Department of the Army permits under the authority of Section 404 of the Clean Water Act (33 U.S.C. § 1344) and Section 10 of the Rivers and Harbors Act (33 U.S.C. § 403); and

WHEREAS, the Carmel Area Wastewater District (Applicant) proposes to implement the Calle la Cruz Pipeline Replacement Project (Project), located in Carmel, California to replace sections of existing wastewater pipelines which currently span the south arm of the Carmel River Lagoon with new pipeline sections installed under the lagoon using horizontal directional drilling (HDD); and

WHEREAS, the Project work would include boring under the Carmel River Lagoon and minor surface excavation on either side of the lagoon; and

WHEREAS, the USACE determined that the Project work requires a Department of the Army permit and therefore determined this work constitutes an undertaking (Undertaking) as defined in 36 C.F.R. § 800.16(y); and

WHEREAS, the Applicant participated in the consultation for the Undertaking, is responsible for the implementation of this MOA under the jurisdiction of the USACE permit, and is invited to participate in this MOA as a Concurring Party; and

WHEREAS, the USACE consulted with California State Parks who owns and manages the land where the undertaking is to take place, and California State Parks is invited to participate in this MOA as a Concurring Party; and

WHEREAS, the USACE, in consultation with the SHPO and in accordance with 36 C.F.R. § 800.4(a)(l), determined and documented the Undertaking's Area of Potential Effects (APE) to be an area approximately 17.8 acres encompassing all construction, staging, and access areas around the proposed pipeline replacement, as depicted and described in Appendix A of this MOA; and

WHEREAS, the USACE, in consultation with the SHPO, and in accordance with 36 C.F.R. §§ 800.4(b)-(c), inventoried historic properties within the Undertaking's APE and identified a six-acre Native American shell mound site (P-27-000150, CA-MNT-14) overlapping the APE on the west side of the lagoon where three of the excavation areas would be located; and

WHEREAS, the USACE determined and the SHPO concurred that the CA-MNT-14 site is eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion D for its ability to answer research questions regarding Cultural Chronology, Subsistence, Settlement Patterns, and Technological Organization for the Monterey Bay Area; and

WHEREAS, the CA-MNT-14 site is a historic property as defined at 36 C.F.R. § 800.16(l)(1)); and

WHEREAS, the USACE, in consultation with the SHPO and the ACHP, applied the criteria in 36 C.F.R. § 800.5(a) and determined that the Undertaking may adversely affect the CA-MNT-14 site through disturbance of shell mound soils during excavation activities; and

WHEREAS, the USACE consulted with the Applicant regarding the effects of the Undertaking on historic properties, thoroughly considered alternatives to the Undertaking and determined that disturbance of the CA-MNT-14 site had been minimized to the extent feasible, and minor potential adverse effects to the site were unavoidable; and

WHEREAS, the USACE notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect pursuant to 36 C.F.R. § 800.6(a)(l) on January 10, 2024, and the ACHP declined to participate; and

WHEREAS, the USACE invited the following Native American Tribes as identified by the California Native American Heritage Commission to consult with the USACE regarding the Undertaking and its effects to the historic property: Amah Mutsun Tribal Band, Costanoan Rumsen Carmel Tribe, Ohlone/Costanoan-Esselen Nation, Esselen Tribe of Monterey County, Amah Mutsun Tribal Band of Mission San Juan Bautista, Rumsen Am:a Tur:ataj Ohlone, KaKoon-Ta-Ruk Band of Ohlone-Costanoan Indians, and Indian Canyon Mutsun Band of Costanoan; and

WHEREAS, the KaKoon-Ta-Ruk Band of Ohlone-Costanoan Indians, Esselen Tribe of Monterey County, and Costanoan Rumsen Carmel Tribe have expressed their views and provided comments on the Project to the Applicant; and

WHEREAS, the USACE considered the information provided by the Tribes and utilized it to inform the avoidance, minimization, and mitigation measures included in this MOA; and

WHEREAS, the USACE shared the proposed avoidance, minimization, and mitigation measures with the above three Tribes and confirmed their previously expressed views regarding the Project remain unchanged; and

WHEREAS, the KaKoon-Ta-Ruk Band of Ohlone-Costanoan Indians, Esselen Tribe of Monterey County, and Costanoan Rumsen Carmel Tribe are invited to participate in this MOA as Concurring Parties; and

WHEREAS, the USACE consulted with the SHPO, pursuant to 36 C.F.R. Part 800, the regulations that implement Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. § 306108)), as amended, regarding the Undertaking's adverse effects on the CA-MNT-14 site; and

WHEREAS, the SHPO is participating as a Signatory to this MOA along with the USACE; and

WHEREAS, the definitions set forth in 36 C.F.R. §§ 800.16, 800.6(c)(1), and 800.6(c)(3) are incorporated herein by reference and apply throughout this MOA; and

WHEREAS, the Signatories enter into this MOA pursuant to 36 C.F.R. § 800.6; and

NOW, THEREFORE, the USACE and the SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the Undertaking's effects on historic properties, and that these stipulations shall govern the Undertaking and all of its parts until this MOA expires or is terminated.

STIPULATIONS

The USACE's resolution of adverse effects resulting from the Undertaking upon the CA-MNT-14 site shall be achieved through the implementation of this MOA. Failure to follow the MOA would compromise the terms of this MOA and the Applicant's Section 404/10 permit. The USACE is responsible for ensuring that the MOA and all attachments, including the stipulations below (Stipulations I-IV) are carried out:

I. Area of Potential Effects:

A. If USACE determines that conditions necessitate the revision of the APE subsequent to the execution of this MOA, USACE shall notify all Signatories and

Concurring Parties of any proposed change to the APE by providing a map and a narrative description of the change.

B. These parties shall then have fifteen (15) days to comment on the modified APE. If no comments on the modified APE are received within fifteen (15) days, no further consultation by USACE is required.

C. If the Signatories cannot agree or USACE receives an objection from a party on the revision, then USACE shall attempt to resolve the dispute. The USACE shall consult with the objecting party and the SHPO for no less than thirty (30) days to resolve the dispute before determining and documenting the revised APE.

D. If the Signatories reach mutual agreement on the proposed revisions, then USACE shall provide a final map and narrative description of the revisions in writing to all parties no later than fourteen (14) days following such agreement.

II. Historic Property Treatment Plan

The Applicant shall implement the activities and procedures detailed in the Historic Property Treatment Plan (HPTP) incorporated by and attached to this MOA as Appendix B to avoid, minimize, manage, mitigate, or otherwise resolve adverse effects to Historic Properties during the construction phase of the Undertaking including:

A. **Management of Cultural Resources in the APE.**

1. The Applicant will manage the historic property in the APE in accordance with the HPTP.

2. If, at any time during the construction phase it should become apparent to the USACE or Concurring Parties that changes to the HPTP are warranted, and the desired changes involve either the need to modify an existing element or to add/delete an elements; the USACE and Concurring Parties will consult regarding the feasibility of making the proposed changes to the HPTP. Upon agreement between the USACE and the Concurring Parties, the USACE will within 7 days of receiving the proposed changes consult with the SHPO to determine if the proposed changes constitute a significant revision of the HPTP. The SHPO shall have 14 days to consider and comment on the proposed changes. If the SHPO declines to respond within the 14-day review period, this will constitute concurrence to the proposed HPTP changes. If the SHPO concurs that the proposed changes do not constitute a significant revision to the HPTP, then the USACE and the Concurring Parties will proceed to revise and implement the proposed changes to the appropriate elements of the HPTP. If the parties do not agree on the proposed changes, or the SHPO determines that the proposed changes do constitute a significant revision to the HPTP, then the matter will be resolved by implementing Stipulation IV.C or IV.D.

B. **Avoidance and Protective Measures.**

1. The Applicant will implement the management and protective measures identified in the HPTP; including establishment of Environmentally Sensitive Areas (ESAs) and Archaeological Monitoring Areas (AMAs), monitoring all surface excavation and initial HDD drilling activities, and reporting.

C. **Phase III Data Recovery**

To resolve potential adverse effects on the CA-MNT-14 site, the Applicant will implement the data recovery provisions of the HPTP prior to construction.

D. **Construction Monitoring Activities**

The Applicant will implement all monitoring provisions of the HPTP, including the following:

1. Archaeological and designated Tribal monitors will be present during any ground disturbing activities within the AMAs.

2. Archaeological and designated Tribal monitors will meet the professional standards specified in Stipulation IV(A) below, will be familiar with the types of Native American and/or archaeological resources that may occur in the APE, and will be directly supervised by a Principal Investigator (PI)-level Field Director.

3. The PI will submit a monthly documentation report on all archaeological and Tribal monitoring activities to the Applicant, USACE, and SHPO by email during the first week of each subsequent month. Documentation will include the location of archeological monitoring activities for the reporting time period, as well as a description of any archeological resources identified, and any actions taken. USACE will provide copies of the monthly archeological monitoring reports to any Tribe upon request.

4. Upon completion of all archaeological monitoring tasks and requirements implemented pursuant to this MOA, the Applicant shall ensure that the PI will submit within three months a final monitoring report to USACE for review and approval. The final monitoring report will describe the monitoring program and its findings and results, and present a detailed professional description, analysis, and evaluation of any cultural resources that were encountered and evaluated during construction. USACE will provide a copy of the monitoring report to the SHPO, and Tribes or other consulting parties.

III. Post-Review Discoveries and Unanticipated Effects

A. The Applicant will follow the provisions of Section 6.5 of the HPTP to manage post-review discoveries and unanticipated effects that might be caused by construction activities.

B. USACE may treat any newly discovered Native American and/or archaeological resource as eligible for inclusion in the NRHP for project management purposes pursuant to 36 C.F.R. § 800.13(c), and if so determined, will provide this determination in consultation with the SHPO and other consulting parties.

IV. Administrative Provisions

A. Professional Qualifications

1. Pursuant to Section 112(a)(1)(A) of the National Historic Preservation Act (54 U.S.C. § 306131(a)(1)(A) and 36 C.F.R. § 800.2(a)(1), USACE shall ensure that all work carried out in accordance with this MOA shall be conducted by or under the direct supervision of, a person or persons meeting, at a minimum, the Secretary of Interior's Professional Qualifications Standards (PQS) in the appropriate professional discipline (48 Fed. Reg. 44,738-39).

2. Historic Preservation Standards. All historic preservation activities carried out pursuant to the MOA shall meet the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 44,716-40) as well as standards and guidelines for historic preservation activities established by the National Park Service and recommended by the SHPO.

3. Documentation Standards. The USACE shall ensure that all written documentation prescribed by this MOA shall conform to the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Fed. Reg. 44,716-40).

B. Reporting Requirements

1. The USACE shall provide an Annual Report documenting actions carried out pursuant to this MOA. The reporting period shall commence one year from the date of execution. The Annual Report shall be distributed to all consulting parties to this MOA.

2. The Annual Report shall address issues and describe actions and accomplishments over the past year, including, as applicable:

    - Historic property surveys and results;
    - Status of treatment and mitigation activities;

- Any issues that are affecting or may affect the ability of the federal agency to continue to meet the terms of this MOA;
- Any disputes and objections received, and how they were resolved; and
- Any additional parties who have become Signatory or concurring parties to this MOA in the past year.

3. The USACE shall coordinate a meeting of the Signatories and Consulting Parties to be scheduled within ninety (90) days of distribution of the Annual Report, or another mutually agreed upon date, to discuss activities carried out pursuant to this MOA during the preceding year and activities scheduled for the upcoming year. This meeting, should it be deemed unnecessary, may be cancelled by mutual consent of the Signatory Parties.

4. The USACE's reporting requirements shall remain in effect until the MOA's expiration.

C. **Dispute Resolution**

Should any Signatory or Concurring Party to this MOA object at any time to actions proposed or the manner in which the terms of this MOA is implemented, the objecting party will immediately notify the other parties, in writing, of the nature of their objection. USACE will facilitate consultation with the objecting party and the other Signatories and Concurring Parties to resolve the objection. If USACE determines that such objection cannot be resolved, USACE will:

1. Forward all documentation relevant to the objection, including the USACE's proposed resolution, to the ACHP. The ACHP will provide USACE with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, USACE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, Signatories and Concurring Parties, and provide them with a copy of this written response. USACE will then proceed according to its final decision.

2. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, USACE may make a final decision regarding the dispute and proceed accordingly. Prior to reaching such a final determination, the USACE will prepare a written response that takes into account any timely advice or comments regarding the dispute from any parties to this MOA and provide its written response to all parties to this MOA within thirty (30) calendar days.

3. USACE's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

D. Amendments

Any Signatory to this MOA may propose that this MOA be amended, whereupon all parties to the MOA will be afforded thirty (30) days to comment upon the proposed amendment. The USACE may extend this consultation period, if necessary, through agreement with all Signatories. The amendment process shall comply with 36 C.F.R. § 800.6(c)(7). This MOA may be amended only upon the written agreement of the Signatories, and the USACE shall file a copy of the amended MOA with the ACHP, as required by 36 C.F.R. § 800.6(c)(7). If the MOA is not amended, it shall remain in effect until it expires or is terminated by a Signatory in accordance with Section III E of this MOA.

E. Termination

1. Only a Signatory may terminate this MOA. If this MOA is not amended as provided for in Section III D, or a Signatory proposes termination of this MOA for other reasons, the Signatory proposing termination shall, in writing, notify the other parties to this MOA, explain the reasons for proposing termination, and shall afford thirty (30) calendar days to consult with the other parties to seek alternatives to termination.

2. Should such consultation result in an agreement, the parties shall proceed in accordance with the terms of that agreement and shall prepare any amendment to the MOA, if needed, in accordance with the terms of Section III D.

3. If, after thirty (30) calendar days, consultation has not led to a resolution of the objection, the Signatory proposing termination may terminate this MOA by promptly notifying the other parties to the MOA in writing. Termination hereunder shall render this MOA without further force or effect.

4. If this MOA is terminated, the USACE may either execute a new MOA pursuant to 36 C.F.R. § 800.6, or follow the procedures in 36 C.F.R. § 800.7 prior to work continuing.

5. Consultation shall not be required if the USACE proposes termination because the Undertaking no longer meets the definition set forth in 36 C.F.R. § 800.16(y).

F. Duration and Expiration

1. Unless terminated pursuant to Section III E, or unless it is superseded by an amended MOA, this MOA will remain in effect following execution by the Signatory Parties until the USACE, in consultation with the other parties to this MOA, determines that all the terms of this MOA have been satisfactorily fulfilled or until five (5) years of its date of execution, whichever comes first.

Upon a determination by the USACE that all of the requirements of this MOA have been satisfactorily fulfilled, the USACE shall notify the other parties to this MOA in writing that the MOA has been fully satisfied and is therefore concluded. Upon agreement of the Signatories, the MOA shall then immediately expire.

2. If the terms of this MOA are not carried out within five (5) years following its date of execution by the Signatory Parties, the USACE shall consult with the other parties to this MOA to reconsider its terms at least sixty (60) calendar days prior to its expiration. Reconsideration may include an agreement by the Signatories to extend the MOA on its original terms for a mutually agreed-upon additional period, or an agreement to amend the MOA in accordance with Section III D of this MOA, or termination.

G. **Effective Date**

This MOA shall take effect on the date that it has been executed by all the Signatories.

Execution of this MOA by USACE and the SHPO, its filing with the ACHP under 36 C.F.R. § 800.6(b)(1)(iv), and implementation of its terms shall evidence that USACE has afforded the ACHP an opportunity to comment on the Undertaking and its effects on historic properties, and that USACE has taken the effects of the Undertaking's effects on historic properties into account in fulfillment of its duties under Section 106 of the NHPA.

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, SAN FRANCISCO DISTRICT
AND
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING
THE CALLE LA CRUZ WASTEWATER PIPELINE REPLACEMENT PROJECT
CARMEL, MONTEREY COUNTY, CALIFORNIA

SIGNATORY

U. S. ARMY CORPS OF ENGINEERS, SAN FRANCISCO DISTRICT

By: _____ Digitally signed by James Mazza Date: 2024.10.10 17:39:17 -07'00' Date: 10 OCT 2024

JAMES MAZZA
Chief, Regulatory Division
San Francisco District, U.S. Army Corps of Engineers

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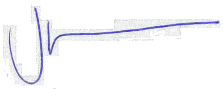
CARMEL, MONTEREY COUNTY, CALIFORNIA

SIGNATORY

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER



By: _____ Date: __10/11/24_____
JULIANNE POLANCO
State Historic Preservation Officer
California Office of Historic Preservation

MEMORANDUM OF AGREEMENT
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THE CALLE LA CRUZ WASTEWATER PIPELINE REPLACEMENT PROJECT
CARMEL, MONTEREY COUNTY, CALIFORNIA

CONCURRING PARTY

CARMEL AREA WASTEWATER DISTRICT

By: _____ Date: _____
MR. PATRICK TREANOR
District Engineer
Carmel Area Wastewater District

MEMORANDUM OF AGREEMENT
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THE CALLE LA CRUZ WASTEWATER PIPELINE REPLACEMENT PROJECT
CARMEL, MONTEREY COUNTY, CALIFORNIA

CONCURRING PARTY

CALIFORNIA STATE PARKS, MONTEREY DISTRICT

By: _____ Date: _____
MR. DANIEL SHAW
Deputy District Superintendent
Monterey District, California State Parks

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY CORPS OF ENGINEERS, SAN FRANCISCO DISTRICT
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THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
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THE CALLE LA CRUZ WASTEWATER PIPELINE REPLACEMENT PROJECT
CARMEL, MONTEREY COUNTY, CALIFORNIA

CONCURRING PARTY

KAKOON TA RUK BAND OF OHLONE-COSTANOAN INDIANS

By: _____ Date: _____
LYDIA BOJORQUEZ
Vice Chairperson
Kakoon Ta Ruk Band of Ohlone-Costanoan Indians

MEMORANDUM OF AGREEMENT
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CARMEL, MONTEREY COUNTY, CALIFORNIA

CONCURRING PARTY

ESSELEN TRIBE OF MONTEREY COUNTY

By: _____ Date: _____
TOM LITTLE BEAR NASON
Tribal Chairperson
Esselen Tribe of Monterey County

MEMORANDUM OF AGREEMENT
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THE CALLE LA CRUZ WASTEWATER PIPELINE REPLACEMENT PROJECT
CARMEL, MONTEREY COUNTY, CALIFORNIA

CONCURRING PARTY

COSTANOAN RUMSEN CARMEL TRIBE

By: _____ Date: _____
SAMUEL THUNDER RODRIGUEZ
Cultural Resource Officer
Costanoan Rumsen Carmel Tribe

Appendix A

Area of Potential Effects

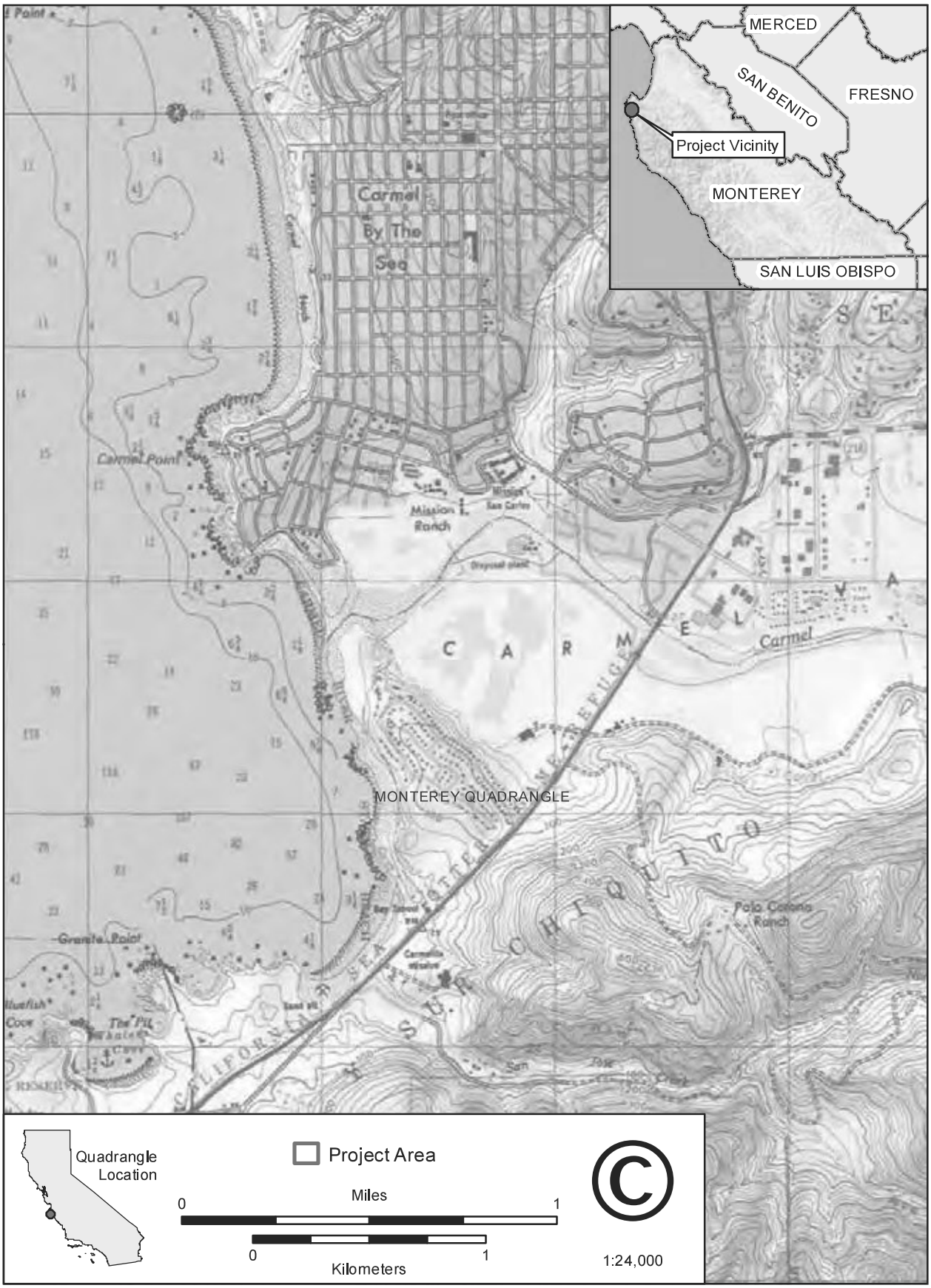

Figure 1. Project Vicnity and Location Map.

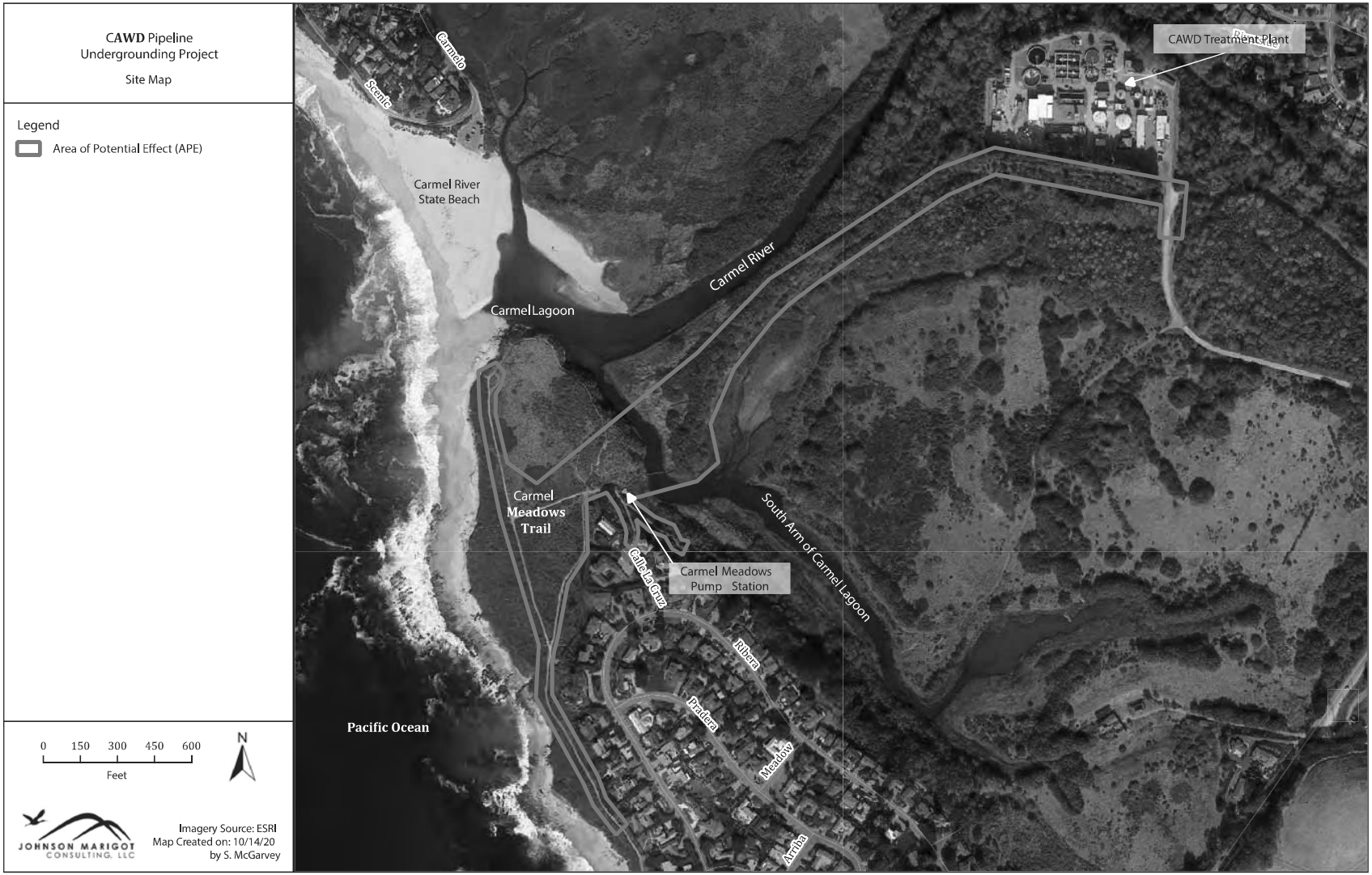

Figure 2. Project Area of Potential Effect Map.

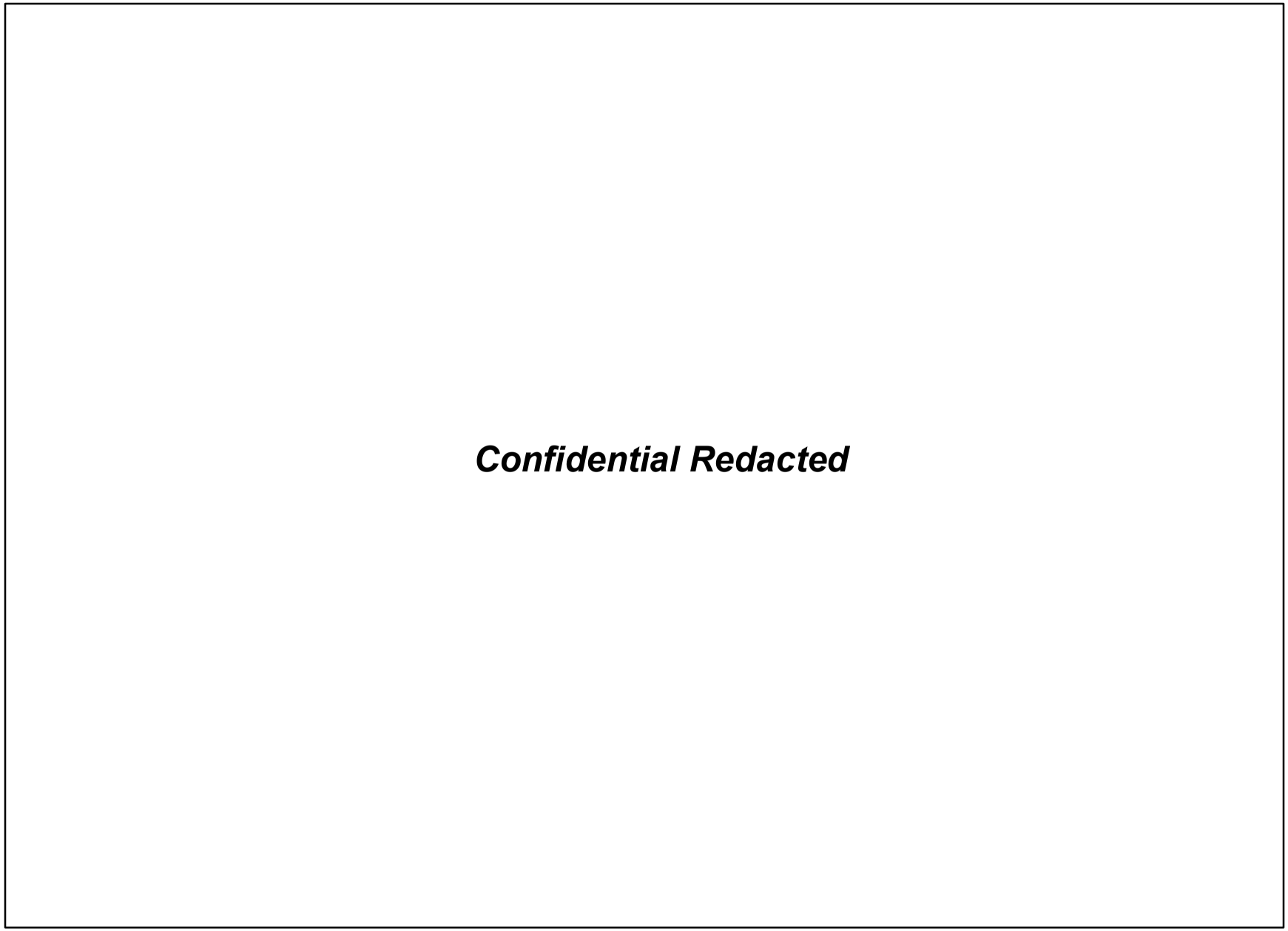

Figure 3. Previously Identified Cultural Resources Near or Adjacent to the CAWD Project area.

Confidential Redactaed

Figure 4. Project ESA with Proposed Work Areas and Access Roads - Inset

Confidential Redacted

Figure 5. Test Locations
2023-128 CAWD CRFREE Mitigation
Pipeline Undergrounding Project

Appendix B

Historic Property Treatment Plan

Confidential Redacted

Appendix D. Agency Correspondence

Index

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

August 03, 2016

In reply refer to: FWS_2015_1211_001

Mr. Anan Raymond, Regional Archaeologist
United States Department of the Interior
U.S. Fish and Wildlife Service
Region 1 + Region 8 Cultural Resource Team
20555 Gerda Lane, Sherwood, OR 97140

RE: Section 106 Continuing Consultation for the Carmel River Floodplain Restoration and Environmental Enhancement Project (CRFREE) – Monterey County, California

Dear Mr. Raymond:

The Office of Historic Preservation (OHP) received, on June 30, 2016, your letter continuing consultation on the above referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations at 36 CFR Part 800. The U.S. Fish and Wildlife Service (USFWS) is seeking comments on the historic properties identification efforts, and finding of effect for the CRFREE located in Monterey County, CA. An initial Area of Potential Effects (APE) consultation letter was sent on December 04, 2015. The OHP replied on January 05, 2016, acknowledging USFWS delineation of the APE.

This proposed project is managed by multiple agencies. Monterey County Resource Management Agency (County) and Big Sur Land Trust (BSLT) are project partners. With California Department of Transportation (Caltrans) agreement, the County is acting as Lead Agency in accordance with requirements of the California Environmental Quality Act. The County and BSLT will be co-applicants for all project permits and authorizations. The USFWS and Caltrans' District 5 Program of Local Assistance (as the delegated authority for the Federal Highways Administration [FHWA]) will serve as federal co-leads per National Historic Preservation Act (NHPA) Section 106 requirements. Funding is from several federal and state agency grant programs: the U.S. Environmental Protection Agency, USFWS, California Coastal Conservancy, California Wildlife Conservation Board, and California Department of Water Resources. Part of the Odello Farm Complex is located on California Department of Parks and Recreation lands at Carmel River State Beach and also on the adjacent Palo Corona Regional Park which is managed by the Monterey Peninsula Regional Park District.

The following reports are included with the current submittal:

- *Green, Kate E.: 2016 - Archaeological Survey Report for the Carmel River Floodplain Restoration and Environmental Enhancement Project, Carmel, Monterey County, California. [By Sonoma State University, Anthropological Studies Center for Denise Duffy & Associates and Big Sur Land Trust.] (ASC)*

- *Garavaglia Architecture, Inc.: 2016 - Carmel River Floodplain Restoration and Environmental Enhancement, Carmel-by-the-Sea, CA: Historic Resource Evaluation Report. [Prepared for Denise Duffy and Associates and Big Sur Land Trust.] (GAI)*
-

The overall proposed CRFREE project within the APE consists of six components:

- **New Causeway**: on about 6 acres, an elevated causeway will replace the highway embankment to improve water flow. Vertical APE will be eight feet with areas of up to 124 feet for column and pier supports. The existing 1995 Carmel River Bridge will remain.
- **Floodplain Grading:** on 135 acres cut and fill contouring will be done to disperse and slow water flow, create habitat, and connect to the Carmel Lagoon located to the west. The vertical APE should be eight feet at maximum.
- **Levee Section Removals:** several discontinuous sections of the 4,650 foot, 1930s protective levee built on the Carmel River south bank will be breached to allow dispersal of any future flood waters. This involves about 30% of existing levee; vertical depths vary from seven to 33 feet of existing levee soils only; native soils will not be excavated.
- **Agricultural Preserve:** about 23 acres of land will be retained for an agricultural heritage preserve area in the southern portion of the APE. Nearby removed fill soils will be used to construct an elevated terrace and farm access road to this locale.
- **Maintenance and access roads and trails:** dirt access roads will cross the southern boundary and go east and west to access existing facilities and, cross to the north for causeway access and to maintain the new levee "notches." A 10 foot wide alignment under the causeway will be created to facilitate future coastal trail connections.
- **Re-vegetation:** select areas of native riparian zones will be enhanced with new native plantings to stabilize the cut and fill and to create expanded habitat refuge areas.

As part of identification efforts to determine whether historic properties occur in the APE standard records searches, literature reviews, pedestrian surveys and recordation were conducted for the entire APE. Results indicate that about 80% of the APE had been previously surveyed for various projects and that five cultural resources were previously recorded as being located within the APE (ASC: Tables 2 & 3, pp. 10-1; map 6). These will be avoided.

Consultation with Indian Tribes and groups, identified as having an interest in this area, was initiated via letters which described the undertaking and APE. Mr. Edward Ketchum of the Amah Mutsun Tribal Band responded and recommended professional monitoring for the grading component of the project and stated that the Esselen people are more closely associated with the project location. Mr. Ketchum asked to be kept informed and requested a copy of any reports. USFWS will take appropriate steps to address any future concerns that might arise and will make any needed notifications as required.

In their report, ASC recommends that the grading area of the braided river channel should be considered very sensitive for finding further cultural resources. However, when comparing ASC Map 4: *project components*, with ASC Map 6: *previously recorded resources*, it can be seen that most sites lie on higher ground in an arc outside the channel plain and basin of the Carmel River. High water flows and flooding in this basin area have been a regular occurrence through time. This area was also leveled in previous decades for growing produce crops.

One linear resource, State Highway 1, passes through the APE and will be affected by the undertaking. This section of State Highway 1 has been determined eligible for listing in the National Register of Historic Places (NRHP) as the Carmel to San Simeon Highway Historic District. The highway district boundary is the roadway itself and contributing features along the route include individual associated elements such as stone parapets, retaining walls, stone culvert headwalls and wayside drinking fountains. It is stated that there is one stone headwall and culvert located in the highway embankment section that will be demolished. In the submitted reports a single picture of a stone headwall obscured by weeds is included in the DPR 523 form for the south levee. It is not referenced in any of the form's text.

As part of identification efforts, historical-era resources from early dairying and cattle ranching and from the Odello artichoke farm have been evaluated under Criterion C as contributors to a proposed Carmel River Floodplain Agricultural Landscape and Historic District, which USFWS has determined eligible for listing in the NRHP, with a period of significance from 1892 to 1970. It is important under Criterion A for agriculture and Criterion B for the long term Odello family independent ownership and operation of a prosperous artichoke growing and shipping business. The district retains a high degree of integrity in the overall character of its contributors, its association, setting and feeling of a rural, minimally developed landscape.

Contributing buildings and structures are: Fish Lower Front Barn (c. 1900-1920; Fish Ranch Corrals (c. 1920s); Odello Farm Worker Housing (c. 1900-1920); Odello Barn East (c. 1900-1920); Odello House (c. 1900-1920), Odello Creamery (c. 1900-1920), Odello Barn West (c. 1900-1920), and the Odello Blacksmith Shop (c. 1900-1920). A 1930s historic levee that protected the cropland fields from seasonal overflow and flood waters is another contributing element. The minimally-developed, low and open aspect of the land and its river view shed are also considered important features and elements of this rural farming landscape.

The buildings are located at the west, south and east margins of the APE and will be avoided. The cut and fill grading will alter the surface of the cropland and grazing area adjacent to the Carmel River but will retain the low, open and rural character of the overall landscape itself and a south portion has been designated as a future agricultural preserve (ASC-map 4). Although the levee will have additional sections removed, its entire historic length, earth mounding heights and overall simple historic appearance will remain the same when viewed from nearby and at a distance within the overall historic landscape view shed.

Based on a review of land use history, scope of activities, and the results of the fieldwork and reporting, including the evaluation of resources greater than 50 years of age, the USFWS has determined that the project will have *no adverse effect* on historic properties (as defined in 36CFR800.5(b)) and is requesting comment on its efforts and findings.

OHP reviewed the submitted documentation and offers the following comments:

- Based on the stated sensitivity of the flood plain zone, it is recommended that USFWS conduct cultural resource sensitivity training for grading crews when the work is being done and also incorporate provisions of 36 CFR 800.13(b) into the overall work plan.

- Pursuant to 36 CFR 800.4(c)(2), **I concur** that the proposed Carmel River Floodplain Agricultural Landscape and Historic District with a period of significance from 1892 to 1970, is an eligible district under Criterion A for the theme of development of local commercial agriculture in Monterey, under Criterion B for its long association with the Odello family and their independent ownership of a successful artichoke business and under Criterion C, as a district with an area of contiguous resources united historically by physical development and use as functionally related properties.

- Pursuant to 36 CFR 800.5(c)(1), **I cannot presently concur** with your finding of effect as a part of your identification and evaluation effort is unclear and appears incomplete. Please consider the following comments:
  - It is proposed to remove a stone headwall and culvert associated with the Carmel to San Simeon Highway Historic District, but other than a verbal description there is no documentation of its location, no clear photos and no description that includes measurements. A copy of the Highway Historic District (P-27-002775) nomination was not included which might describe and illustrate the contributing stone headwall and culvert or culvert types for the district.
  - There is a single weed obscured photo of what appears to be a stone headwall in the DPR 523 record for the south levee (GAI), but the form lacks any description to accompany the photo so it is not clear if this is the highway stone headwall and culvert or another feature associated with the south levee instead.
  - As the contributing stone headwall and culvert will be demolished, please provide a separate DPR 523 with adequate photos and description (including measurements) as well as an analysis of why its removal would not diminish the character of the highway historic district. Sequential individual removal of small elements and features may cumulatively constitute an overall loss of integrity of design, materials and workmanship, reducing district character.
  - Please provide the requested documentation in order to adequately support your finding of effect for this undertaking.

Please be advised that USFWS has additional future responsibilities for this undertaking under 36 CFR Part 800 (as amended). Should you require further information, please contact Jeanette Schulz at Jeanette.Schulz@parks.ca.gov or (916) 445-7031.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

OFFICE OF HISTORIC PRESERVATION
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August 30, 2016

In reply refer to: FWS_2015_1211_001

Mr. Anan Raymond, Regional Archaeologist
Regional Historic Preservation Officer
United States Department of the Interior
U.S. Fish and Wildlife Service
Region 1 + Region 8 Cultural Resource Team
20555 Gerda Lane, Sherwood, OR 97140

RE: Section 106 Continuing Consultation for the Carmel River Floodplain Restoration and Environmental Enhancement Project (CRFREE) – Monterey County, California

Dear Mr. Raymond:

The Office of Historic Preservation (OHP) received, on August 05, 2016, your letter continuing consultation on the above referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations at 36 CFR Part 800. The U.S. Fish and Wildlife Service (USFWS) is providing requested supplementary information for seeking comments on historic properties identification efforts, and finding of effect for the CRFREE located in Monterey County, CA. An initial Area of Potential Effects (APE) consultation letter was sent on December 04, 2015. The OHP replied on January 05, 2016, acknowledging USFWS delineation of the APE. On August 03, 2016 the OHP concurred with the USFWS eligibility evaluation to the National Register of Historic Places, under Criteria A and B, of the Carmel River Floodplain Agricultural Landscape and Historic District but requested more information for contributing elements of the Carmel San Simeon Highway Historic District (a California Department of Transportation [Caltrans] property located within the APE) before commenting on USFWS finding of effect. USFWS has provided the following documentation in response:

- *Attachment A: Finding of No Adverse Effect, Pursuant to PRC 5024 and PRC 5024.5 for Carmel River Floodplain Restoration and Environmental Enhancement Project: 05-MON-1, PM 71.9-72.3; by A. Bevk, Architectural Historian, California Department of Transportation District 5, San Luis Obispo, CA [July 2016]*
- *Attachment B: DPR 523: Carmel-San Simeon Highway Historic District (P-27-002775) prepared for California Department of Transportation District 5, San Luis Obispo, CA: 88 pp. [October 06, 2004] [State Highway One]*

As part of clarification of identification efforts, determination of eligibility and finding of effect USFWS has provided a summary of the Caltrans study findings for the contributing State Highway One culvert and headwall (DM-002), slated to be demolished as part of the undertaking, and agrees with Caltrans' conclusions and evaluation as supporting the initial finding of no adverse effect.

In addition to the culvert and headwall, a section of the State Highway One contributing roadway and its supporting embankment leading to the Carmel River Bridge will be demolished and replaced with a 360 foot long elevated causeway to provide for future disbursement of flood waters from the Carmel River. Caltrans concludes that:

"The introduction of the 360 foot long bridge will not introduce elements that diminish the integrity of the (highway) district's significant historic features….The addition of the bridge within the boundaries of the (highway) historic district has no potential for indirect visual effect to any of the contributing features…within the 75-mile context of the (highway) historic district." (Bevk 2016: 9).

While introduction of the 360 foot long bridge will alter the existing view shed for the adjacent determined eligible Carmel River Floodplain Agricultural Landscape and Historic District (CRFALHD), the new bridge's plain design, overall scale and location contiguous with the existing elevated bridge spanning the Carmel River minimizes its visual appearance and therefore it does not diminish significant characteristics and features of the adjoining and surrounding CRFALHD.

Based on a review of land use history, scope of activities, and results of fieldwork and reporting, including evaluation of resources greater than 50 years of age, the USFWS has determined that the overall undertaking will have *no adverse effect* on historic properties (as defined in 36CFR800.5(b)) and is requesting comment on its efforts and findings.

OHP reviewed the additional submitted documentation and offers the following comments:

- Pursuant to 36 CFR 800.5(b), **I concur** that this undertaking, as described, will have no adverse effect to historic properties.

Please be advised that under certain circumstances, such as unanticipated discovery or a change in project description, USFWS may have additional future responsibilities for this undertaking under 36 CFR Part 800 (as amended). Should you require further information, please contact Jeanette Schulz at Jeanette.Schulz@parks.ca.gov or (916) 445-7031.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

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March 02, 2017

In reply refer to: FWS_2015_1211_001

Mr. Anan Raymond, Regional Historic Preservation Officer
United States Department of the Interior
U.S. Fish and Wildlife Service, Region 1 + Region 8 Cultural Resource Team
20555 Gerda Lane, Sherwood, OR 97140

RE: Section 106 Continuing Consultation for the Additional Activity for Carmel River Floodplain Restoration and Environmental Enhancement Project (CRFREEP) Monterey County, California (OHP Project #: FWS_2015_1211_001)

Dear Mr. Raymond:

The Office of Historic Preservation (OHP) received, on January 30, 2017, your letter continuing consultation on the above referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations at 36 CFR Part 800. Previous consultation between the U.S. Fish and Wildlife Service (USFWS) and the State Historic Preservation Officer (SHPO) for the Carmel River Floodplain Restoration and Environmental Enhancement Project (Project) was completed on August 30, 2016 and concluded that the Project would have no adverse effect on historic properties, including the determined eligible Carmel River Floodplain Agricultural Landscape and Historic District (District) which has multiple contributors. Documentation submitted with this cover letter is:

- *Attachment 1: Letter Report: Balance Hydrologics, Inc., Memo to: N.M. Milan, PE (Whitson Engineers); From: A. Nazarov, PE, CFM; E. D. Ballman, PE; dated September 15, 2016.* ***Subject: Potential Impacts to the State Parks Barn Complex Due to the Carmel River Floodplain Restoration and Environmental Enhancement Project. [Memo: 2016]***

Subsequent to the above referenced earlier consultation, further analysis has identified that although no direct impacts to the District will result from the construction of the Project; indirect, operational impacts consisting of an increase in flood risk could potentially result from the Project. It has been determined that Causeway installation and associated grading to connect the floodplain with the south arm of the Carmel Lagoon may increase flood elevations to a level that could impact existing, and low-lying, historic properties.

The historic buildings of concern, which contribute to the District, are located within the California Department of Parks and Recreation (State Parks) property on the west side of SR 1. These historic buildings comprise the State Parks Barn Complex (Complex) and include the Barn, the Blacksmith Shop, the Creamery, and the Former Residence (Memo 2016: Figure 1).

Balance Hydrologics concludes that, due to the larger volume of flow that will be routed under the Causeway out to Carmel Lagoon, the 100-year flood elevation will potentially increase by as much as 0.2 feet (2.4 inches) at the Complex due to the predicted increase in backwater flow. The source of this backwater flood risk potential is from behind the partial berm that was

installed as part of the South Arm construction (ca. 2006) and comprises an existing flood risk (Memo 2016: Figure 1 as illustrated). The stated additional 2.4 inch rise is above that currently expected from these existing conditions. There are two options to provide more protection to the historic properties from the increased flood risk. The first is to extend the existing berm around the west and south which has costs due to the length of new berm required and the fact that the Complex is adjacent on the west to riparian habitat which would require separate review and compensatory treatments. An extended berm would also introduce a change in the visual appearance of the agricultural landscape and the visual relationship of the Complex within it. The second is to raise the historic buildings up out of the mapped and actual flood risk and meet Monterey County's floodplain ordinance requirement of one foot above the base flood elevation (BFE) (Memo 2016: p. 3, Table). It is proposed to raise the buildings to avoid current and future flooding risks by implementing the following plan and measures:

> *The Creamery and Blacksmith Shop will be raised and placed on concrete foundations prior to the levee plugs being removed (approximately three to five years following construction). It is anticipated that the buildings will be elevated between 6" to 8" and then placed on concrete perimeter or pier foundations. Existing engineering plans prepared by State Parks shall be updated prior to implementation of this measure to reflect any changed conditions or changes in building codes since the original preparation. A Memorandum of Understanding (MOU) between State Parks and the County shall be codified prior to the initiation of construction that outlines the details of this effort, including cost sharing.*

USFWS has determined that while raising the buildings 6" to 8", according to the above proposed plan, will have effects (visual and physical) they will not be adverse to retaining the rural historic character for which the Complex buildings and District are significant, if the plan is implemented as stated including the partnership and updating the proposal before work is implemented. All four buildings are simple wood-frame structures that are important as related and contributing elements to the significant rural historic landscape that exemplifies the bygone era of independent farmers on the Monterey Coast and at Carmel. As such, they were also utilitarian buildings that were subject over time to storm overflows, were added to, repaired and are generally plain in character. They are important for their grouping within the rural landscape. Following OHP staff review of the documentation, the following comments are offered:

- USFWS has determined that by implementing the above plan and measures as stated, the proposed undertaking will result in a less than adverse effect to the historic properties. Pursuant to 36 CFR 800.5(b), **I concur**.

Please be advised that USFWS has additional future responsibilities for this undertaking under 36 CFR Part 800 (as amended). Should you require further information, please contact Jeanette Schulz at Jeanette.Schulz@parks.ca.gov or (916) 445-7031.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*
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December 12, 2024

In reply, refer to: FEMA_2024_1106_001

Lisa Holm
Senior Environmental Protection
Specialist / Archaeologist
FEMA – U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Subject: Carmel River Floodplain Restoration and Environmental Enhancement Project (CRFREE) – Design Change for Odello Barn West, Creamery, and Blacksmith Shop, LH-HMGP-4344-539-094

Dear Ms. Holm:

The California State Historic Preservation Officer (SHPO) has received FEMA's November 5, 2024, letter initiating consultation on a proposed undertaking in Trinity County, in compliance with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108), as amended, and its implementing regulation found at 36 CFR Part 800, and the 2019 Programmatic Agreement (PA) among FEMA, SHPO, and California Office of Emergency Services. Along with the letter, FEMA provided the following documents.

- USFWS Letter and SHPO Concurrence Regarding Area of Potential Effects (SHPO File No. FWS_2015_1211_001)
- USFWS Letter and SHPO Concurrence Regarding Finding of No Adverse Effect
- for Structure Elevation (SHPO File No. FWS_2015_1211_001)
- Design Plans for Berm Construction
- SHPO Concurrence on Eligibility for the Carmel River Floodplain Agricultural Landscape and Historic District (SHPO File No. FWS_2015_1211_001)
- Department of Parks and Recreation Forms 523 for the Carmel River Floodplain Agricultural Landscape and Historic District
- FEMA Letters to Consulting Tribes

FEMA proposes to provide funding to Monterey County floodplain restoration to restore natural floodplain functions and values, including connectivity with the coastal and estuarine waters of the Carmel Lagoon. In previous consultation with the U.S. Fish and Wildlife Service (USFWS), the SHPO reviewed this project and concurred with a Finding of No Adverse Effect (FWS_2015_1211_001). In January 2017, USFWS proposed the

elevation of the Creamery and Blacksmith Shop within the Carmel River Floodplain Agricultural Landscape and Historic District as a protective measure, and the SHPO concurred in March 2017 with a finding of No Adverse Effect for the proposed measure. Subsequently, Monterey County withdrew from the USFWS National Coastal Wetlands Conservation Grant Program, and USFWS no longer has a direct nexus to the Undertaking. Monterey County has applied for funding from FEMA through the Hazard Mitigation Grant Program.

The purpose of FEMA's letter is to consult regarding a change in project design, specifically the protective measure to protect the Creamery and Blacksmith Shop. As project design developed, California State Parks raised concerns related to elevation of the structures because of a lack of structural integrity of the buildings and long-term interpretive plans for the structures. The Odello Barn West collapsed in 2003 and therefore could not be raised, and elevating the Creamery and Blacksmith Shop may damage the structures. In response, the design plans were updated to include the construction of two earthen berms that would expand the existing berm to surround the Odello Historic Barn Complex rather than elevating the structures.

Construction of the berms would occur prior to the levee plugs being removed (approximately three to five years following construction). The berms would have an approximate 40-foot-wide disturbance area, with a final berm width of approximately 30 feet. The berms would be approximately 2 feet above the existing grade and extend approximately 1,300 feet. The soil used to create the berms would be obtained on-site from the adjacent floodplain excavation area.

The USFWS consulted with the SHPO about the project's Area of Potential Effects (APE), defining it as comprising 200 acres. This includes 140 acres where potential ground disturbing activities would occur and an additional 60 acres where restoration activities might have the potential to introduce visual elements that may diminish the integrity of the significant features of historic properties. The SHPO responded on January 5, 2016, that there were no comments on the APE. For FEMA's consultation, the CRFREE APE remains the same as was determined in 2015. The vertical APE for construction of berms is limited to 6 inches required to prepare the existing ground surface to ensure effectiveness of the berms as a flood control feature.

On August 3, 2016, the SHPO concurred with the USFWS that the Carmel River Floodplain Agricultural Landscape and Historic District is a district eligible for listing in the National Register of Historic Places (NRHP). The district consists of 12 buildings, structures, and/or landscape features within and adjacent to the project on the west side of State Route 1. The Odello Barn West, Creamery, and Blacksmith Shop, the subjects of this consultation, are contributing elements to this District.

The Odello Historic Barn Complex area was surveyed in 2015 with negative results for archaeological deposits aside from scattered historic-era sheet refuse. For this current consultation, FEMA determined the previous efforts were sufficient to understand the effects of the updated design related to the Odello Barn West, Creamery, and Blacksmith Shop and no additional field investigations were warranted.

There are no known Native American archaeological or cultural resources in the area where the berm extension is proposed and, given the location on a floodplain consisting of silty sandy soil with minimal ground disturbance, there is a low likelihood of encountering buried archaeological deposits. The fill material to construct the berm would be sourced within the APE from the floodplain excavation area that is associated with floodplain grading activities described in the 2016 USFWS consultation.

Tribal consultation has been ongoing since 2015. Requests in 2015 and 2017 for a search of the Native American Heritage Commission's (NAHC) Sacred Lands File produced **negative** results.

Pursuant to their responsibilities as a federal lead agency, in 2015 the USFWS initiated consultation on the floodplain restoration and causeway project components through direct mail with the Native American Tribes on the NAHC's list, including Ohlone / Costanoan-Esselen Nation; the Amah Mutsun Tribal Band; the Amah Mutsun Tribal Band of Mission San Juan Bautista; the Indian Canyon Mutsun Band of Costanoan; the Costanoan Rumsen Carmel Tribe; the Trina Marine Ruano Family (Ohlone/Miwok), and Jakki Kehl. USFWS received no responses.

Between 2015 and 2020, the Subapplicant consulted further with the Ohlone / Costanoan-Esselen Nation and the Esselen Tribe of Monterey County in accordance with Assembly Bill 52 and its implementing California Public Resources Code (PRC) on the floodplain and causeway project components. The County developed a set of mitigation measures in collaboration with both Tribes to avoid and minimize impacts to tribal cultural resources that were included in the Final EIR/EA. These measures consisted of tribal monitoring, cultural sensitivity awareness training for workers, and discovery protocols.

Because of the proposed design change to construct the berm extension, FEMA mailed and emailed letters to the two Tribes who previously consulted with Monterey County on this project: the Ohlone / Costanoan Esselen Nation and the Esselen Tribe of Monterey County. FEMA agreed to make Tribal monitoring and cultural sensitivity awareness training for workers as mitigation measures a condition of project approval.

The proposed berms would be less than 2 feet above the surrounding ground surface. The low profile of the proposed berm extension would be consistent with the existing immediately surrounding topography and would not alter the landscape such that the

integrity of setting, feeling, materials, or workmanship are diminished. Construction would be temporary, and any mechanical work for the berm extension would not introduce any auditory or atmospheric effects that would alter these historic properties. In addition, construction of the berms rather than the elevation of the structures would avoid any modification or potential damage to the structures. Based upon this analysis, FEMA has determined that, while extension of the berm would introduce a new element within the boundaries of this historic property, this feature would not alter any of the characteristics that qualify the Odello Barn West, Creamery, or Blacksmith Shop for the NRHP. Further, this berm extension is so minimal that it would not have any effects upon the larger Carmel River Floodplain Agricultural Landscape and Historic District. FEMA has therefore made a finding of No Adverse Effect to Historic Properties with Conditions for this Undertaking per Stipulation II.C.5.a of the Agreement.

After reviewing the information submitted by FEMA, the SHPO offers the following comments.

- The proposed project qualifies as a federal undertaking with the potential to affect historic properties.
- The APE appears to be sufficient to take direct and indirect effects into account.
- Identification and evaluation efforts are sufficient. The previous documentation of the USFWS consultation was very helpful.
- The SHPO has no objection to the proposed Finding of No Adverse Effect with the conditions identified by FEMA above.
- Please be advised that under certain circumstances such as an unanticipated discovery or a change in project description, you may have future responsibilities for this undertaking under 36 CFR Part 800 and/or the 2019 FEMA PA.

If there are any questions, please contact Mark Beason, State Historian, at (916) 503-8599 or mark.beason@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

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

JUL 2 0 2018

Refer to NMFS No: WCR-2018-10148

Rick M. Bottoms, Ph.D.
Chief, Regulatory Division
U.S. Department of the Army
San Francisco District, Corps of Engineers
1455 Market Street
San Francisco, California 94103-1398

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Calle La Cruz Pipeline Replacement Project (Corps File No. 2017-00521S)

Dear Dr. Bottoms:

Thank you for your letter of June 18, 2018, requesting initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS), pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), for the Calle La Cruz Pipeline Replacement Project (herein referred to as "Project"). The Corps of Engineers (Corps) proposes to provide authorization pursuant to Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq.*), and Section 10 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. § 403 *et seq.*) to the Carmel Area Wastewater District for construction of the Project.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action.

The enclosed biological opinion is based on our review of the proposed Project and describes NMFS' analysis of the effects of the implementation of the Project on threatened South-Central California Coast (S-CCC) steelhead (*Oncorhynchus mykiss*) and their designated critical habitat in accordance with section 7 of the ESA.

In the enclosed biological opinion, NMFS concludes the Project is not likely to jeopardize the continued existence of the S-CCC steelhead Distinct Population Segment (DPS), nor is the Project likely to result in the destruction or adverse modification of designated critical habitat for S-CCC steelhead. However, NMFS anticipates take of S-CCC steelhead is likely to occur as a result of Project. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion.

Regarding EFH, NMFS has reviewed the proposed project for potential effects and determined that the proposed project will occur within an area identified as EFH for Pacific Groundfish,

managed under the Pacific Groundfish Fishery Management Plan. NMFS has determined the project will result in adverse effects to EFH due to disturbance of the lagoon substrates and water quality during construction. However, the project has proposed several minimization measures, including some recommended by NMFS, to avoid or minimize potential adverse effects to EFH. Thus, no additional EFH conservation recommendations are provided.

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

Sincerely,

for

Barry A. Thom
Regional Administrator

Enclosure

cc: Copy to ARN # 151422WCR2018SR00127
Copy to Chron File

Endangered Species Act Section 7(a)(2) Biological Opinion for the

Calle La Cruz Pipeline Replacement Project (Corps File No. 2017-00521S)

NMFS Consultation Number: WCR-2018-10148

Action Agency: U.S. Army Corps of Engineers

Affected Species and NMFS' Determinations:

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

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

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

Issued By: for

Barry A. Thom
Regional Administrator

Date: JUL 20 2018

LIST OF ACRONYMS AND ABBREVIATIONS

CSUMB	California State University Monterey Bay
cm	centimeter
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ITS	Incidental Take Statement
MSA	Magnuson-Stevens Fishery Conservation and Management Act
mm	millimeter
MCRMA	Monterey County Resource Management Agency
MPWMD	Monterey Peninsula Water Management District
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
PBF	Physical or Biological Features
PCE	Primary Constituent Elements
S-CCC	South-Central California Coast
TRT	Technical Review Team
WSE	Water Surface Elevation

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into section 2 below.

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement 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.),* and implementing regulations at 50 CFR 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 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 through NMFS' Public Consultation Tracking System (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). A complete record of this consultation is on file at NMFS' North Central Coast Office in Santa Rosa, California.

1.2 Consultation History

On November 14, 2017, NMFS participated on a conference call with the applicant's consultant to review the Project's design and to discuss potential alternatives. During this call, NMFS provided input on the timing of the proposed work, dewatering plans, and suggested alternative Project alignments. On February 28, 2018, NMFS participated on a conference call with the consultant to discuss different measures to reduce impacts on steelhead and habitat. NMFS and the consultant discussed a revised Project description via conference call on March 26, 2018. During this call, NMFS was informed the Project had been revised to incorporate specific minimization measures discussed during the February 28 call. In addition, dewatering of the action area was no longer necessary and the area to be isolated for construction was substantially reduced. On June 21, 2018, NMFS received a request from the Corps for formal consultation and as well as a copy of the project's biological assessment (Johnson Margot Consulting 2018). After a review of the biological assessment, NMFS determined the information therein was sufficient to initiate consultation.

1.3 Proposed Action

For section 7 ESA, "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). For EFH consultation, federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal Agency (50 CFR 600.910).

The Corps proposes to authorize the Carmel Area Wastewater District (CAWD, applicant) to replace an existing aboveground, 24-inch diameter by 330-foot long treated wastewater outfall pipeline (known as the Calle de La Cruz pipeline) and a temporary 6-inch diameter by 330-foot long HDPE sewage force main. Both pipelines are undergrounded on either side of the South Arm of the lagoon and are supported over the lagoon on piles. The new pipeline sections will be placed beneath the bottom the lagoon. Due to the variable hydrologic conditions in the lagoon, including periods of complete submersion, the pipelines and steel pile supports have become highly degraded and unsafe. As a result, flood surge and or debris passing through the South Arm of the lagoon could easily cause a collapse of the pipes off of the 12-inch concrete-filled, steel shell pile supports. The steel piles have corroded extensively, and in some places only the concrete fill is holding up the pipelines (concrete originally poured into the steel shell pile). Recent inspections revealed that the interior mortar lining of the 24-inch treated wastewater pipe is currently the last barrier to a potential spill in the lagoon. The original six-inch sewage force main developed a seven-foot long crack over the length of pipe crossing the lagoon. This pipe was bypassed with a temporary high density polyethylene (HDPE) pipe in 2014.

The Project also includes access road improvements and creation of temporary staging areas north and south of the pipeline crossing over the lagoon. These are needed because the pipeline replacement location is located primarily in a heavily vegetated riparian area that can only be accessed from the north by an existing dirt road and from the south by a foot trail.

1.3.1. Staging Areas and Access Roads

The Project will require two staging areas for storage of equipment and materials. These include a 0.1-acre staging area at the southern end of the lagoon and a 0.8-acre staging area at the northern end of the lagoon. To construct the Project, staging areas and an approximately 2,235-foot long existing access road from the treatment plant to the northern staging area also will be cleared of vegetation, as needed, and widened where necessary to between 10 and 15 feet to facilitate vehicular access and accommodate equipment and construction material storage. Access road improvements will be temporary and no permanent improvements are required. Rubber mats, steel plates, or wood plates/crane mats will be placed over the existing dirt access road to allow construction vehicle access. Access roads will also be stabilized with filter fabric and 12 inches of clean crushed gravel, as necessary. There is one location on the northern access road where a seasonal wetland and drainage may not be avoided. Appropriate BMPs (e.g., filter fabric and gravel) will be placed over the wetland at this location. To level the northern staging area, the embankment that is currently in the staging area will be temporarily lowered.

A temporary sediment basin for construction-related water treatment would be installed in one of the staging areas, and a crane pad will be placed at the southwestern edge of the northern staging area to accommodate a construction crane. The crane will be used to remove the existing pipelines and assist in the installation of the new pipes. Leveling and stabilizing the northern staging area will include grading 0.21 acre of perennial wetland. A 50-foot by 30-foot crane pad will be constructed at the southwestern edge of the northern staging area that will necessitate import of clean fill. All access road and staging area improvement will occur from the top of bank and there will be no need to place heavy equipment within the open water of the lagoon. It will also be necessary to conduct grading work to widen a portion of the southern access road

and level the southern staging area. The staging areas will be used for construction activities such as temporary infiltration, baker tank staging, and dredge spoils stockpile. Trenching activities are anticipated to result in the excavation of 1,000-2,500 cubic yards of native soil; the excavated soil will be used as backfill material.

1.3.2. Trenching and Pipeline Placement

To isolate the area where trenching and backfilling activities will occur, steel sheet piles will be installed (Figure 1). Prior to trench construction, two rows of sheet piles would be installed 6 to 10 feet apart across the South Arm of the lagoon, to isolate the trenching area, control water quality, and to ensure trench stability. The sheet piles (65-feet long by 3-feet wide) would be installed with a vibratory hammer upstream (north) and downstream (south) of the trenching area. Depending on the construction sequencing by the contractor, the sheet piles may be installed all at one time, or in segments. The reach of the existing 24-inch outfall pipeline crossing the lagoon would then be isolated with a bypass pipe. Trenching and backfilling would then occur between the two rows of sheet piles. Dewatering is not proposed during in-water trenching. To ensure water quality within the lagoon is not adversely affected, turbidity curtains would be installed immediately outside of the sheet piles.

Prior to installation of the steel sheet piles, fish will be excluded from approximately 20 linear feet of the lagoon encompassing the work areas. To exclude fish from the work area, two permeable curtains (e.g., turbidity curtains) of a sufficient length to reach the bottom elevation of the southern arm of the lagoon will be placed immediately outside of the work area (one upstream and one downstream), parallel with the existing pipelines (Figure 1). The curtains will first be installed together and then gradually be pulled apart to exclude most, if not all, fish from the work area. Once the block nets are in place, seine nets will be used to ensure all fish have been removed from the work area. This fish exclusion area will remain in place for the duration of sheet pile installation, trenching, pipe installation, and backfilling activities. Lastly, a fish passageway, consisting of one or more 12-inch culverts will be installed and maintained. The culvert(s) will extend through the two sheet piles and the turbidity curtains/exclusion nets (Figure 1) to provide an unobstructed passageway for fish between the two temporarily isolated bodies of water.

In addition to installation of fish passageway culverts, measures would be implemented to help maintain good rearing conditions for steelhead during construction. An existing agricultural well adjacent to State Route 1 is in close proximity to the upper reaches of the South Arm of the lagoon and will be used, as needed, to provide cold oxygenated water to the lagoon during construction. The existing well will be retrofitted with a working lower flow pump. Water will be supplied to two or three locations along the South Arm. Finally, to maintain adequate oxygenation, solar bees (equipment used to circulate and aerate waters) will be placed within the lagoon during construction.

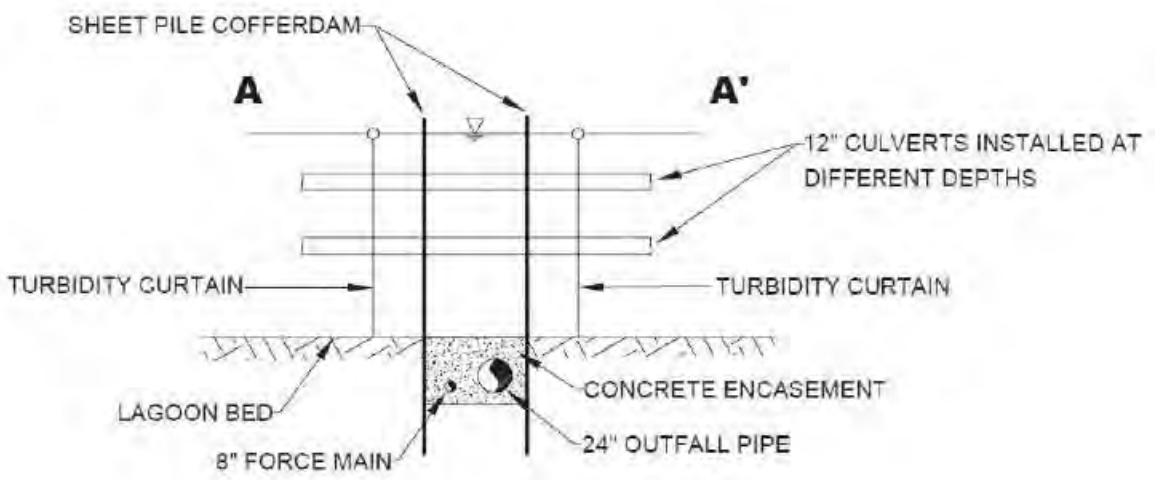

Figure 1. A cross-sectional view of the sheet piles, turbidity curtain, new pipeline placement, and 12-inch fish passageway culverts. From: Johnson Marigot Consulting (2018).

After steel sheet piles and the bypass line are installed, and while maintaining water level between the sheet piles, an excavator or a clam-shell excavating bucket mounted on a crane will first remove the isolated 24-inch outfall pipeline, the 6-inch sewer force main and the existing concrete piers; then the contractor will start excavating the lagoon bed. Excavated spoils will be stockpiled in a constructed sediment basin within one of the staging areas. Excess water from the spoils will be filtered through sediment controls and either discharged back into the lagoon or left to infiltrate through the porous on-site soil material surrounding the lagoon.

After the trenching activities are complete, two pre-assembled HDPE pipes would be installed inside the trench. The contractor would then connect both new pipes to the existing 24-inch outfall and the existing 6-inch sewer force main. Localized, short-duration groundwater dewatering will be required at the tie-in points of new pipes, which are to the east and west sides of the trenching area. After the pipes are installed, the pipe will be partially backfilled with concrete slurry to just above the top of the pipeline. After the concrete cures, the remainder of the trench will be backfilled with material previously excavated from the lagoon bed. During concrete work, pH of the lagoon waters within the confined area will be carefully monitored. The trenched area in the upland portions of the new pipelines will also be covered with clean aggregate and native soil.

The water inside the sheet piles is expected to be turbid following the excavation and backfilling activities. At the end of the backfilling process, the water inside the sheet piles will be treated such that the water quality is returned to pre-construction conditions. Water removed from within the in-water work area will be filtered through sediment controls and either discharged back into the lagoon (after treatment in Baker tanks) or left to infiltrate through the porous on-site soil material. After the water inside the steel sheet piles is treated and returned to its preconstruction quality, the steel sheet piles will be removed followed by the removal of the turbidity curtains.

All sediment will be stored in a sediment basin located in either of the two staging areas. Some of the graded material will be removed, and some will be used as backfill. Typically, excess fill material is sent to a sanitary land fill. Any imported material will be certified clean and weed free. It is anticipated that the project will require the following import and export of fill-related materials:

- Export 1,000-2,500 cubic yards of sediment from trench and 1,000 cubic yards of construction debris, and
- Import: 200 cubic yards clean sand and 180 cubic yards of concrete.

1.3.3. Post-Construction Activities

Upon completion of construction activities, temporary fill will be removed from the wetlands, preconstruction grades will be restored, and the impacted areas will be re-planted with appropriate native vegetation. Site restoration will generally involve overall clean up, grading, and installation of erosion control measures, as necessary. Revegetation work will be consistent with a Revegetation Plan to be submitted to and approved by appropriate agencies prior to commencement of project activities.

1.3.4. Minimization Measures/Best Management Practices

All efforts will be made to avoid and minimize impacts to environmental resources within and immediately adjacent to the Action Area. The applicant has proposed various minimization measures and best management practices (BMPs) which are described in Section 3.2 of the biological assessment (Johnson Margot Consulting 2018). These include general avoidance and minimization measures and site BMPs related to water quality protection, environmental education training for construction crews, use of biological monitors during all construction related activities, seasonal work windows for in-water construction (June 15-October 31), and other species-specific measures (e.g., fish relocation, exclusion, *etc.*).

1.3.5. Schedule

Construction is planned for June through October in either 2018, or 2019. The project field work is anticipated to take approximately four months to complete, with two months of work directly within the lagoon. This includes approximately two weeks to install sheet piles, four weeks to install pipe and backfill, and two weeks to remove the sheet piles and restore the channel.

In-water work is proposed to occur during the months of August to October to avoid migrating steelhead. Crews would typically work from approximately 6:00 a.m. to 5:00 p.m., Monday through Friday. These dates and times are subject to change, pending issuance of project permits and agency authorizations.

1.3.6. Interrelated and Interdependent Actions

"Interrelated actions" are those that are part of a larger action and depend on the larger action for their justification. "Interdependent actions" are those that have no independent utility apart from

the action under consideration (50 CFR 402.02). There are no interrelated of interdependent actions associated with the proposed action.

2. ENDANGERED SPECIES ACT CONSULTATION: 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, Federal agencies must ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitat. If incidental take is expected, section 7(b)(4) requires NMFS to provide an Incidental Take Statement (ITS) that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures and terms and conditions to minimize such impacts.

2.1 Analytical Approach

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

The adverse modification analysis considers the impacts of the Federal action on the conservation value of designated critical habitat. This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.[1]

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

- Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an "exposure-response-risk" approach.
- Describe any cumulative effects in the action area.

[1] Memorandum from William T. Hogarth to Regional Administrators, Office of Protected Resources, NMFS (Application of the "Destruction or Adverse Modification" Standard Under Section 7(a)(2) of the Endangered Species Act) (November 7, 2005).

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

2.2.1. Status of the S-CCC Steelhead DPS

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

Recent analyses conducted by the S-CCC steelhead Technical Review Team (TRT) indicate the S-CCC steelhead DPS consists of 12 discrete sub-populations representing localized groups of interbreeding individuals, and none of these sub-populations currently meet the definition of viable (Boughton *et al.* 2006; Boughton *et al.* 2007). Most of these sub-populations are characterized by low population abundance, variable or negative population growth rates, and reduced spatial structure and diversity. The sub-populations in the Pajaro River and Salinas River[2] watersheds are in particularly poor condition (relative to watershed size) and exhibit a greater lack of viability than many of the coastal subpopulations. In the Carmel River there has been a fairly steady 15-year decline in abundance of anadromous adults (Williams *et al.* 2016). The decline has surprised researchers because it coincides with a concentrated effort to restore

[2] The TRT only identified multiple populations in the Salinas River system for purposes of DPS viability analysis. However, for the purposes of threat analysis (and corresponding recovery actions), the Pajaro River was broken into the Uvas Creek tributary and the remainder of the Pajaro River system (which includes the mainstem and other tributaries). Uvas Creek was singled out because of its importance and the large number of threats.

the habitat in the Carmel River and to improve numbers through a rescue/captive rearing operation (Williams *et al.* 2016). This decline could indicate an increase in S-CCC steelhead DPS extinction risk (Williams *et al.* 2016).

Although steelhead are present in most streams in the S-CCC DPS (Good *et al.* 2005), their populations are small, fragmented, and unstable (more subject to stochastic events) (Boughton *et al.* 2006). In addition, severe habitat degradation and the compromised genetic integrity of some populations pose a serious risk to the survival and recovery of the S-CCC steelhead DPS (Good *et al.* 2005). In addition, severe habitat degradation and the compromised genetic integrity of some populations pose a serious risk to the survival and recovery of the S-CCC steelhead DPS (Good *et al.* 2005). NMFS' 2005 status review concluded S-CCC steelhead remain "likely to become endangered in the foreseeable future" (Good *et al.* 2005). NMFS confirmed the listing of S-CCC steelhead as threatened under the ESA on January 5, 2006 (January 5, 2006; 71 FR 834).

In the most recent status update (Williams *et al.* 2016), NMFS concluded there was no evidence to suggest the status of the S-CCC steelhead DPS has changed appreciably since the publication of the previous status review (Williams *et al.* 2011), and, therefore, S-CCC steelhead remain listed as threatened (Williams *et al.* 2016).

2.2.2. Status of Critical Habitat for the S-CCC steelhead DPS

Critical habitat was designated for S-CCC steelhead on September 2, 2005 (70 FR 52488). The designation of critical habitat for S-CCC steelhead uses the term primary constituent elements (PCEs). The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). This shift in terminology does not change the approach used in conducting our analysis, whether the original designation identified primary constituent elements, physical or biological features, 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.

For S-CCC steelhead, PBFs include estuarine areas free of obstruction and excessive predation with the following essential features: (1) water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (2) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and (3) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation (70 FR 52488).

The condition of critical habitat for S-CCC steelhead, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined the present depressed population conditions are, in part, the result of the following human-induced factors affecting PBFs of critical habitat: agriculture, grazing, and mining activities, urbanization, stream channelization, construction of dams and other migration impediments, wetland loss, water resource development including aquifer overdraft, and past recreational harvest. Impacts of concern include alteration of stream bank and channel morphology, alteration of water temperatures, fragmentation of habitat, loss of downstream

recruitment of spawning gravels and large woody debris, degradation of water quality and quantity, alteration or loss of riparian vegetation communities, and fish passage constraints (Busby *et al.* 1996, 70 FR 52488).

Depletion and storage of streamflows have drastically altered the natural hydrologic cycles in many of the streams in the S-CCC steelhead DPS (Good *et al.* 2005, NMFS 2013). Alteration of streamflows results in migration delays, loss of suitable habitat due to dewatering and blockage, stranding of fish from rapid flow fluctuations, and increased water temperatures harmful to steelhead. Overall, the current condition of S-CCC steelhead critical habitat is degraded, and likely cannot provide the conservation value necessary for the recovery of the species absent habitat restoration efforts.

2.2.3. Global Climate Change

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

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

In the San Francisco Bay region[3], warm temperatures generally occur in July and August, but as climate change takes hold, the occurrences of these events will likely begin in June and could continue to occur in September (Cayan *et al.* 2012). Climate simulation models project that the San Francisco region will maintain its Mediterranean climate regime, but experience a higher degree of variability of annual precipitation during the next 50 years and years that are drier than the historical annual average during the middle and end of the twenty-first century. The greatest reduction in precipitation is projected to occur in March and April, with the core winter months remaining relatively unchanged (Cayan *et al.* 2012).

[3] Both the San Francisco Bay and Monterey Bay regions exhibit similar Mediterranean climate patterns. The action area for the Project is located between the two regions.

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 2004; Osgood 2008; Turley 2008; Abdul-Aziz *et al.* 2011; Doney *et al.* 2012). The projections described above are for the mid to late 21st Century. In shorter time frames, climate conditions not caused by the human addition of carbon dioxide to the atmosphere are more likely to predominate (Cox and Stephenson 2007; Smith *et al.* 2007, Santer *et al.* 2011).

2.2.4. S-CCC Steelhead General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both fresh- and saltwater. The older juvenile and adult life stages reside in the ocean, until the adults ascend freshwater streams to spawn. Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby *et al.* 1996; Moyle 2002). Although one-time spawners are the great majority, Shapovalov and Taft (1954) reported that repeat spawners are relatively numerous (17.2 %) in California streams. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults.

Adult S-CCC steelhead are classified as winter-run steelhead because they emigrate from the ocean to their natal streams to spawn annually during the winter (Moyle 2002). Specifically, adult CCC steelhead typically enter freshwater between December and April, peaking in January and February (Wagner 1983; Fukushima and Lesh 1998). During this time, seasonal high flows create stream velocities and depth that are optimal for adults to transit to and from spawning grounds. The minimum stream depth necessary for successful upstream migration is about 13 centimeters (cm), although short sections with depths less than 13 cm are passable (Thompson 1972). The preferred water velocity for upstream migration is in the range of 40-90 cm/s, with a maximum velocity, beyond which upstream migration is not likely to occur, of 240 cm/s (Thompson 1972).

Upon entering their natal stream, steelhead females build redds to bury eggs for a several month long incubation period. Redds are generally located in areas where the hydraulic conditions are such that fine sediments, for the most part, are sorted out and streamflow is constant. Reiser and Bjornn (1979) found that gravels of 1.3-11.7 cm in diameter were preferred by steelhead. The survival of embryos is reduced when fines smaller than 6.4 millimeters (mm) comprise 20 to 25 percent of the substrate. This is because, during the incubation period, the intragravel environment must permit a constant flow of water to deliver dissolved oxygen and to remove metabolic wastes. Studies have shown a higher survival of embryos when intragravel velocities exceed 20 cm/hr (Coble 1961; Phillips and Campbell 1961). The number of days required for steelhead eggs to hatch is inversely proportional to water temperature and varies from about 19 days at 15.6˚ degrees (°) Celsius (C) to about 80 days at 5.6˚ C. Fry typically emerge from the

gravel two to three weeks after hatching (Barnhart 1986). Other intragravel parameters such as the organic material in the substrate effect the survival of eggs to fry emergence (Chapman 1988; Everest *et al.* 1987; Shapovalov and Taft 1954).

Once emerged from the gravel, steelhead fry rear in freshwater edgewater habitats and move gradually into pools and riffles as they grow larger. Cover, water temperature, sediment, and food items are important habitat components for juvenile steelhead. Cover in the form of woody debris, rocks, overhanging banks, and other in-water structures provide velocity refuge and a means of avoiding predation (Bjornn *et al.* 1991; Shirvell 1990). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Water temperature can influence the metabolic rate, distribution, abundance, and swimming ability of rearing juvenile steelhead (Barnhart 1986; Bjornn and Reiser 1991; Myrick and Cech 2005). Optimal temperatures for steelhead growth range between 10 and 20° C (Hokanson *et al.* 1977; Myrick and Cech 2005; Wurtsbaugh and Davis 1977). Fluctuating diurnal water temperatures are also important for the survival and growth of salmonids (Busby *et al.* 1996).

Although variation occurs, in coastal California juvenile steelhead usually rear in freshwater for 1-2 years until they are become large enough to enter the ocean as smolts to finish rearing and maturing to adults. Barnhart (1986) reported that steelhead smolts in California range in size from 140 to 210 millimeters (mm) (fork length). S-CCC steelhead smolts emigrate episodically from natal streams during fall, winter, and spring high flows, with peak migration occurring in April and May (Fukushima and Lesh 1998).

2.3 Action Area

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The Action Area is located within the southern portion of the Carmel Lagoon, in Monterey County. The Carmel River Lagoon, owned by the California Department of Park and Recreation (State Parks), consists of a mixture of wetland habitat types including perennial open water areas surrounded by riparian forests/scrub shrub, emergent wetland and shore habitats (Casagrande 2006). The action area is situated in the South Arm of the lagoon and extends from CAWD's water pollution control plant in the northeast corner of the action area, to the bedrock bluffs overlooking the southwest corner of the lagoon (Figure 2).

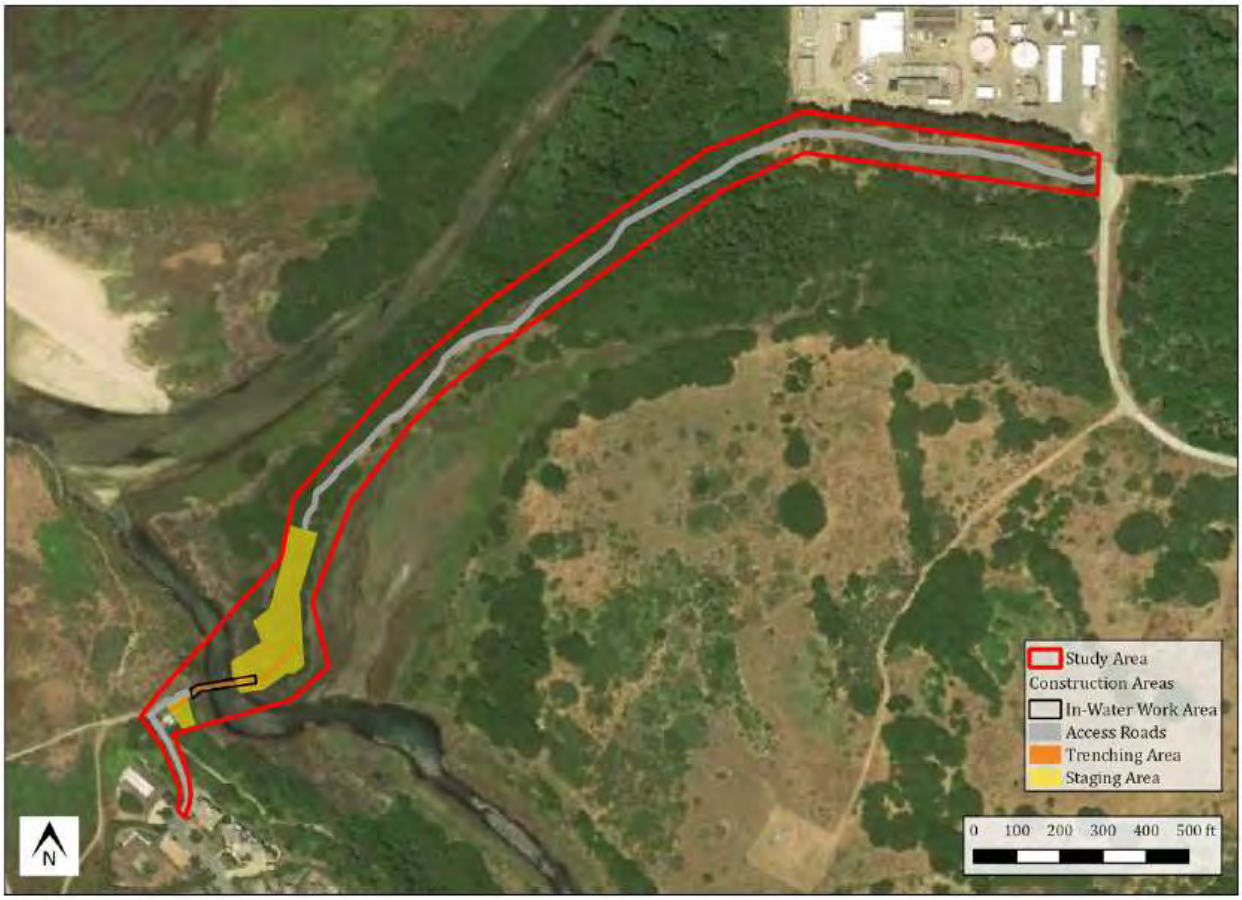

Figure 2. The action area (study area) showing the staging areas, the pipeline alignment, lagoon crossing, and with in-water work areas highlighted. The CAWD treatment plant is in the northeast corner of the figure.

2.4 Environmental Baseline

The "environmental baseline" includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The Carmel River is a central California coastal river that drains approximately 255 square miles of watershed to the Pacific Ocean. Past and present land uses within the Carmel River watershed include open space, rangeland grazing, agriculture, golf courses, as well as residential and commercial developments (Carmel River Watershed Conservancy 2004). Significant human impacts have occurred in the basin, including the over appropriation of surface and groundwater, urbanization, an expansive road network, construction and operation of upstream dams and reservoirs, near-annual sandbar management at the mouth of the lagoon, that when combined with the land use changes described above have resulted in a degradation of habitat quality throughout the Carmel River system (Smith *et al.* 2004). More recently, two longstanding dams

have were removed (Old Carmel River Dam in 2015, and San Clemente Dam 2016) which have already improved sediment transport and hydrologic conditions in the river.

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

The Carmel River Lagoon is designated critical habitat for S-CCC steelhead, of which the boundaries extent up to the extreme high water within the Carmel Lagoon. The maximum water surface elevation recorded for the Carmel Lagoon is at 15.4 feet in 2008 (USACE 2013). The lagoon develops after the sandbar forms at the mouth of the river, typically in late spring or early summer. In total, the current extent of the lagoon and adjacent wetlands encompasses approximately 300 acres. The majority of this is owned and managed by the California Department of Parks and Recreation (State Parks), which includes the Carmel River Lagoon and Wetland Natural Preserve and Carmel River State Beach. The lagoon/marsh preserve area consists of a mosaic of wetland habitat types including perennial open water habitats in the main lagoon and South Arm, seasonally flooded willow riparian forest and scrub shrub, both perennial and seasonal emergent marshes, seasonally inundated mudflats, and beach dunes (Casagrande 2006).

The Carmel Lagoon provides important PBFs for steelhead rearing and migration. Steelhead adults and smolts migrate through the lagoon once the sandbar is open, which typically occurs during the wet season (December-June). Habitat suitability for steelhead in the Carmel Lagoon changes seasonally and is directly related to changes in water quality and depth (Casagrande *et al.* 2002; Casagrande and Watson 2003). In seasonally closed lagoons, such as Carmel, each of these parameters is driven primarily by the timing of sandbar formation and both the volume and duration of freshwater inflow to the lagoon (Smith 1990). Surface flow from the Carmel River provides the primary source of freshwater to the lagoon, with smaller contributions from groundwater (Watson and Casagrande 2004). Greater depths in the lagoon are important because they provide necessary escape cover from avian predators and help maintain suitable water quality conditions. The South Arm of the lagoon supports the deepest habitat in the lagoon (Casagrande *et al.* 2002).

Habitat quality in the lagoon is most limited during the summer dry season, when water quality often becomes degraded. Water temperatures are often near or above 20°C during summer and early fall, and water column stratification often results in reduced dissolved oxygen concentrations at depth (Casagrande *et al.* 2002; Casagrande and Watson 2003; Hagar Environmental Science 2003; Watson and Casagrande 2004). This is especially problematic in deeper, off-channel or backwater areas of the lagoon (e.g., the South Arm) where the volume of trapped saltwater is greater and submerged aquatic vegetation is more dense (Alley 1997; Casagrande and Watson 2003; Hagar Environmental Science 2003). The thickness of the freshwater layer is important because it allows for better vertical mixing and thus more suitable water quality conditions for juvenile steelhead to use.

In fall (September – December), wave overwash events can provide a substantial volume of saltwater and marine debris (e.g., kelp) to the lagoon (Casagrande and Watson 2003; Hagar Environmental Science 2003; Watson and Casagrande 2004). Wave overwash initially provides a

source of mechanical mixing (i.e., increased dissolved oxygen) and colder water to the lagoon, however the lack of freshwater inflow can result in a strengthening of the water column stratification and subsequent poor water quality conditions.

When flow in the river is connected to the lagoon, juvenile steelhead of multiple age classes are able to migrate to the lagoon until the lower river becomes disconnected (usually in early summer). Once in the lagoon, they are able to take advantage of the high prey abundance (e.g., macroinvertebrates) as long as water quality conditions remain suitable. As in other coastal lagoons, juvenile steelhead that rear over the summer in the Carmel Lagoon can exhibit rapid growth relative to riverine reared juveniles of the same cohort (Smith 1990; Hayes *et al.* 2008).

After the initial breach of the sandbar in late fall or winter, suitable habitat for steelhead rearing is largely restricted to areas with sufficient residual depth. The residual depth in the lagoon is important for maintaining habitat where young steelhead can continue feeding and acclimate to saltwater. During exceptionally dry years, opening of the sandbar in late fall or winter may be delayed or not occur at all (e.g., 1988-89, 1989-90, and 2013-14).

During fall and winter, increases in river inflow and/or large wave overwash events can cause a rapid increase in WSE within the lagoon that threatens low-lying residential properties along the northern edge of the marsh with flooding. The potential for flooding has resulted in a long history of sandbar management to reduce flood risk and property damage. This was originally done by locals with horse and plow, shovels, and eventually transitioned to the use of heavy equipment led by the County since at least 1973. Prior to 2011, the sandbar was physically opened by machinery to evacuate the lagoon in the quickest and most efficient manner. However, since then, the County has shifted sandbar management practices to grading specific locations of the sandbar down to the highest elevation possible to avoid flooding (approximately 11 feet NGVD) which allows the lagoon WSE to rise and scour the channel on its own. In the past, sandbar breaching has been carried out as early as October and as late as June, depending on the timing of storms, wave heights, and lagoon WSE, with multiple breach events in a single season.

Breaching activities, especially when done out of season, can result in adverse effects to juvenile steelhead rearing habitat quantity and quality. Once the sandbar opens (natural or mechanical), the volume and rate of water exiting the lagoon continues to increase and in many cases the lagoon is often drained to near sea level within several hours (Hagar Environmental Science 2003). The speed and magnitude of the draining can result in entrainment of juvenile steelhead to the ocean including some individuals that may not be fully acclimated to seawater. The reduction of the lagoon volume also results in a reduction in residual habitat for juvenile steelhead that remain in the lagoon. In the Carmel Lagoon, the primary (and often only) residual habitat with suitable low velocities during rapid draining events is located in the South Arm.

The location and angle of breach through the sandbar can affect the rate of water surface elevation drawdown and the ability to maintain in a perched condition (i.e. where the water surface elevation in the lagoon remains higher than the sea level even during low tide). Based on recent and some historic information, the Carmel Lagoon can maintain a perched configuration if the sandbar opens on the north end. When the sandbar opens in the center of the beach, the

opening experiences a more rapid scour, which often results in a more complete draining of the lagoon. The more rapid and full draining not only reduces habitat quantity but also results in a greater influx of seawater to the lagoon.

In wet years, the lagoon may stay open or in a perched condition well into June or July, whereas in drier years the lagoon may open for a few weeks, or not at all. In most years, however, the lagoon will experience a natural cycle of repeated open and closure following the initial breach as river inflow causes the lagoon to fill and crest the newly formed sandbar. In years when sandbar management actions are taken to reduce flood risks, MCRMA is required to close the lagoon based in spring or early summer following coordination with NMFS and other resource agencies.

Climate Change and the Carmel River

The long-term effects of climate change have been presented in Section 2.2.3 Global Climate Change. These include temperature and precipitation changes that may affect steelhead and critical habitat by changing water quality, streamflow levels, and steelhead migration in the action area.

The threat to S-CCC steelhead in the action area from climate change is likely going to mirror what is expected for the rest of Central California. NMFS expects that average summer air temperatures would increase, heat waves would become more extreme, and droughts and wildfire would occur more often (Hayhoe *et al.* 2004; Lindley *et al.* 2007; Schneider 2007; Westerling *et al.* 2011; Moser *et al.* 2012; Kadir *et al.* 2013). Many of these changes are likely to further degrade S-CCC habitat in the action area by, for example, further reducing streamflow in the river or volume in the lagoon during the summer and raising summer water temperatures.

2.4.2. Status of S-CCC steelhead in the Action Area

Since the early 1980's, monitoring of juvenile steelhead abundance in the lagoon has been conducted occasionally with varying levels of effort. These monitoring efforts have produced a few lagoon population estimates but mostly the data provide snapshots of steelhead presence, relative abundance, size ranges, and provide inference on the suitability of habitat conditions for steelhead rearing in the lagoon during the dry season. Below, we summarize these sampling efforts.

Surveys conducted between April and October 1982 (a wet year), resulted in approximately 2,000 steelhead captured in the lagoon, ranging from YOY to out-migrating smolts (Dettman 1984). A mark-recapture study in the summer and fall of 1996 (moderately wet year), estimated the juvenile steelhead population in the lagoon at approximately 5,000 and 6,000 fish (Alley 1997) with sizes ranging from 90 to 189 mm standard length. Alley (1997) estimated this number of fish could equate to approximately 7 or 8 percent of the summer rearing population for the entire Carmel River watershed based on observed juvenile densities at multiple sites in the river upstream of the lagoon and the abundance of rescued fish throughout the basin. As others have found (Smith 1990; Bond *et al.* 2008; Atkinson 2010), lagoon habitat can be highly productive where juvenile steelhead can grow rapidly resulting in a substantial increase in the number and average size of smolts produced in the watershed. For example, in August 1999 (a wet year) the

California Department of Fish and Game captured several hundred to a thousand rearing steelhead in a single seine haul at the entrance to the South Arm of the lagoon with mean lengths between 200 to 300 mm (Kevan Urquhart, personal communication, 2017). This large smolt size is important because studies have shown the vast majority of the returning adults (80 to 90 percent) can be disproportionally represented by juveniles that reared in the lagoon and reached a larger size (>150 mm fork length) prior to ocean entry (Bond *et al.* 2008). These data highlight the value of a functioning lagoon to individual steelhead and to the overall health and resiliency of the population.

In July 2006 (also a wet year), staff from the Watershed Institute at California State University Monterey Bay (CSUMB), California State Parks, and the Monterey Peninsula Water Management District (MPWMD) conducted nine seine hauls throughout the lagoon which produced approximately 1,100 steelhead (no population estimate was performed). Precise counts were not made due to large number of fish captured and the potentially stressful water quality conditions at the time of sampling. Sizes ranged from 75 to 185 mm fork length (Joel Casagrande, NMFS, unpublished data). Later in December 2006, staff from CSUMB, NMFS, the Carmel River Steelhead Association, and MPWMD conducted seine hauls at various sites throughout the lagoon over three days. Several hundred juvenile steelhead were captured, which confirmed that juvenile steelhead not only survived through the summer-fall dry period while rearing in the lagoon, but that these fish grew exceptionally well based on comparisons of length frequencies captured between two periods (Joel Casagrande, NMFS, unpublished data).

Specific to the action area (near the pipeline crossing), approximately 30-50 juvenile steelhead were observed beneath the pipeline on August 17, 2003 (Figure 3).

Figure 3. A screen-grab of a video taken beneath the existing pipeline over the South Arm in the afternoon of August 17, 2003. The juvenile steelhead were between approximately 1 to 3 feet below the surface.

In summary, there is wide annual and seasonal variation of steelhead abundance and distribution in the Carmel Lagoon, yet empirical evidence suggests steelhead frequently use the action area.

Therefore, juvenile steelhead are expected to be present in South Arm during construction of the Project.

2.4.3. Previous Section 7 Consultations in the Action Area

Pursuant to section 7 of the ESA, NMFS has completed the following interagency consultations that have occurred, or may have the potential to occur, within the action area of this Project.

- *Regional General Permit (RGP) for Carmel River Restoration & Maintenance Activities (NMFS PCTS #: SWR-2000-1889, ARN: 151422SWR2000SR148 Cabinet 4B)*

  NMFS and the Corps completed a programmatic formal section 7 consultation and Essential Fish Habitat consultation on MPWMD's proposal, and a biological opinion was issued on March 12, 2004, and renewed in 2010, the current Corps permit expires in 2020. The 2004 proposal included maintenance and restoration activities along tributaries and mainstem of the Carmel River from the LPD to the Carmel Lagoon, and the 2009 proposal included activities from the former SCD site to the lagoon. The biological opinion analyzed the effects of the project and concluded that the proposed project will not jeopardize the continued existence of S-CCC steelhead, nor adversely modify or destroy their critical habitat. In addition, the project was determined to adversely affect EFH, however, no EFH Conservation Recommendations were provided, because the project included measures to avoid, minimize, mitigate, or otherwise offset potential adverse effects to EFH. The following projects were approved for inclusion under the programmatic:

  - Selective vegetation management in the Carmel River channel, fall 2005 (NMFS PCTS #: SWR-2005-4297); NMFS response September 7, 2005;

  - Carmel River RGP Reinitiation for Critical Habitat, 2006 (NMFS PCTS#: SWR-2006-3148); NMFS response August 25, 2006;

  - 2006 Tiering letter for Carmel River RGP (NMFS PCTS#: SWR-2006-4190); NMFS response September 5, 2006;

  - Carmel River RGP: Tiering letter for 2007 Activities (NMFS PCTS#: SWR-2007-4626); NMFS response July 20, 2007;

  - Carmel River RGP: Tiering letter for 2008 activities (NMFS PCTS#: SWR-2008-5384) NMFS response September 9, 2008;

  - Carmel River RGP: Tiering letter for 2009: Woods/Marotta (NMFS PCTS#: SWR-2009-3958); NMFS response December 31, 2009;

  - Carmel River RGP: Tiering letter 2009: MPWMD (NMFS PCTS#: SWR-2009-3959); NMFS response December 31, 2009. Carmel Lagoon Enhancement Project (NMFS PCTS#: SWR-2002-1746, ARN: 151422SWR02SR8490)

- *Carmel Lagoon Enhancement Project (NMFS PCTS#: SWR-2002-1746, ARN: 151422SWR02SR8490)*

  NMFS and the Corps completed a formal section 7 consultation on California Department of Parks and Recreation's proposal, and a biological opinion was issued on February 13, 2004. The proposal included creating woody riparian, freshwater wetland, and open water habitat in an extension of the South Arm of Carmel Lagoon. The project included grading and dredging to accomplish project objectives. The biological opinion analyzed the effects of the project and concluded that the proposed project will not jeopardize the continued existence of S-CCC steelhead, nor adversely modify or destroy their critical habitat.

- *Carmel River Steelhead Association LWD Project (NMFS PCTS# SWR-2008-7150, ARN 151422SWR2008SR00400)*

  NMFS and the Corps completed informal section 7 on a Carmel River Steelhead Association proposal, and a concurrence letter was issued on February 12, 2009. The proposal included placing LWD complexes at seven locations in the Carmel Lagoon. The letter of concurrence analyzed the effects of the project and concluded that the project was not likely to adversely affect S-CCC steelhead or designated critical habitat.

- *Carmel Lagoon Water Level Adaptive Management Project (NMFS PCTS #: SWR-2009-2325, ARN: 151422SWR2008SR00416)*

  NMFS and the Corps completed informal section 7 on a California State Parks proposal, and a concurrence letter was issued on May 12, 2009. The project intended to modify the Carmel Lagoon sandbar during spring and summer months of 2009 (usually by closing the outlet channel to the ocean) such that the highest possible lagoon volume and subsequent water quality at the beginning of the dry summer period was maintained in order to enhance habitat conditions for steelhead. The letter of concurrence analyzed the effects of the project and concluded that the project was not likely to adversely affect S-CCC steelhead or designated critical habitat.

- *Flood Protection at Carmel River Lagoon (NMFS PCTS #: SWR-2011-5438, ARN: 151422SWR2011SR00542)*

  NMFS and the Corps completed informal section 7 on a Monterey County proposal, and a concurrence letter was issued on October 28, 2011. The proposal included sandbar management activities in Carmel Lagoon from October 2011 to September 2012. The letter of concurrence analyzed the effects of the project and concluded that the project was not likely to adversely affect S-CCC steelhead or designated critical habitat.

- *Carmel Lagoon Interim Sandbar Management Plan (NMFS PCTS #: WCR-2015-2584, ARN: 151422WCR2015SR00132 and NMFS PCTS # WCR-2017-6858, ARN: 151422WCR2015SR00132)*

  NMFS and the Corps completed informal section 7 and EFH consultation on a Monterey County RMA proposal, and a concurrence letters were issued on May 7, 2015, and again on November 22, 2017. The proposals included sandbar management activities in Carmel Lagoon from spring 2015 to fall 2016, and fall 2017 through summer 2018. The letters of concurrence analyzed the effects of the project and concluded that the projects were not likely to adversely affect S-CCC steelhead or their designated critical habitat. In addition, the projects were determined to adversely affect EFH, however, no EFH Conservation Recommendations were provided, because the projects included measures to avoid, minimize, mitigate, or otherwise offset potential adverse effects to EFH.

- *Emergency consultations on sandbar breaching*

  As previously stated, the mechanical breaching of the Carmel Lagoon has been carried out by Monterey County or State Parks at least once a year since 1973, and more frequently in some years. In the past, sandbar breaching has been carried out as early as October and as late as June. At first, the sandbar was breached without authorization, and more recently the activity has been conducted under the auspices of an emergency Corps RGP-5 Permit to temporarily alleviate flood threats.

Several research and enhancement projects resulting from NMFS' Section 10(a)(1)(A) research and enhancement permits and section 4(d) limits or exceptions could occur in the action area. Currently, fisheries research and monitoring is authorized and conducted in the Carmel River watershed by NOAA's Southwest Fisheries Science Center, the California Department of Fish and Wildlife, and the Monterey Peninsula Water Management District. These activities are closely monitored by NMFS and require measures to minimize take of steelhead. NMFS has analyzed these activities and determined that they would not jeopardize the S-CCC steelhead DPS nor adversely modify its designated critical habitat.

2.5 Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that would be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

In this biological opinion, our approach to determine the effects of the action was based on institutional knowledge and a review of the ecological literature and other relevant materials. We used this information to gauge the likely effects of the proposed project via an exposure and response framework that focuses on the stressors (physical, chemical, or biotic), directly or indirectly caused by the proposed action, to which S-CCC steelhead are likely to be exposed. Next, we evaluate the likely response of S-CCC steelhead to these stressors in terms of changes

to survival, growth, and reproduction, and changes to the ability of PBFs to support the value of critical habitat in the action area. PBFs include sites essential to support one or more life stages of the species. These sites for migration, spawning, and rearing in turn contain physical and biological features that are essential to the conservation of the species. Where data to quantitatively determine the effects of the proposed action on listed fish and their critical habitat were limited or not available, our assessment of effects focused mostly on qualitative identification of likely stressors and responses.

Project activities that are likely to affect steelhead during construction include, fish capture and relocation prior to construction, and potential mortality during construction to those fish that evade capture and relocation. The project is also expected to result in temporary impacts to critical habitat in the lagoon, particularly changes to water quality, and disturbance to the lagoon bottom and shores, including vegetation removal. A total of 0.028 acres of designated critical habitat for S-CCC steelhead would be temporarily disturbed as a result of the Project. This includes impacts to open water and shoreline/vegetated habitats.

2.5.1. Fish Capture and Relocation

As noted above in Section 2.4 Environmental Baseline, steelhead have been documented using the South Arm for rearing during the summer months (Joel Casagrande, NMFS personal observations, 2001-2007). Attempts will be made to exclude steelhead and other fish species from the in-water work area prior to construction. Due to the extensive shoreline vegetation and irregular bottom and banks, total exclusion of all fish may not be possible. Therefore, after the exclusion area is set, attempts will be made to capture and relocate any fish trapped within the excluded area. NMFS expects the proposed method (spreading of parallel nets away from each other) will be effective at excluding most fish in the area and anticipates only a few (if any) juvenile steelhead (no more than 20) would avoid exclusion. Qualified biologists would use seines to try and relocate any juvenile steelhead present within the isolated area.

Fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996), has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists, direct effects to and mortality of steelhead during capture will be minimized. NMFS assumes, based on extensive past information on fish relocation activities, no more than 2 percent (or in this case, no more than 1 fish) of the steelhead captured and relocated using seines will die as a result of these activities.

Capture effectiveness using seines is likely to be compromised by the same environmental conditions described above for the exclusion nets and therefore some steelhead may avoid being captured and relocated. Due to the small area and the efforts described above, NMFS expects this to be a small number (no more than 3 steelhead), if any. These trapped steelhead would be subject to potentially high turbidity levels and changes in pH during trenching and backfilling (discussed below).

Any steelhead that are successfully captured will be placed into areas of the lagoon outside of the exclusion zone. Because the majority of the lagoon's available habitat for steelhead will be unaffected by the project (except for the approximately 20-foot wide exclusion zone), impacts from relocating the small number of juveniles on crowding and competition for available resources will be insignificant.

2.5.2. Water Quality

Construction activities will impact water quality in two ways: increased suspended sediment, or turbidity, during trench excavation and backfilling, and localized changes in pH of the water during placement of cement around the pipeline.

Suspended sediment can affect fish in a variety of ways. High concentrations of suspended sediment, or turbidity, can disrupt normal feeding behavior and efficiency (Cordon and Kelley 1961; Bjornn *et al.* 1977; Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High and prolonged turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Sigler *et al.* 1984; Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water can cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation. Increased sedimentation can fill pools or other habitats thereby reducing the amount of potential cover and habitat available, and smother or change substrate particle composition which can affect macroinvertebrate composition and abundance (Sigler *et al.* 1984, Alexander and Hansen 1986). It is difficult to predict what the water column turbidity or concentration of suspended sediment will rise to during construction, but NMFS assumes it is conceivable to reach the levels described above that could cause injury or death to juvenile salmonids.

Placement of uncured cement can alter the receiving water's pH. As with turbidity, predicting the degree of change in pH on the bottom of the lagoon during placement and curing of cement is difficult. Although literature on the effects of concrete placement in water on pH is limited, existing literature suggests the exposure (or affected area) is highly localized (within a few feet of the cement) with peak changes in pH occurring within 20 to 180 minutes (CTC & Associates 2016). Furthermore, use of impermeable barriers that block affected waters, or even permeable barriers (e.g., turbidity curtains) that allow for slow passage of waters to outside areas, prevents or reduces the area that experiences a change in pH. For this project, both impermeable sheet piles and permeable turbidity curtains will be used to isolate area and contain water quality impairment. Also, the bottom most layers of the lagoon are typically anoxic in summer due to water quality stratification (Casagrande and Watson 2003; Watson and Casagrande 2004), and therefore steelhead are unlikely to be present at these depths where brief changes in pH may occur.

Any juvenile steelhead that avoid relocation will be subject to the changes in water quality described above, particularly high suspended sediment/turbidity levels. Based on the expected low abundance of steelhead remaining in the isolated area after the exclusion and relocation

attempts, NMFS expects no more than 3 juvenile steelhead will be injured or die as a result of temporary acute turbidity levels or suspended sediment concentrations.

2.5.3. Vegetation Removal and Shoreline Disturbance

Replacement of the existing pipeline will include temporary improvements to an existing access road and construction of two staging areas immediately adjacent to the lagoon. These activities will require the removal of a mixture of riparian (predominantly willow shrubs) and emergent wetland (predominantly tule and sedge) vegetation. Riparian and wetland vegetation serve important functions in stream ecosystems by providing shade, sediment storage, nutrient inputs, channel and stream bank stability, habitat diversity, and cover and shelter for fish (Murphy and Meehan 1991). Small streams can be especially sensitive to loss of riparian habitat and shade, which moderates stream temperatures by insulating the stream from solar radiation and reducing heat exchange with the surrounding air (Poole and Berman 2001).

Riparian vegetation removal along much of the existing access road will not affect steelhead critical habitat because this area does not border the river channel or the lagoon and is only inundated during extreme high water elevations. Therefore it does not provide habitat benefits such as shade or instream habitat complexity utilized by juvenile steelhead. The predominant vegetation along the access road alignment consists of small stature willows that would not be a source of large wood material to the lagoon or the creek (see Photographs 1-4, in Johnson Margot Consulting 2018).

Emergent wetland vegetation removed along the shoreline of the South Arm would result in a temporary, but localized, loss of foraging and shelter habitat for fish in the lagoon. However, the vast majority of the lagoon's shoreline and adjacent vegetation communities will remain unaffected by the project and will continue providing these habitat functions for juvenile steelhead. Through proposed revegetation efforts and natural recolonization, the emergent species will quickly become reestablished in these areas and within a few years these areas are expected to resemble pre-construction conditions. This will include the areas where the existing above-ground pipeline currently blocks plant establishment. As such, NMFS does not expect the temporary loss of this vegetation as a result of the Project will diminish the ability of the Carmel Lagoon to continue providing the necessary PBFs for S-CCC steelhead seasonal rearing.

2.5.4. Beneficial Impacts

Although the replacement of the pipeline will result in temporary impacts to critical habitat and the potential loss of a small number of juvenile steelhead, relocating the pipeline below ground will permanently remove the threat of pipeline failure and the discharge of sewage and treated effluent into the lagoon.

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. NMFS does not anticipate any cumulative effects in the action area.

2.7 Integration and Synthesis

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

The S-CCC steelhead DPS is listed as threatened under the ESA and the Carmel River is considered a Core 1 population for the recovery of the DPS (NMFS 2013). Steelhead throughout the DPS have experienced substantial declines in large part due to anthropogenic influences associated with agriculture, mining, and urbanization activities that have resulted in the loss, degradation, simplification, and fragmentation of habitat (Hunt and Associates Biological Consulting Services 2008), and to some degree disease and predation. However, the greatest threats to the S-CCC steelhead DPS are the degradation and loss of habitats caused by impassable barriers and water resource development (NMFS 2013). The decline of steelhead in the Carmel River watershed is linked to the many anthropogenic factors described above in the Environmental Baseline, but particularly the extraction and use of ground and surface waters, construction of levees and fish passage impediments, alteration to the lagoon function, and the introduction of invasive species to the aquatic and riparian environments (NMFS 2013).

The proposed replacement of the pipeline section that currently spans the Carmel Lagoon with a new, underground section will include in-water work during the late-summer and fall months. While in many cases in-water work is discouraged, the applicant has chosen to use this approach to avoid or reduce additional impacts to critical habitat and S-CCC steelhead that would be exacerbated by attempts to dewater the pipeline alignment. Despite these measures, the proposed in-water work may result in take of S-CCC juvenile steelhead as a result of capture and relocation efforts (up to 20 relocated, plus 1 mortality), and up 3 additional fish that evade capture and relocation and remain in the isolated work area during construction. The potential loss of up to 4 fish from this Project is not likely to impact future adult returns, due to the relatively large number of juveniles produced by each spawning pair, each year. Therefore, NMFS does not believe the potential loss of up to 4 juvenile steelhead, will appreciably diminish the abundance, productivity, diversity, or spatial structure of the Carmel River steelhead population, or the S-CCC steelhead DPS as a whole.

In regards to S-CCC steelhead critical habitat, relocation of the pipeline will require the removal of riparian and emergent vegetation, including small areas surrounding the shoreline of the lagoon. While this will result in a minor reduction in the amount of cover and foraging habitat along the margins of the lagoon, the remainder of the lagoon will be unaffected by the project which steelhead will have access to use. NMFS expects the proposed revegetation efforts and

the natural colonization of wetland plans will quickly return the area to pre-construction conditions (i.e., less than 3 years) which will include vegetation replacing the footprint of the pipeline through the shoreline area. Furthermore, the sheet piles and turbidity curtains are expected to contain the disturbed water quality. Once the pipeline is set and backfilling is complete, water quality will be returned to its pre-construction condition before the sheet piles and turbidity curtains are removed. This is expected to avoid impacts to water quality in the lagoon outside of the turbidity curtains. Based on the nature of these temporary and localized impacts within the lagoon, NMFS does not expect the implementation of the proposed action will compromise the value or function of designated critical habitat in the Carmel Lagoon for S-CCC steelhead, or S-CCC steelhead DPS critical habitat as a whole.

Finally, with climate change and continued sea-level rise, lagoon water surface elevations are expected to increase which would increase the frequency of inundation and risk of pipeline failure. The relocation of the pipeline to underground will remove a future threat of pipeline failure and discharge of sewage and treated effluent to the lagoon, which would potentially have much greater impacts on S-CCC steelhead and their critical habitat than the temporary and localized impacts posed by the construction of this project.

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, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of threatened S-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). "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

The amount or extent of take described below is based on the analysis of effects of the action done in the preceding biological opinion. If the action is implemented in a manner inconsistent

with the project description provided to NMFS, and as a result take of listed species occurs, such take would not be exempt from section 9 of the ESA.

In the biological opinion, NMFS determined incidental take of threatened S-CCC steelhead could occur as a result of the Project. NMFS anticipates a small number of juvenile steelhead that avoid attempts to exclude them from action area may need to be relocated (no more than 20), of which 1 may die as a result of capture. In addition, a small number that avoid both the attempts at exclusion and relocation from the action area (no more than 3 fish) may die as a result of construction related disturbance. NMFS expects no more than 4 juvenile steelhead will be killed as a result of the Project.

2.9.2. Effect of the Take

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

2.9.3. Reasonable and Prudent Measures

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

NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize and document take of S-CCC steelhead:

1. Undertake measures to ensure that harm and mortality to S-CCC steelhead resulting from fish relocation and dewatering activities are low.

2. Prepare and submit a report, which summarizes the post-construction site conditions (i.e., revegetation and BMP installation), and the fish relocation activities.

2.9.4. Terms and Conditions

The terms and conditions described below are non-discretionary, and the Corps, the applicant, or their consultant, must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The Corps, the applicant, or their consultant, have 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 incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

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

    a. The Corps, the applicant, or their consultant, will ensure a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and

biological monitoring of salmonids is available to conduct and oversee fish exclusion, capture and relocation activities. The Corps, the applicant, or their consultant, will ensure that all biologists working on the project are qualified to identify steelhead and conduct fish collections in a manner which minimizes all potential risks to steelhead.

b. Any steelhead captured will be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured steelhead must be kept in cool, shaded, and aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and steelhead will not be removed from this water expect when released. To avoid predation, the biologists will have at least two containers and segregate small, or young, juveniles from larger, or older age-classes, and other potential predators. Captured steelhead will be relocated as soon as possible downstream of (i.e., towards the lagoon's main embayment) the pipeline crossing.

c. If any steelhead are found dead or injured, the biologists will contact NMFS biologist, Joel Casagrande, by phone immediately at (707) 575-6016 or the NMFS North Central Coast Office [Santa Rosa, California] at (707) 575-6050. The purpose of the contact is to review the activities resulting in take, determine if additional protective measures are required, and to ensure appropriate collection and transfer of steelhead mortalities and tissue samples. All steelhead mortalities will be retained. Tissue samples are to be acquired from each salmonid mortality per the methods identified in the NMFS Southwest Fisheries Science Center Genetic Repository protocols (contact the above NMFS staff for directions) and sent to: NOAA Coastal California Genetic Repository; Southwest Fisheries Science Center; 110 McAllister Way; Santa Cruz, California 95060.

The steelhead mortalities (following acquisition of genetic sample material) are to be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location of collection, and fork length, and be frozen as soon as possible. Frozen steelhead mortalities will be retained by the biological monitor until specific instructions are provided by the NMFS contact named above. Tissue samples are to be stored at ambient temperature. The biological monitor may not transfer steelhead mortalities to anyone other than the NMFS contact named above without obtaining prior written approval from NMFS' Central Coast Branch Chief. Any such transfer will be subject to such conditions as NMFS deems appropriate.

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

a. **Fish Capture and Relocation Report –** On January 15th following completion of the project, a report must be submitted to NMFS, that includes the number of steelhead collected and their disposition; the date and time; a description of the water quality conditions at the site including surface-to-depth profiles of water temperature, dissolved oxygen and salinity recorded in 0.5 meter increments; and

a description of the equipment and methods used to collect, hold, and transport steelhead.

b. **Annual Post-Construction Site Conditions Report –** On January 15th following completion, a report must be submitted to NMFS that provides a comprehensive summary of project construction, a description of any unforeseen project impacts (if applicable), measures taken to resolve the unforeseen impacts (if applicable), summary of water quality monitoring data (turbidity and pH), and a summary of implemented erosion control measures and site revegetation efforts. The report will include photos of the action area following construction and revegetation.

2.10 Conservation Recommendations

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

2.11 Reinitiation of Consultation

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

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (Section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide

impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the descriptions of EFH contained in the Pacific Coast Groundfish Fishery Management Plan (PFMC 2005) developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

EFH managed under the Pacific Groundfish Fishery Management Plan may be adversely affected by the project. Project construction will be limited to a relatively small portion of the lagoon habitat. Areas of the Carmel Lagoon are known to support Pacific Groundfish species such as Starry Flounder (*Platichthys stellatus*). The lagoon is also designated as a Habitat Area of Particular Concern (HAPC). HAPCs are described in the regulations as subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPCs are not afforded any additional regulatory protection under MSA; however, federal projects that may adversely affect HAPC are more carefully scrutinized during the consultation process.

3.2 Adverse Effects on Essential Fish Habitat

The potential adverse effects of the project on EFH are the same as the potential effects on S-CCC steelhead, and therefore have been described in the preceding Biological Opinion. To summarize, the project will result in temporary impacts to the lagoon substrate within the pipeline alignment, increased turbidity in the water column in the vicinity of the sheet piles, and impacts to shorelines and vegetation (emergent). However, the Project has been modified to reduce the footprint of disturbance to the smallest area necessary, will include revegetation of all disturbed areas, and proposes other measures to avoid or minimize potential adverse effects to EFH. Therefore, NMFS has no EFH recommendations at this time.

3.3 Supplemental Consultation

Reinitiation of EFH consultation will be necessary if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are the Corps. Individual copies of this opinion were provided to the Corps. This opinion would be posted on the Public Consultation Tracking System web site (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). The format and naming adheres 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.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this 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 written by NMFS staff with training in ESA implementation and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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UNITED STATES DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
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JUL 27 2018

Refer to NMFS No: WCR-2017-7810

Marie Strassburger
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United States Fish and Wildlife Service
2800 Cottage Way, W-1729
Sacramento, California 95825

Re: Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Carmel River Floodplain Restoration and Environmental Enhancement Project

Dear Ms. Strassburger:

Thank you for your letter of October 7, 2016, requesting initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS), pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 USC 1531 et seq.), for the Carmel River Floodplain Restoration and Environmental Enhancement Project (herein referred to as "Project"). The United States Fish and Wildlife Service (USFWS) proposes to provide partial funding to the Monterey County Resource Management Agency (MCRMA) and the Big Sur Land Trust (BSLT) (applicants) for implementation of a floodplain restoration and flood reduction project located along the lower Carmel River in Monterey County, California.

Thank you, also, for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action.

The enclosed biological opinion is based on our review of the proposed Project and describes NMFS' analysis of the effects of the implementation of the Project on threatened South-Central California Coast (S-CCC) steelhead (*Oncorhynchus mykiss*) and their designated critical habitat in accordance with section 7 of the ESA.

In the enclosed biological opinion, NMFS concludes the Project is not likely to jeopardize the continued existence of S-CCC steelhead, nor is the Project likely to result in the destruction or adverse modification of designated critical habitat for S-CCC steelhead. However, NMFS anticipates take of S-CCC steelhead will occur as a result of the Project. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion.

Regarding EFH, NMFS has reviewed the proposed project for potential effects and determined that the proposed project will occur within or immediately upstream of an area identified as EFH for Pacific Groundfish, managed under the Pacific Groundfish Fishery Management Plan. The project is intended to improve riparian and floodplain habitat connectivity and function and measures have been incorporated to avoid or minimize potential adverse effects to EFH. Thus, no additional EFH conservation recommendations are currently provided.

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

Sincerely,

for

Barry A. Thom
Regional Administrator

Enclosure

cc: Copy to ARN # 151422WCR2017SR00227
Copy to Chron File

Endangered Species Act Section 7(a)(2) Biological Opinion for the Carmel River Floodplain and Environmental Enhancement Project

NMFS Consultation Number: WCR-2017-7810

Action Agency: United States Fish and Wildlife Service

Affected Species and NMFS' Determinations:

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

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

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

Issued By:

Barry A. Thom
Regional Administrator

Date: JUL 27 2018

LIST OF ACRONYMS AND ABBREVIATIONS

API	Area of Potential Impact
BSLT	Big Sur Land Trust
CSUMB	California State University Monterey Bay
CRSA	Carmel River Steelhead Association
cm	centimeter
cfs	cubic feet per second
cy	cubic yard
cSEL	Cumulative Sound Exposure Level
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FHWG	Fisheries Hydroacoustic Working Group
ITS	Incidental Take Statement
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MFCA	Maintained Flow Conveyance Areas
mm	millimeter
MCRMA	Monterey County Resource Management Agency
MPWMD	Monterey Peninsula Water Management District
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
OHWM	Ordinary High Water Mark
PBF	Physical or Biological Features
PCE	Primary Constituent Elements
RMP	Restoration Management Plan
RPM	Reasonable and Prudent Measures
S-CCC	South-Central California Coast
SR	State Route
TRT	Technical Review Team
USFWS	United States Fish and Wildlife Service
WSE	Water Surface Elevation

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into section 2 below.

1.1 Background

NOAA's National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 USC 1531 *et seq.),* and implementing regulations at 50 CFR 402.

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 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 through NMFS' Public Consultation Tracking System (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). A complete record of this consultation is on file at NMFS' North Central Coast Office in Santa Rosa, California.

1.2 Consultation History

On June 11, 2015, the project applicants and their consultants met with grant funders and regulatory agencies (including NMFS) to provide a detailed project presentation and discuss regulatory requirements and approaches to satisfy those requirements. During this meeting, guidance was provided by NMFS on the requirements of a combined Biological Assessment (BA) for NMFS and USFWS.

A draft BA was provided to NMFS via email on October 21, 2015, and NMFS provided preliminary comments to USFWS on December 8, 2015. A second draft of the BA was provided to NMFS on June 20, 2016.

On December 2, 2016, NMFS, via email, requested additional information from the USFWS on the Project. This included questions on the number of work seasons, hydro-acoustic analyses for the proposed pile driving, potential need for dewatering, floodplain designs and their relation to potential fish stranding, and a request for copies of technical studies conducted by consultants related to channel avulsion risk. The USFWS responded to these requests via email on February 10 and February 24, 2017.

On March 15, 2017, NMFS received a request via email from USFWS for a draft copy of NMFS' Biological Opinion for review. On July 7 and August 29, 2017, NMFS contacted USFWS and the Project consultant via email to request stream flow and flood frequency

information. This information was provided by the consultant on July 11, September 1, and September 6, 2017.

On October, 10, 2017, NMFS submitted a letter (NMFS 2017) to USFWS outlining comments on the proposed Project design, its utility for steelhead, and proposed alternative design attributes that would increase benefits for steelhead.

Between October 2017 and December 2018, NMFS continued communication with USFWS, the Project applicants, and their consultants on the potential for including project design elements. On January 3, 2018, the USFWS, the Project applicants, and their consultants held a conference call with NMFS to discuss the limitations of incorporating these recommended design changes presented by NMFS (NMFS 2017). This was followed by an additional conference call with web-based presentations made by both the Project's consultants and NMFS on February 1, 2018. NMFS presented its alternative design concepts that sought to substantially increase floodplain activation at lower stream flow return intervals (e.g., 1-year), and that increased the area of flooded riparian forests within the current Carmel River corridor. MCWRA, BSLT, and their consultants agreed to review the design concepts and would follow up with NMFS. They also acknowledged there were several logistical constraints related to incorporating these designs including the elevated risk of channel avulsion to the South Arm of the lagoon and need for major revisions to the State Route (SR) 1 causeway designs, as well as budget limitations.

On April 25, 2018, NMFS received a response from MCRMA regarding NMFS' recommended design alternatives. In their response, they noted that including these recommended design alternatives was not feasible due to the aforementioned constraints. However, they did note that there was potential to incorporate elements of NMFS' recommendations as a future project at the site and included conceptual drawings for these elements. With the receipt of this information, NMFS initiated consultation.

NMFS discussed other minor Project details with USFWS on May 24, 2018, which included the Project timeframe, and the need for potential incidental take coverage to capture and relocate stranded steelhead on the floodplain. USFWS agreed including incidental coverage for the capture and relocation of a small number of live steelhead was appropriate to include as part of the Project's covered activities. USFWS also determined the total length of the project would be 10 years because this timeframe encompasses all of the project components that USFWS is responsible for completing (construction and post-project monitoring).

1.3 Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). The proposed action, or Project, consists of two interdependent components: a floodplain restoration action on the south, or left bank, of the Carmel River immediately upstream of SR 1, and the construction of a partial causeway along a portion of SR 1 adjacent to the floodplain restoration area. The Project is intended to reduce flooding and to improve riparian and floodplain habitat connectivity and hydrologic function at this site.

The floodplain restoration component consists of: (1) removing approximately 1,470 linear feet of non-engineered earthen levees on the south side of the Carmel River channel; (2) grading to elevate approximately 23 acres of existing farmland above the 100-year floodplain elevation to create an agricultural preserve; (3) grading on approximately 100 acres to restore the site's ecological function as a floodplain by creating the hydrogeomorphic characteristics necessary to support floodplain restoration activities; and (4) implementation of a Restoration Management Plan (RMP), which includes restoration of a mosaic of native habitats across the site in two phases, restoration maintenance and monitoring to ensure the success of the revegetation specific to compensatory mitigation requirements.

The Causeway Component consists of replacing a portion of SR 1 roadway fill embankment with a 360-foot long section of elevated causeway to accommodate flood flows that enter into the south overbank area following removal of portions of the levees, as described above, and to restore hydrologic connectivity between the floodplain area and the South Arm of Carmel Lagoon.

"Interrelated actions" are those that are part of a larger action and depend on the larger action for their justification. "Interdependent actions" are those that have no independent utility apart from the action under consideration (50 CFR 402.02). There are no interrelated of interdependent actions associated with the proposed action.

1.3.1. Floodplain Restoration

The Floodplain Restoration Component would occur on 128.5 acres within the 467.2 acre action area.

Levee Removal
Approximately 1,470 feet of the south bank levee would be removed in order to improve floodplain hydrology. Currently, the system of south bank non-engineered levees serves to contain existing river flows and floodwaters in the main river channel. The proposed project would reduce the height of portions of the existing levees in order to allow flows to spread into the south overbank area. Several portions of the existing levee, approximately 3,180 feet in length, would remain to preserve important areas of existing vegetation that would support colonization and expansion of riparian plant communities to the floodplain. No work is proposed to occur below the ordinary high water mark (OHWM) in the main channel.

This element is an integral part of the project's flood control and restoration objectives, as removal of portions of the existing south bank levees would enhance the hydrologic connectivity of the main Carmel River channel and the south overbank of the lower Carmel River to the Carmel Lagoon. Levee removal would also improve the overall ecological function of the Odello East property (Figure 2)[1] as a floodplain by providing the hydrologic conditions to support the restoration of native vegetation communities within the floodplain.

[1] The Odello East Property is a fallow farm field that is located immediately upstream of SR 1 and is the focus area for restoration for this Project. The Odello West Property is on the downstream side of SR 1 and is owned by State Parks.

Floodplain Grading

The floodplain would be graded to create the topographic characteristics necessary to support floodwater conveyance under SR 1 and restore the site's longitudinal connectivity with the Carmel Lagoon. This includes construction of intermittent channels to form flow paths through the floodplain, and areas designed to support a mixture native upland habitat (Figure 1). Multiple pool features, or depressions, would be excavated within the floodplain channels which will serve as sediment traps. The levees would be cut to set the top of bank elevations approximately equivalent to, or just slightly below, the 5-year flood event elevation (Balance Hydrologics 2015). As such, river flows in the Carmel River channel under normal conditions would not be affected by the Project.

An approximately 23-acre agricultural preserve would be constructed on the southern portion of the site, where organic agricultural uses would be consolidated in order to maintain the agricultural heritage of the area (Figure 1). Construction of the agricultural preserve would entail creating an elevated terrace and farm access road above the existing floodplain to avoid inundation from floods as large as a 100-year flood event. The elevated agricultural preserve would be created using excess fill material (275,000 cubic yards, (cy)) from the levee removal, floodplain grading, and construction of the Causeway Component.

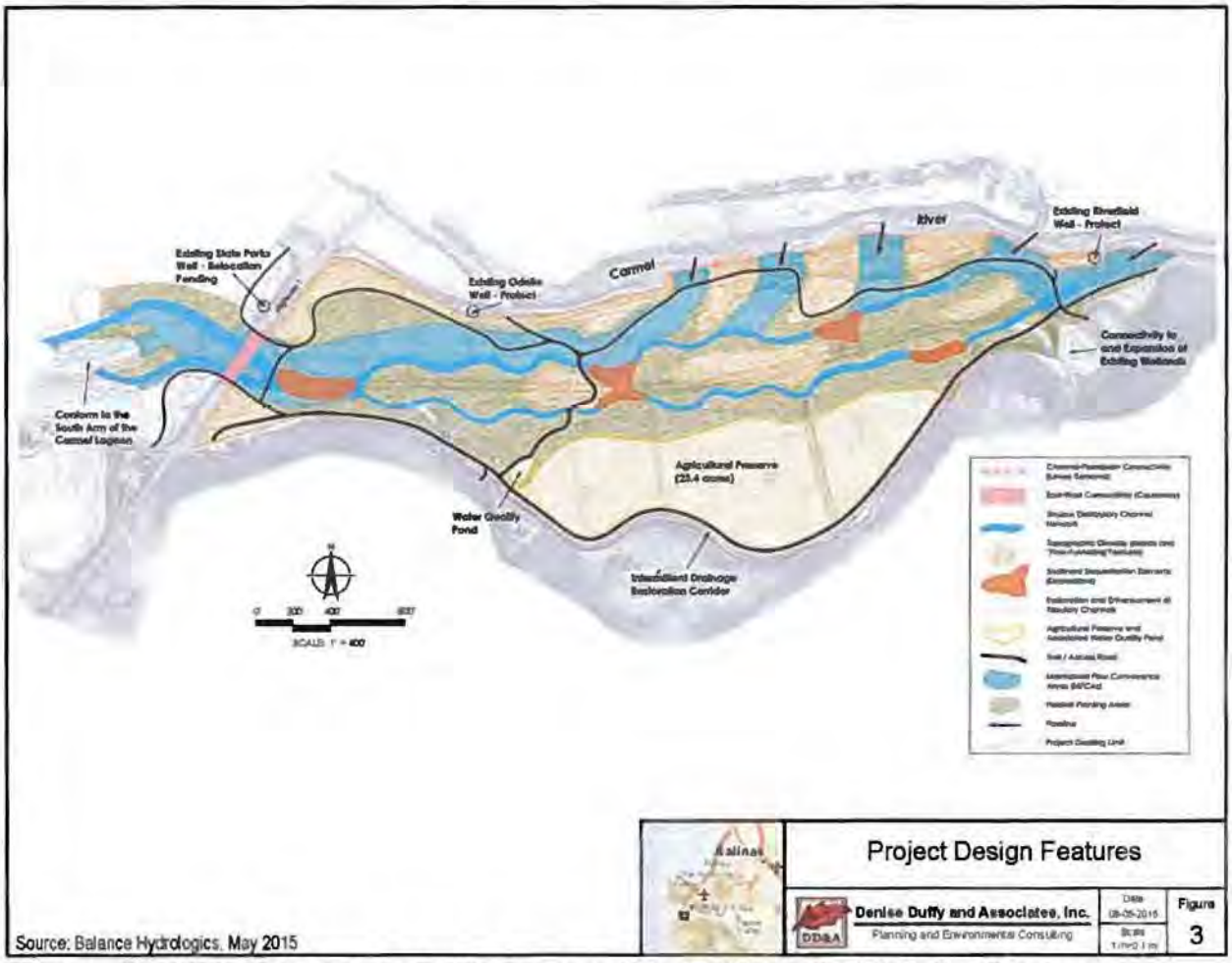

Figure 1. Floodplain design features for the former agricultural field on the Odello East Property.

Maintenance/Access Roads and Trails
A network of maintenance/access roads is included as part of the design. The maintenance/access roads will either be unimproved (dirt) or surfaced with natural aggregate (such as a Caltrans-approved aggregate base). The access road begins at SR 1, south of the causeway, and follows the south boundary of the land owned by the Big Sur Land Trust (BSLT). A clearance of a minimum of 10 feet has been provided underneath the causeway, near the north abutment, for a future trail connection between the east and west portions of the floodplain. Additionally, the maintenance access roads have the ability to function as pedestrian trails, if desired.

Restoration Management Plan
A portion of the Action Area will be actively revegetated following grading to accelerate native vegetation establishment. A RMP for the area has been developed that outlines the revegetation plan, maintenance, and monitoring of site conditions (H.T. Harvey & Associates 2015). Revegetation will occur in two phases (referred to as "Tier 1" and "Tier 2"). Tier 1 activities will be installed as part of the project during construction to compensate for impacts to riparian (wetland) habitats and California red-legged frog (*Rana draytonii*) critical habitat. Tier 2 will occur subsequent to, and separate from, the construction effort. Tier 2 revegetation will be a long-term endeavor with no mandated criteria beyond moving the site toward a self-sustaining native floodplain habitat. A minimum of 16.0 acres of habitat will be restored as Tier 1 compensatory mitigation for impacts to wetlands and California red-legged frog critical habitat (H.T. Harvey & Associates 2015). Tier 2 restoration will be implemented across the remainder of the site (approximately 111.1 acres).

Revegetation implementation will establish a mosaic of habitats across the site, including willow and cottonwood riparian forest, mixed riparian forest, coastal scrub, and grassland that will feature various canopy heights and structures. Willow and cottonwood riparian forest will be planted in dense stands, primarily in the downstream half of the action area, including an area adjacent to willows at the south arm of the Carmel Lagoon, the lower elevation floodplain locations west and east of the SR 1 road alignment, downslope of the River Pond. Mixed riparian forest will be planted on the outboard slopes of the existing levee, in the higher elevation portions of the floodplain between distributary channels, and in locations where the floodplain transitions to the uplands associated with Palo Corona Regional Park. Distributary channels and maintained flow conveyance areas (MFCAs) will be seeded with native grass and forb species to provide grassland habitat in linear strips that will bisect the action area and further enhance the diversity of site habitats.

The revegetation areas will be maintained during the first three years following Tier 1 installation to aid in plant establishment and increase the likelihood that the plants will become self-sustainable. Maintenance will involve replacing dead plants, irrigating, and controlling weeds. The plant establishment period and associated site maintenance will be extended beyond three years if significant plant replacement is required because of low plant survivorship. USFWS expects similar maintenance will need to occur during the plant establishment period for Tier 2 installation. Monitoring data collected by a qualified restoration ecologist will be used to evaluate the success of Tier 1 revegetation and the compensatory mitigation. Information obtained through this monitoring program will be used to guide maintenance throughout Tier 1 and help ensure that the revegetation areas achieve the success criteria outlined in the RMP.

Maintenance activities may also be adjusted as part of adaptive management during Tier 2. The maintenance, interim, and final success criteria described in the RMP apply only to the required acreage of compensatory mitigation. Additional restoration areas will not be held to these criteria.

The Tier 1 revegetation areas will be monitored over a 10-year period following installation, during Years 1–5, 7, and 10. All monitoring will be conducted by a qualified restoration ecologist. Maintenance, interim, and final success criteria will be based on tree and shrub percent survival, canopy percent cover, and a riparian habitat functional assessment. Hydrologic, geomorphic, and flood conveyance monitoring will be conducted to track the functioning of the site's hydrology. By Year 10, it is expected the revegetation areas will be sufficiently established to determine whether they will eventually reach the long-term goals. If the final success criteria have not been met by Year 10, monitoring will continue until they have been met.

1.3.2. Causeway

The Causeway Component consists of replacing a portion of the SR 1 roadway embankment (Post Mile 71.9 to 72.3) with a 360-foot long causeway. The bridge will accommodate one 12-foot lane in each direction with 8-foot wide shoulders. Construction-related activities would temporarily disturb approximately six acres of upland habitats in connection with the removal of a portion of the existing SR 1 embankment and project grading. The analysis contained in the October 2016 Biological Assessment (Denise Duffy & Associates 2016) is based on 35 percent project designs.

The purpose of the proposed causeway is to accommodate flows that come into the south overbank area and to increase hydrologic connectivity between the Carmel Lagoon and the proposed action area (Figure 1). The project would result in a number of benefits including a reduction in flooding to the developed areas north of the Carmel River, and reducing existing flood hazards to SR 1. Currently the existing SR 1 embankment acts as a barrier, which has resulted in floodwater overtopping SR 1. These benefits would generally result from the enhanced/restored floodplain, which would increase the site's capacity to accommodate floodwaters, as well as restore the site's longitudinal connectivity with the Carmel Lagoon. The proposed causeway would increase flood conveyance for all floods, including a 100-year flood.

Construction of the proposed causeway would include temporary traffic bypass sections, demolition of existing culverts and road paving, two phases of utility relocation, ground improvement, pile driving for support piers, concrete placement, paving, and the eventual removal of traffic bypass sections. Grading activities within the floodplain would entail approximately 20,000 cy of cut, and 40,000 cy of fill. The fill deficit (23,600 cy) would be imported from excess soil from the floodplain restoration component, as described above.

1.3.3. Floodplain Monitoring

The USFWS anticipates a small number of steelhead may become stranded on the floodplain following floodplain inundation. To validate the assumption that few, if any, steelhead will become stranded during these brief events, the project applicants have proposed to conduct

monitoring of the first two inundation events.[2] During these monitoring activities, NMFS-approved monitors will visually assess the constructed channels and sediment basins (assuming environmental conditions are safe to do so) in order evaluate the performance of the constructed floodplain features, and to numerate any stranded steelhead that may be present. The project applicants or their consultants may attempt to rescue stranded, live fish with dip nets or seines and relocate them to the nearest suitable habitat in the lagoon or river.

2. ENDANGERED SPECIES ACT CONSULTATION: 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, Federal agencies must ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, Federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provides an opinion stating how the agency's actions would affect listed species and their critical habitat. If incidental take is expected, section 7(b)(4) requires NMFS to provide an Incidental Take Statement (ITS) that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures and terms and conditions to minimize such impacts.

2.1 Analytical Approach

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

The adverse modification analysis considers the impacts of the Federal action on the conservation value of designated critical habitat. This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.[3]

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

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[2] An inundation event is defined as an event where flow from the Carmel River crests through the constructed levee openings and connects with graded floodplain features. Standing water that develops only from localized runoff or precipitation will not be considered an inundation event.

[3] Memorandum from William T. Hogarth to Regional Administrators, Office of Protected Resources, NMFS (Application of the "Destruction or Adverse Modification" Standard Under Section 7(a)(2) of the Endangered Species Act) (November 7, 2005).

- Identify the rangewide status of the species and critical habitat likely to be adversely affected by the proposed action.
- Describe the environmental baseline in the action area.
- Analyze the effects of the proposed action on both species and their habitat using an "exposure-response-risk" approach.
- Describe any cumulative effects in the action area.
- Integrate and synthesize the above factors to assess the risk that the proposed action poses to species and critical habitat.
- Reach jeopardy and adverse modification conclusions.
- If necessary, define 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 would be adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The species status section also helps to inform the description of the species' current "reproduction, numbers, or distribution" as described in 50 CFR 402.02. The opinion also examines the condition of critical habitat throughout the designated area, evaluates the conservation value of the various watersheds and coastal and marine environments that make up the designated area, and discusses the current function of the essential physical and biological features that help to form that conservation value.

2.2.1. Status of the S-CCC Steelhead DPS

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

Recent analyses conducted by the S-CCC steelhead Technical Review Team (TRT) indicate the S-CCC steelhead DPS consists of 12 discrete sub-populations representing localized groups of interbreeding individuals, and none of these sub-populations currently meet the definition of viable (Boughton *et al.* 2006; Boughton *et al.* 2007). Most of these sub-populations are characterized by low population abundance, variable or negative population growth rates, and reduced spatial structure and diversity. The sub-populations in the Pajaro River and Salinas

River[4] watersheds are in particularly poor condition (relative to watershed size) and exhibit a greater lack of viability than many of the coastal subpopulations. In the Carmel River there has been a fairly steady 15-year decline in abundance of anadromous adults (Williams *et al.* 2016). The decline has surprised researchers because it coincides with a concentrated effort to restore the habitat in the Carmel River and to improve numbers through a rescue/captive rearing operation (Williams *et al.* 2016). This decline could indicate an increase in S-CCC steelhead DPS extinction risk (Williams *et al.* 2016).

Although steelhead are present in most streams in the S-CCC DPS (Good *et al.* 2005), their populations are small, fragmented, and unstable (more subject to stochastic events) (Boughton *et al.* 2006). In addition, severe habitat degradation and the compromised genetic integrity of some populations pose a serious risk to the survival and recovery of the S-CCC steelhead DPS (Good *et al.* 2005). In addition, severe habitat degradation and the compromised genetic integrity of some populations pose a serious risk to the survival and recovery of the S-CCC steelhead DPS (Good *et al.* 2005). NMFS' 2005 status review concluded S-CCC steelhead remain "likely to become endangered in the foreseeable future" (Good *et al.* 2005). NMFS confirmed the listing of S-CCC steelhead as threatened under the ESA on January 5, 2006 (January 5, 2006; 71 FR 834).

In the most recent status update (Williams *et al.* 2016), NMFS concluded there was no evidence to suggest the status of the S-CCC steelhead DPS has changed appreciably since the publication of the previous status review (Williams *et al.* 2011), and, therefore, S-CCC steelhead remain listed as threatened (Williams *et al.* 2016).

2.2.2. Status of Critical Habitat for the S-CCC steelhead DPS

Critical habitat was designated for S-CCC steelhead on September 2, 2005 (70 FR 52488). The designation of critical habitat for S-CCC steelhead uses the term primary constituent elements (PCEs). The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). This shift in terminology does not change the approach used in conducting our analysis, whether the original designation identified primary constituent elements, physical or biological features, 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.

For S-CCC steelhead, PBFs include estuarine areas free of obstruction and excessive predation with the following essential features: (1) water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (2) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and (3) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation (70 FR 52488).

[4] The TRT only identified multiple populations in the Salinas River system for purposes of DPS viability analysis. However, for the purposes of threat analysis (and corresponding recovery actions), the Pajaro River was broken into the Uvas Creek tributary and the remainder of the Pajaro River system (which includes the mainstem and other tributaries). Uvas Creek was singled out because of its importance and the large number of threats.

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

Depletion and storage of streamflows have drastically altered the natural hydrologic cycles in many of the streams in the S-CCC steelhead DPS (Good *et al.* 2005, NMFS 2013). Alteration of streamflows results in migration delays, loss of suitable habitat due to dewatering and blockage, stranding of fish from rapid flow fluctuations, and increased water temperatures harmful to steelhead. Overall, the current condition of S-CCC steelhead critical habitat is degraded, and likely cannot provide the conservation value necessary for the recovery of the species absent habitat restoration efforts.

2.2.3. Global Climate Change

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

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

In the San Francisco Bay region[5], warm temperatures generally occur in July and August, but as climate change takes hold, the occurrences of these events will likely begin in June and could continue to occur in September (Cayan *et al.* 2012). Climate simulation models project that the San Francisco region will maintain its Mediterranean climate regime, but experience a higher degree of variability of annual precipitation during the next 50 years and years that are drier than the historical annual average during the middle and end of the twenty-first century. The greatest reduction in precipitation is projected to occur in March and April, with the core winter months remaining relatively unchanged (Cayan *et al.* 2012).

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

2.2.4. S-CCC Steelhead General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both fresh- and saltwater. The older juvenile and adult life stages reside in the ocean, until the adults ascend freshwater streams to spawn. Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby *et al.* 1996; Moyle 2002). Although one-time spawners are the great majority, Shapovalov and Taft (1954) reported that repeat spawners are relatively numerous (17.2 %) in California streams. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults.

Adult S-CCC steelhead are classified as winter-run steelhead because they emigrate from the ocean to their natal streams to spawn annually during the winter (Moyle 2002). Specifically, adult CCC steelhead typically enter freshwater between December and April, peaking in January and February (Wagner 1983; Fukushima and Lesh 1998). During this time, seasonal high flows create stream velocities and depth that are optimal for adults to transit to and from spawning grounds. The minimum stream depth necessary for successful upstream migration is about 13 centimeters (cm), although short sections with depths less than 13 cm are passable (Thompson 1972). The preferred water velocity for upstream migration is in the range of 40-90 cm/s, with a maximum velocity, beyond which upstream migration is not likely to occur, of 240 cm/s (Thompson 1972).

Upon entering their natal stream, steelhead females build redds to bury eggs for a several month long incubation period. Redds are generally located in areas where the hydraulic conditions are

[5] Both the San Francisco Bay and Monterey Bay regions exhibit similar Mediterranean climate patterns. The action area for the Project is located between the two regions.

such that fine sediments, for the most part, are sorted out and streamflow is constant. Reiser and Bjornn (1979) found that gravels of 1.3-11.7 cm in diameter were preferred by steelhead. The survival of embryos is reduced when fines smaller than 6.4 millimeters (mm) comprise 20 to 25 percent of the substrate. This is because, during the incubation period, the intragravel environment must permit a constant flow of water to deliver dissolved oxygen and to remove metabolic wastes. Studies have shown a higher survival of embryos when intragravel velocities exceed 20 cm/hr (Coble 1961; Phillips and Campbell 1961). The number of days required for steelhead eggs to hatch is inversely proportional to water temperature and varies from about 19 days at 15.6° degrees (°) Celsius (C) to about 80 days at 5.6° C. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986). Other intragravel parameters such as the organic material in the substrate effect the survival of eggs to fry emergence (Chapman 1988; Everest *et al.* 1987; Shapovalov and Taft 1954).

Once emerged from the gravel, steelhead fry rear in freshwater edgewater habitats and move gradually into pools and riffles as they grow larger. Cover, water temperature, sediment, and food items are important habitat components for juvenile steelhead. Cover in the form of woody debris, rocks, overhanging banks, and other in-water structures provide velocity refuge and a means of avoiding predation (Bjornn *et al.* 1991; Shirvell 1990). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Water temperature can influence the metabolic rate, distribution, abundance, and swimming ability of rearing juvenile steelhead (Barnhart 1986; Bjornn and Reiser 1991; Myrick and Cech 2005). Optimal temperatures for steelhead growth range between 10 and 20° C (Hokanson *et al.* 1977; Myrick and Cech 2005; Wurtsbaugh and Davis 1977). Fluctuating diurnal water temperatures are also important for the survival and growth of salmonids (Busby *et al.* 1996).

Although variation occurs, in coastal California juvenile steelhead usually rear in freshwater for 1-2 years until they are become large enough to enter the ocean as smolts to finish rearing and maturing to adults. Barnhart (1986) reported that steelhead smolts in California range in size from 140 to 210 millimeters (mm) (fork length). S-CCC steelhead smolts emigrate episodically from natal streams during fall, winter, and spring high flows, with peak migration occurring in April and May (Fukushima and Lesh 1998).

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 (467.2 acres) is located at the mouth of the Carmel Valley in an unincorporated area of Monterey County. It overlaps with several open space areas, including an active agricultural area, the Carmel River State Beach (including the Carmel Lagoon), a portion of Palo Corona Regional Park, and a portion of the Carmel River. Also included within the Action Area are small developed areas. These include the Carmel Area Wastewater District water pollution control plant (located near the mouth of the Carmel River), a portion of SR 1, a parking lot, bathroom, and barn complex within the Carmel River State Beach, a barn and parking lot on MPRPD

property, a small row of houses east of SR 1, and a small group of houses west of SR 1. Within the 467 acre Action Area is the Area of Potential Impact (API), which is 134.8 acres and includes all areas where permanent and temporary impacts are expected to occur as a result of the project activities (Figure 2). The majority of the API if former agricultural lands. The Action Area includes areas adjacent to and downstream that may be affected indirectly by erosion and sedimentation following construction.

Figure 2. The Action Area and API for the Project.

2.4 Environmental Baseline

The "environmental baseline" includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The Carmel River is a central California coastal river that drains approximately 255 square miles of watershed to the Pacific Ocean. Past and present land use within the Carmel River watershed has included open space, grazing, agriculture, golf courses, as well as residential and commercial developments (Carmel River Watershed Conservancy 2004). There are significant human impacts in the basin, including the over appropriation of surface and groundwater, urbanization, an expansive road network, operation of the LPD, sandbar management, and grazing and agriculture practices that cumulatively result in a degradation of habitat quality throughout the Carmel River system (Smith *et al.* 2004). Recent beneficial actions that have occurred in the watershed include the removal of Old Carmel River Dam (2015) and San Clemente Dam (2016). As noted above, the project action area is located at the terminus of the watershed from just upstream of SR 1 down to the river mouth (Figure 2). The following sections describe more specifically the status of critical habitat and adjacent areas within the action area, and the status of S-CCC steelhead within the action area.

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

Critical habitat for S-CCC steelhead within the Action Area is comprised of two distinct habitat types: the reach of the lower Carmel River channel, and estuarine habitat in the Carmel Lagoon (Figure 2). The Carmel River and Carmel Lagoon are designated critical habitat for S-CCC steelhead. Per the definition of the lateral extent of critical habitat for steelhead, the OHWM within the Carmel River and extreme high water within the Carmel Lagoon is the extent of the critical habitat. The maximum water surface elevation recorded for the Carmel Lagoon is at 15.4 feet in 2008 (USACE 2013). As such, approximately 159.4 acres of S-CCC steelhead critical habitat are present within the Action Area, of which approximately 1.0 acre is within the Floodplain Restoration Component of the project (Figure 3).

Lower Carmel River
The lower-most reaches of the Carmel River are located within the action area. Although there is not a definitive boundary of where riverine habitat ends and estuarine habitat begins, in general, this transition zone begins approximately 2,000 feet downstream of SR 1 (adjacent to the Carmel Area Wastewater Treatment Plant). This extends to approximately 1,000 feet upstream of SR 1. During most years, this reach of the river channel is completely dry by early to mid-summer, and therefore this part of the Carmel River is used almost exclusively as a migratory corridor between spawning and rearing habitat in the upper watershed and the ocean. There are no physical barriers to migration within this reach of the river.

Through this reach, the river is confined to a single thread and slightly entrenched channel, with dense, mixed-aged stands of riparian forests. Levees, constructed in the 1930s, line both river banks through this reach that severely limits floodplain connectivity. Substrate in this reach consists mostly of sand and gravel, which provides very limited spawning and rearing habitat. Prior to last year, substrate conditions in the channel had transitioned from primarily sand, to greater amounts of gravel and cobble, to the extent that redds had been observed in the vicinity of this reach (Kevan Urquhart, MPWMD, personal communication, August 2017). After the large winter storms of 2017, substrate in this reach was converted back to a predominantly sand.

Human activity has significantly impacted the watershed as a result of water diversions, gravel mining, agricultural conversion, roads, levees, bridges, and buildings. These actions have dramatically altered the river, diminished and redirected flows, reduced floodplain acreage and connectivity, and impaired associated ecosystems. This stretch of the lower Carmel River is surrounded by residential and commercial developments (north bank) and open space agricultural and parks (south bank and estuary) and is located near the terminus of the watershed. In 1995, following significant flooding of the entire lower Carmel River, a "notch" was created in the levee at the upstream end of the API to allow water from the Carmel River to enter the south floodplain during flood events. Along with various other improvements in the north floodplain, the "notch" is believed to have been instrumental in preventing significant damage during the 1998 floods. The existing SR 1 highway embankment is approximately 5 to 8 feet high and acts as "dam" during high flow events.

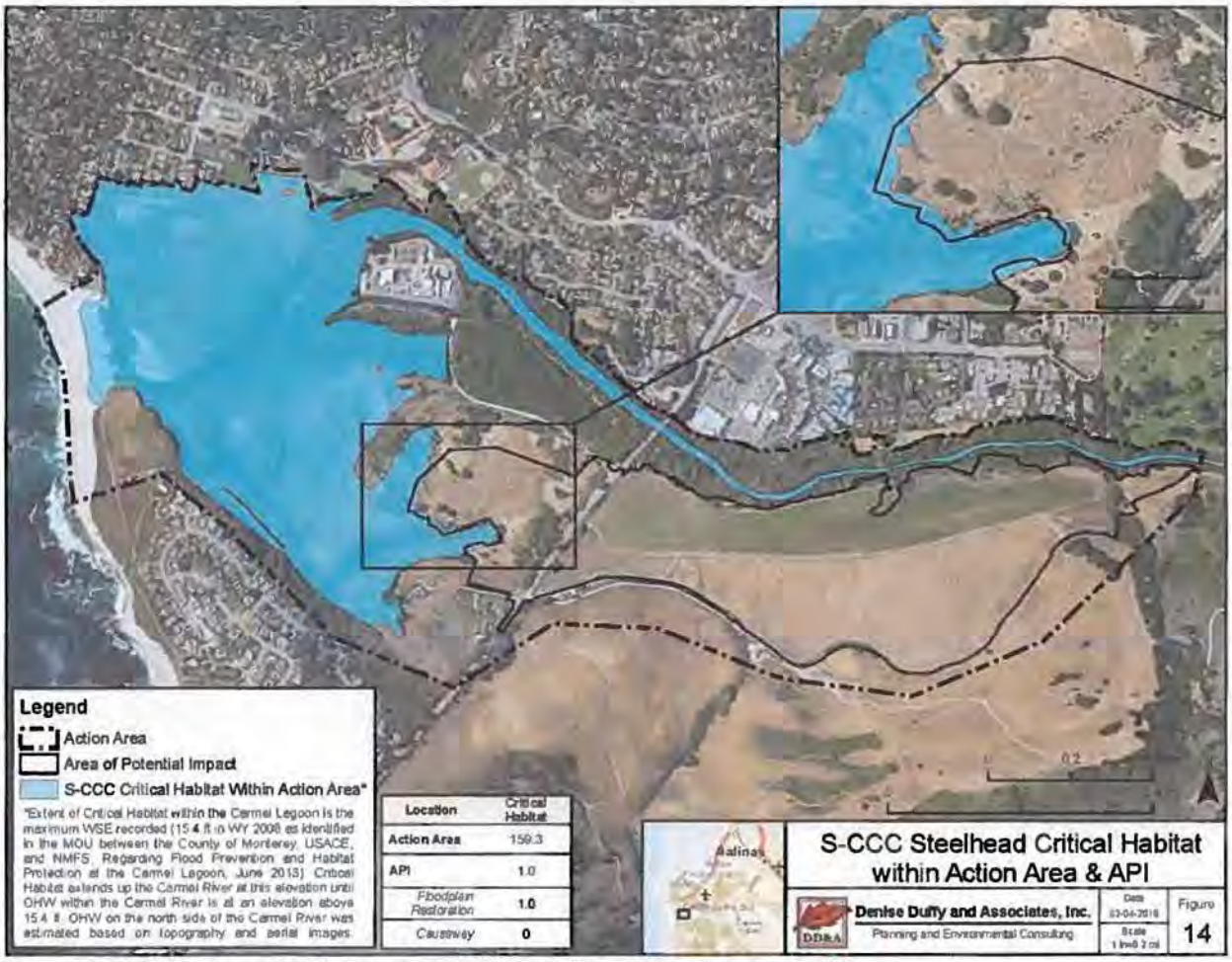

Figure 3. S-CCC steelhead Critical Habitat within the Action Area and API.

Carmel Lagoon

The Carmel Lagoon develops after a sandbar forms at the mouth of the river, typically in late spring or early summer (Casagrande and Watson 2003). In total, the current extent of the Carmel Lagoon and adjacent wetlands and waters encompasses approximately 300 acres. The majority of the lagoon and wetlands are owned and managed by the California Department of Parks and

Recreation (State Parks), which includes the *Carmel River Lagoon and Wetland Natural Preserve* and *Carmel River State Beach.* The lagoon/marsh preserve area consists of a variety of wetland habitat types including open water habitats in the main lagoon and South Arm, seasonally flooded willow riparian forest and scrub shrub, emergent tule marsh, seasonally inundated mudflats, and beach dunes (Casagrande 2006).

Carmel Lagoon provides important PBFs for steelhead rearing and migration. Steelhead adults and smolts migrate through the lagoon once the sandbar is open, which typically occurs during the wet season (December-June). Habitat suitability for steelhead in the Carmel Lagoon changes seasonally and is directly related to changes in water quality and depth (Casagrande *et al.* 2002; Casagrande and Watson 2003). In seasonally closed lagoons, such as Carmel, each of these parameters is driven primarily by the timing of sandbar formation and both the volume and duration of freshwater inflow to the lagoon (Smith 1990). Surface flow from the Carmel River provides the primary source of freshwater to the lagoon, with smaller contributions from groundwater (Watson and Casagrande 2004). Greater depths in the lagoon are important because they provide necessary escape cover from avian predators and help maintain suitable water quality conditions. The South Arm of the lagoon supports the deepest habitat in the lagoon (Casagrande *et al.* 2002)

Habitat quality in the lagoon is most limiting during the summer dry season, when water quality often becomes degraded. Water temperatures are often near or above 20°C during summer and early fall, and water column stratification often results in reduced dissolved oxygen concentrations at depth (Casagrande *et al.* 2002; Casagrande and Watson 2003; Hagar Environmental Science 2003; Watson and Casagrande 2004). This is especially problematic in deeper, off-channel or backwater areas of the lagoon (e.g., the South Arm) where the volume of trapped saltwater is greater and submerged aquatic vegetation is more dense (Alley 1997; Casagrande and Watson 2003; Hagar Environmental Science 2003). The thickness of the freshwater layer is important because it allows for better vertical mixing and thus more suitable water quality conditions for juvenile steelhead to use.

In fall (September – December), wave overwash events can provide a substantial volume of saltwater and marine debris (e.g., kelp) to the lagoon (Casagrande and Watson 2003; Hagar Environmental Science 2003; Watson and Casagrande 2004). Wave overwash initially provides a source of mechanical mixing (i.e., increased dissolved oxygen) and colder water to the lagoon, however the lack of freshwater inflow can result in a strengthening of the water column stratification and subsequent poor water quality conditions.

When flow in the river is connected to the lagoon, juvenile steelhead of multiple age classes are able to migrate to the lagoon until the lower river becomes disconnected (in early summer of most years). Once in the lagoon, they are able to take advantage of the high prey abundance (e.g., macroinvertebrates) as long as water quality conditions remain suitable. As in other coastal lagoons, juvenile steelhead that rear over the summer in the Carmel Lagoon can exhibit rapid growth relative to riverine-reared juveniles of the same cohort (Smith 1990; Hayes *et al.* 2008).

After the initial breach of the sandbar in late fall or early winter, steelhead rearing is largely restricted to areas with residual depth. The residual depth in the lagoon is important for

maintaining habitat where young steelhead can continue feeding and acclimate to saltwater. During exceptionally dry years, opening of the sandbar in late fall or winter may be delayed or not occur at all (e.g., 1988-89, 1989-90, and 2013-14).

During fall and winter, increases in river inflow and/or large wave overwash events can cause a rapid increase in WSE within the lagoon that threatens low-lying residential properties along the northern edge of the marsh with flooding. The potential for flooding has resulted in a long history of sandbar management to reduce flood risk and property damage. This was originally done by locals with horse and plow, shovels, and eventually transitioned to the use of heavy equipment led by the County since at least 1973. Prior to 2011, the sandbar was physically opened by machinery to evacuate the lagoon in the quickest and most efficient manner. However, since then, the County has shifted sandbar management practices to grading specific locations of the sandbar down to the highest elevation possible to avoid flooding (approximately 11 feet NGVD) which allows the lagoon WSE to rise and scour the channel on its own. In the past, sandbar breaching has been carried out as early as October and as late as June, depending on the timing of storms, wave heights, and lagoon WSE, with multiple breach events in a single season.

Breaching activities, especially when done out of season, can result in adverse effects to juvenile steelhead rearing habitat quantity and quality. Once the sandbar opens (natural or mechanical), the volume and rate of water exiting the lagoon continues to increase and in many cases the lagoon is often drained to near sea level within two to three hours (Hagar Environmental Science 2003). The speed and magnitude of the draining can result in entrainment of juvenile steelhead to the ocean including some individuals that may not be fully acclimated to seawater. The reduction of the lagoon volume also results in a reduction in residual habitat for juvenile steelhead that remain in the lagoon. In the Carmel Lagoon, the primary (and often only) residual habitat with suitable low velocities during rapid draining events is located in the South Arm.

The location and angle of breach through the sandbar can affect the degree of drawdown and the ability to maintain a perched lagoon. Based on recent and some historic information, the Carmel Lagoon can maintain a perched configuration if the sandbar opens on the north end. When the sandbar opens in the center of the beach, the opening experiences a more rapid scour, which often results in a more complete draining of the lagoon. The more rapid and full draining not only reduces habitat quantity but also results in a greater influx of seawater to the lagoon. As noted above, the duration of the sandbar opening depends on the volume of river inflow, ocean conditions, and the rate of sand replenishment on the beach. In wet years, the lagoon may stay open or in a perched condition well into June or July, whereas in drier years the lagoon may open for a few weeks, or not at all. In most years, the lagoon will experience a natural cycle of repeated open and close condition after the initial breach as inflow causes the lagoon to crest the newly formed sandbar. In years when MCRMA implements sandbar management during winter to reduce flood risks, they are required to implement actions to close the lagoon based on river inflow and in close coordination with NMFS and other resource agencies.

Climate Change and the Carmel River

The long-term effects of climate change have been presented in Section 2.2.3 Global Climate Change. These include temperature and precipitation changes that may affect steelhead and

critical habitat by changing water quality, streamflow levels, and steelhead migration in the action area.

The threat to S-CCC steelhead in the action area from climate change is likely going to mirror what is expected for the rest of Central California. NMFS expects that average summer air temperatures would increase, heat waves would become more extreme, and droughts and wildfire would occur more often (Hayhoe *et al.* 2004; Lindley *et al.* 2007; Schneider 2007; Westerling *et al.* 2011; Moser *et al.* 2012; Kadir *et al.* 2013). Many of these changes are likely to further degrade S-CCC habitat in the action area by, for example, further reducing streamflow in the river or volume in the lagoon during the summer and raising summer water temperatures.

2.4.2. Status of S-CCC steelhead in the Action Area

Steelhead utilize both the riverine and estuarine portions of the action area (Dettman 1984). During the dry season, the lower river channel is typically dry or intermittent and therefore steelhead are absent. In years when stream flow is maintained through this reach, juvenile steelhead abundance is very low. Between late fall and early summer, the lower river channel is used by steelhead for migration to and from spawning and rearing habitat and the lagoon.

Since the early 1980's, monitoring of juvenile steelhead abundance in the lagoon has been conducted occasionally with varying levels of effort. These monitoring efforts have produced a few lagoon population estimates but mostly the data provide snapshots of steelhead presence, relative abundance, size ranges, and provide inference on the suitability of habitat conditions for steelhead rearing in the lagoon during the dry season.

Surveys conducted between April and October 1982 (a wet year), resulted in approximately 2,000 steelhead captured in the lagoon, ranging from YOY to out-migrating smolts (Dettman 1984). A mark-recapture study in the summer and fall of 1996 (moderately wet year), estimated the juvenile steelhead population in the lagoon at approximately 5,000 and 6,000 fish (Alley 1997) with sizes ranging from 90 to 189 mm standard length. Alley (1997) estimated this number of fish could equate to approximately 7 or 8 percent of the summer rearing population for the entire Carmel River watershed based on observed juvenile densities at multiple sites in the river upstream of the lagoon and the abundance of rescued fish throughout the basin. As others have found (Smith 1990; Bond *et al.* 2008; Atkinson 2010), lagoon habitat can be highly productive where juvenile steelhead can grow rapidly, resulting in a substantial increase in the number and average size of smolts produced in the watershed. For example, in August 1999 (a wet year) the California Department of Fish and Game captured several hundred to a thousand rearing steelhead in a single seine haul at the entrance to the South Arm of the lagoon with mean lengths between 200 to 300 mm (Kevan Urquhart, personal communication, 2017). This large smolt size is important because studies have shown the vast majority of the returning adults (80 to 90 percent) can be disproportionally represented by juveniles that reared in the lagoon and reached a larger size (>150 mm fork length) prior to ocean entry (Bond *et al.* 2008). These data highlight the value of a functioning lagoon to individual steelhead and to the overall health and resiliency of the population.

In July 2006 (also a wet year), staff from the Watershed Institute at California State University Monterey Bay (CSUMB), California State Parks, and the Monterey Peninsula Water Management District (MPWMD) conducted nine seine hauls throughout the lagoon which produced approximately 1,100 steelhead (no population estimate was performed). Precise counts were not made due to large number of fish captured and the potentially stressful water quality conditions at the time of sampling. Sizes ranged from 75 to 185 mm fork length (Joel Casagrande, NMFS, unpublished data). Later in December 2006, staff from CSUMB, NMFS, the Carmel River Steelhead Association (CRSA), and MPWMD conducted seine hauls at various sites throughout the lagoon over three days. Several hundred juvenile steelhead were captured, which confirmed that juvenile steelhead not only survived through the summer-fall dry period while rearing in the lagoon, but that these fish grew exceptionally well based on comparisons of length frequencies captured between two periods (Joel Casagrande, NMFS, unpublished data).

2.4.3. Previous Section 7 Consultations in the Action Area

Pursuant to section 7 of the ESA, NMFS has completed the following interagency consultations that have included or may the potential to occur within the action area of this Project.

- *Regional General Permit (RGP) for Carmel River Restoration & Maintenance Activities (NMFS PCTS #: SWR-2000-1889, ARN: 151422SWR2000SR148 Cabinet 4B)*

  NMFS and the Corps completed a programmatic formal section 7 consultation and Essential Fish Habitat consultation on MPWMD's proposal, and a biological opinion was issued on March 12, 2004, and renewed in 2010, the current Corps permit expires in 2020. The 2004 proposal included maintenance and restoration activities along tributaries and mainstem of the Carmel River from the LPD to the Carmel Lagoon, and the 2009 proposal included activities from the former SCD site to the lagoon. The biological opinion analyzed the effects of the project and concluded that the proposed project will not jeopardize the continued existence of S-CCC steelhead, nor adversely modify or destroy their critical habitat. In addition, the project was determined to adversely affect EFH, however, no EFH Conservation Recommendations were provided, because the project included measures to avoid, minimize, mitigate, or otherwise offset potential adverse effects to EFH. The following projects were approved for inclusion under the programmatic:

  - Selective vegetation management in the Carmel River channel, fall 2005 (NMFS PCTS #: SWR-2005-4297); NMFS response September 7, 2005;

  - Carmel River RGP Reinitiation for Critical Habitat, 2006 (NMFS PCTS#: SWR-2006-3148); NMFS response August 25, 2006;

  - 2006 Tiering letter for Carmel River RGP (NMFS PCTS#: SWR-2006-4190); NMFS response September 5, 2006;

  - Carmel River RGP: Tiering letter for 2007 Activities (NMFS PCTS#: SWR-2007-4626); NMFS response July 20, 2007;

- Carmel River RGP: Tiering letter for 2008 activities (NMFS PCTS#: SWR-2008-5384) NMFS response September 9, 2008;

- Carmel River RGP: Tiering letter for 2009: Woods/Marotta (NMFS PCTS#: SWR-2009-3958); NMFS response December 31, 2009;

- Carmel River RGP: Tiering letter 2009: MPWMD (NMFS PCTS#: SWR-2009-3959); NMFS response December 31, 2009. Carmel Lagoon Enhancement Project (NMFS PCTS#: SWR-2002-1746, ARN: 151422SWR02SR8490).

- *Carmel Lagoon Enhancement Project (NMFS PCTS#: SWR-2002-1746, ARN: 151422SWR02SR8490)*

  NMFS and the Corps completed a formal section 7 consultation on California Department of Parks and Recreation's proposal, and a biological opinion was issued on February 13, 2004. The proposal included creating woody riparian, freshwater wetland, and open water habitat in an extension of the South Arm of the Carmel Lagoon. The project included grading and dredging to accomplish project objectives. The biological opinion analyzed the effects of the project and concluded that the proposed project will not jeopardize the continued existence of S-CCC steelhead, nor adversely modify or destroy their critical habitat.

- *Carmel River Steelhead Association LWD Project (NMFS PCTS# SWR-2008-7150, ARN 151422SWR2008SR00400)*

  NMFS and the Corps completed informal section 7 on a Carmel River Steelhead Association proposal, and a concurrence letter was issued on February 12, 2009. The proposal included placing LWD complexes at seven locations in the Carmel Lagoon. The letter of concurrence analyzed the effects of the project and concluded that the project was not likely to adversely affect S-CCC steelhead or designated critical habitat.

- *Carmel Lagoon Water Level Adaptive Management Project (NMFS PCTS #: SWR-2009-2325, ARN: 151422SWR2008SR00416)*

  NMFS and the Corps completed informal section 7 on a California State Parks proposal, and a concurrence letter was issued on May 12, 2009. The project intended to modify the Carmel Lagoon sandbar during spring and summer months of 2009 (usually by closing the outlet channel to the ocean) such that the highest possible lagoon volume and subsequent water quality at the beginning of the dry summer period was maintained in order to enhance habitat conditions for steelhead.

- *Flood Protection at Carmel River Lagoon (NMFS PCTS #: SWR-2011-5438, ARN. 151422SWR2011SR00542)*

  NMFS and the Corps completed informal section 7 on a Monterey County proposal, and a

concurrence letter was issued on October 28, 2011. The proposal included sandbar management activities in Carmel Lagoon from October 2011 to September 2012. The letter of concurrence analyzed the effects of the project and concluded that the project was not likely to adversely affect S-CCC steelhead or designated critical habitat.

- *Carmel Lagoon Interim Sandbar Management Plan (NMFS PCTS #: WCR-2015-2584, ARN: 151422WCR2015SR00132)*

- *Carmel Lagoon Interim Sandbar Management Plan (NMFS PCTS # WCR-2017-6858, ARN: 151422WCR2015SR00132)*

  NMFS and the Corps completed informal section 7 and EFH consultation on a Monterey County RMA proposal, and a concurrence letters were issued on May 7, 2015, and again on November 22, 2017. The proposals included sandbar management activities in Carmel Lagoon from spring 2015 to fall 2016, and fall 2017 through summer 2018. The letters of concurrence analyzed the effects of the project and concluded that the projects were not likely to adversely affect S-CCC steelhead or their designated critical habitat. In addition, the projects were determined to adversely affect EFH, however, no EFH Conservation Recommendations were provided, because the projects included measures to avoid, minimize, mitigate, or otherwise offset potential adverse effects to EFH.

- *Emergency consultations on sandbar breaching*

  As previously stated, the mechanical breaching of the Carmel Lagoon has been carried out by Monterey County or State Parks at least once a year since 1973, and more frequently in some years. In the past, sandbar breaching has been carried out as early as October and as late as June. At first, the sandbar was breached without authorization, and more recently the activity has been conducted under the auspices of an emergency Corps RGP-5 Permit to temporarily alleviate flood threats.

Several research and enhancement projects resulting from NMFS' Section 10(a)(1)(A) research and enhancement permits and section 4(d) limits or exceptions could occur in the action area. Currently, fisheries research and monitoring is authorized and conducted in the Carmel River Watershed by NOAAs Southwest Fisheries Science Center, the California Department of Fish and Wildlife, and the Monterey Peninsula Water Management District. These activities are closely monitored by NMFS and require measures to minimize take of steelhead. NMFS has analyzed these activities and determined that they would not jeopardize the S-CCC steelhead DPS nor adversely modify its designated critical habitat.

2.5 Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that would be added to the environmental baseline (50 CFR 402.02). Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.

In this biological opinion, our approach to determine the effects of the action was based on institutional knowledge and a review of the ecological literature and other relevant materials. We used this information to gauge the likely effects of the proposed project via an exposure and response framework that focuses on the stressors (physical, chemical, or biotic), directly or indirectly caused by the proposed action, to which S-CCC steelhead are likely to be exposed. Next, we evaluate the likely response of S-CCC steelhead to these stressors in terms of changes to survival, growth, and reproduction, and changes to the ability of PBFs to support the value of critical habitat in the action area. PBFs include sites essential to support one or more life stages of the species. These sites for migration, spawning, and rearing in turn contain physical and biological features that are essential to the conservation of the species. Where data to quantitatively determine the effects of the proposed action on listed fish and their critical habitat were limited or not available, our assessment of effects focused mostly on qualitative identification of likely stressors and responses.

Project activities that have the potential to affect steelhead or their critical habitat during or post construction include, fish stranding (mortality) on the floodplain, fish capture and relocation from the floodplain, impacts from increased underwater sound during pile installation associated with the SR 1 causeway, erosion and sedimentation, and the removal of vegetation along the Carmel River at the levee breaching locations necessary to increase floodplain connectivity.

2.5.1. Fish Stranding, Capture and Relocation

Construction of the levee openings will improve the conveyance of floodwaters ($\geq$ 5 year storm event) onto the southern floodplain (i.e., API). During periods of high flow that activate the floodplain, steelhead may either voluntarily seek velocity refuge and foraging areas on the floodplain, or may be involuntarily entrained onto the floodplain. The proposed designs for the floodplain include features with graded slopes into distributary channels, which are intended to provide a high degree of longitudinal flow connectivity and maximization of flow depth during the receding limb of any flood event that engages the floodplain area. The depression, or pond, features will be connected via the channel system and were designed with defined flow inlets and outlets that are intended to provide passage options at all stages of a flood hydrograph. Thus, peak flows engaging with the floodplain may allow for some degree of utilization of the floodplain habitat itself. Strong, mature adult steelhead will leave the floodplain prior to juveniles in their pursuit of spawning habitat. As flood flows decrease, out-migration through the south overbank levee openings will deliver juveniles into the portion of Carmel Lagoon where deeper habitat is available and the fish may prepare for out-migration to the marine environment.

Although the configuration of geomorphic features on the restored floodplain have been designed to specifically reduce or avoid stranding of steelhead, the possibility of stranding remains. Steelhead may enter the floodplain area from either the South Arm of the lagoon while moving upstream, or through the proposed openings in the levee while moving either upstream or downstream. Because the duration of water flowing across the floodplain will be brief (usually < 24 hours) and only during larger flood events (on average, once every 5 years), some steelhead seeking velocity refuge, shelter, or that are entrained onto the floodplain may become

stranded within the constructed floodplain features. We anticipate this will be rare and limited to a very small number of juvenile steelhead (no more than 15 individuals annually, or 150 over the 10-year project period[6]). Adults, which typically migrate on the rising or receding limbs of the hydrograph, are not expected to become entrained on the floodplain during these peak flow levels. Similarly, the majority of smolts, which tend to migrate later in spring and during smaller freshets, will be unlikely to become entrained onto the floodplain.

Due to the size and complexities of the floodplain area, some of the fish that become stranded on the floodplain will likely die from predation or desiccation. The Project applicants have proposed to monitor the constructed floodplain features during the first two floodplain inundation events to evaluate the performance of the floodplain design, including whether or not juvenile steelhead become stranded. Any live steelhead that are found stranded in isolated pools or other habitat features within the constructed floodplain may be captured and relocated to the closest suitable habitat by NMFS-approved biologists. Steelhead will be collected using seines or dip nets and transported to relocation sites in coolers (or similar containers) containing cool, aerated, freshwater.

As described above, NMFS expects very few steelhead will be encountered on the floodplain due to project designs, the flashy nature of the river's hydrograph, and their life history (i.e., life stage migration times). The number of steelhead that may become stranded and die as a result of predation or desiccation is not expected to exceed 15 fish per year (or no more than 150 fish over 10 years). During inundation events where monitoring and relocation efforts are performed, the number of steelhead mortalities is expected to be lower (if any steelhead are stranded).

Fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996), has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both the CDFW and NMFS guidelines, direct effects to and mortality of steelhead during capture will be minimized. NMFS assumes, based on extensive past information on fish relocation activities, that no more than 2 percent of the steelhead captured and relocated using seines or dip nets will die as a result of these activities, or no more than 1 fish annually (or no more than 10 fish over 10 years).

Although sites selected for relocation of fish should have ample space, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other fish causing increased competition for available resources such as food and habitat (Keeley 2003). Stress from crowding, including increased competition for food among juvenile steelhead in the relocation areas will be minimal and temporary, because when the project is finished steelhead will be able to redistribute in the creek unimpeded. Ideally sites selected for relocating fish should have ample habitat. For this project, steelhead will be encountered during periods when both the Carmel River and Carmel Lagoon have an abundance of habitat space due to significant storm flow events. Therefore, NMFS does

[6] The Project includes three years of maintenance following construction and 10 years of monitoring post project completion, which is the basis for the duration of the take coverage.

not expect the relocation of a small number of live steelhead to result in any increases in competition or stress due to crowding.

2.5.2. Pile Installation and Underwater Sound

Construction of the causeway at SR 1 will require installation of 12, 56-inch Cast in Steel sheet (CISS) piles using an impact hammer. Piles will be installed approximately 460 meters from the open water of the Carmel Lagoon and approximately 300 meters from the Carmel River channel, which may or may not have water present during this activity.

Fish may be injured or killed when exposed to high levels of underwater sound, especially those by impulsive sound sources such as pile driving with impact hammers. Pathologies associated with very high sound levels are collectively known as barotraumas. These include hemorrhage and rupture of internal organs, including the swim bladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. Fish can also die when exposed to lower, continuous sound pressure levels if exposed for longer periods of time. Hastings (1995) found death rates of 50 percent and 56 percent for gouramis (*Trichogaster sp.*) when exposed for two hours or less to continuous sound at 192 dB root mean squared (RMS) (re: 1 µPa) at 400 Hz and 198 dB (re: 1 µPa) at 150 Hz, respectively, and 25 percent for goldfish (*Carassius auratus*) when exposed to sounds of 204 dB (re: 1 µPa) at 250 Hz[7]. Hastings (1995) also reported that acoustic "stunning," a potentially lethal effect resulting in a physiological shutdown of body functions, immobilized gourami within eight to thirty minutes of exposure to these sound levels.

High sound pressure levels can also result in hearing loss to fish (Hastings 1995, Hastings *et al.* 1996). These sounds can over-stimulate the auditory system of fishes and may result in temporary threshold shifts (TTS). TTS are considered a non-injurious temporary reduction in hearing sensitivity. Physical ear injury may also occur for fish exposed to high levels of continuous sound, manifested as a loss of hair cells, located on the epithelium of the inner ear (Hastings and Popper 2005). These hair cells are capable of sustaining injury or damage that may result in a temporary decrease in hearing sensitivity. However, this type of noise-induced hearing loss in fishes is generally considered recoverable, as fish possess the ability to regenerate damaged hair cells (Lombarte *et al.* 1993; Smith *et al.* 2006). Permanent hearing loss has not been documented in fish. Even if threshold shifts in hearing do not occur, loud sounds can mask the ability of fish to hear their environment. This effect from loud sound exposure is referred to as acoustic or auditory masking. Masking generally results from an unwanted or unimportant sound impeding a fish's ability to hear sounds of interest.

Underwater sound exposures have also been shown to alter the behavior of fishes (see review by Hastings and Popper 2005). The observed behavioral changes include startle responses and increases in stress hormones. Exposure to pile driving sound pressure levels may also result in "agitation" of fishes indicated by a change in swimming behavior detected by Shin (1995) or "alarm" detected by Fewtrell (2003). Other potential changes include reduced predator awareness and reduced feeding. The potential for adverse behavioral effects will depend on a number of

[7] Pressures will not be added to each metric for the remainder of the section: dB peak has a pressure of 1 µPa, dB sound exposure level (SEL) has a pressure of 1 $\mu Pa^2 \cdot sec$, RMS dB has a pressure of 1 µPa.

factors, including the sensitivity to sound, the type and duration of the sound, as well as life stages of fish that are present in the areas affected by underwater sound produced during pile driving. A fish that exhibits a startle response to a sudden loud sound may not necessarily be injured, but it is exhibiting behavior that suggests it perceives a stimulus indicating potential danger in its immediate environment. However, fish do not exhibit a startle response every time they experience a strong hydroacoustic stimulus.

In order to assess the potential effects to steelhead exposed to elevated underwater sound levels from pile driving, a coalition of Federal and state resource and transportation agencies from the West Coast, the Fisheries Hydroacoustic Working Group (FHWG) (Buehler *et al.* 2015), used data from a variety of sound sources and species to establish interim acoustic criteria for the onset of injury to fishes from impact pile driving exposure (Buehler *et al.* 2015). Most historical research has used peak pressure to evaluate the effects on fishes from underwater sound. Current research, however, suggests that sound exposure level (SEL), a measure of the total sound energy expressed as the time-integrated, sound pressure squared, is also a relevant metric for evaluating the effects of sound on fishes. An advantage of the SEL metric is that the acoustic energy can be accumulated across multiple events and expressed as the cumulative SEL (cSEL). Therefore a dual metric criteria was established by the FHWG and includes a threshold for peak pressure (206 dB) and cSEL (187 dB for fishes 2 grams or larger and 183 dB for fishes smaller than 2 grams). Injury would be expected if either threshold is exceeded. There is uncertainty as to the behavioral response of fish to underwater sound produced when driving piles in or near water. Until new information indicates otherwise, NMFS believes a 150 dB RMS threshold for behavioral responses for green sturgeon is appropriate.

Several site-specific conditions should be considered when conducting an assessment of the potential effects of pile driving associated with construction projects. Effects on an individual fish during pile driving are dependent on variables such as environmental conditions at the project site, specific construction techniques, and the construction schedule. A dual metric criteria of 206 dB peak SPL for any single strike and a cSEL of 187 dB are currently used by NMFS as thresholds to correlate physical injury to fish greater than 2 grams in size from underwater sound produced during the installation of piles with impact hammers. S-CCC steelhead that may be present within the action area of this project are likely to be greater than 2 grams in size.

Different types of piles (e.g., wood, steel, concrete) result in different levels of underwater sound when struck with a pile driver. As noted above, only steel piles will be used for construction for the causeway. In the updated Compendium of Pile Driving Sound Data (Buehler *et al.* 2015), the most recent pile driving monitoring results are compiled in order to provide information regarding the potential levels of underwater sound pressure levels generated with the installation of different pile and hammer types. Several pile driving case studies conducted within the coastal California region using steel, concrete, and composite piles are included in the compendium. Impact hammers produce the highest elevated underwater sound levels, particularly when used in combination with steel piles. Vibratory hammers produce less sound than impact hammers and are often employed as a measure to reduce the sound generated by pile driving, and in turn, the potential for adverse effects on fish (Buehler *et al.* 2015).

The location of where the piles are driven (i.e., in water or on land), and the distance from open water, will influence the levels sound attenuation. Sound attenuation through dry land is much greater than through open water. Depth of water is also important, as high pressure sound waves are able to travel a much greater distance in deeper waters.

For this Project, the steel piles are being driven on dry land approximately 300 and 460 meters from waters in the Carmel River (if flowing at the time) and the Carmel Lagoon, respectively. Each of the 12, 56-inch CISS piles will require approximately 2 days (24 days total for all piles) to install, with approximately 3,000 to 7,000 strikes per day depending on soil conditions in the field and the contractor's installation methods.

To analyze potential impacts to steelhead in the Carmel River and Carmel Lagoon, the Project applicants and NMFS utilized sound attenuation rates from a case-study with similar project characteristics found in Buehler *et al.* (2015), which was the Geyserville Road Bridge on the Russian River in Sonoma County, California. In that project, a variety of piles were driven in different hydrologic settings, including in-water and on dry land at varying distances from water. The most similar piles included 48-inch CISS piles driven into dry land (gravel floodplain) approximately 25 and 55 meters from open water of the river. With acoustic measurements taken in the river 30 meters away from the pile, peak sound pressure levels were around 180 dB, with the highest level being 183 dB. RMS levels were 168 dB (with a maximum of 171 dB), and signal analyses were performed to measure a cSEL of 157 dB (all below the established thresholds for causing injury or mortality). For the pile 55 meters from edge of water, measurements taken at 60 meters yielded peak sound pressure levels less than 170 dB.

Considering the proposed pile installation, materials, and environmental setting for this Project as well as the attenuation results from the Geyserville Road case study described above, we estimate the cSEL for fish greater than 2 grams will be exceeded only within a radial distance of 95 meters from the piles, and effective quiet (150 dB) will be reached within 129 meters. Since the shortest distance between the piles and waters that may support steelhead is more than 300 meters away, we do not expect the installation of piles using an impact hammer will expose steelhead to underwater sound levels that will result in injury, mortality, or any observable changes in their behavior.

2.5.3. Vegetation Removal

Construction of floodplain restoration and causeway components will result in impacts to a total of 5.8 acres of riparian forest/scrub along the Carmel River or Carmel Lagoon. This includes 4.4 acres of intact riparian forest, 0.6 acres of degraded riparian forest, and 0.8 acres of riparian scrub. However, a majority of this riparian vegetation is located above the OHWM and only 1 acre of designated critical habitat is located within the floodplain restoration API. Approximately 30 percent of the levee on the south side of the river (thus 30 percent of the linear distance of riparian vegetation within the API) will be removed to facilitate the floodplain restoration actions.

Riparian zones serve important functions in stream ecosystems by providing shade, sediment storage, nutrient inputs, channel and stream bank stability, habitat diversity, and cover and

shelter for fish (Murphy and Meehan 1991). Small streams can be especially sensitive to loss of riparian habitat and shade, which moderates stream temperatures by insulating the stream from solar radiation and reducing heat exchange with the surrounding air (Poole and Berman 2001).

As noted above in Section 1.3; Proposed Action, the project includes revegetation plans for areas of the floodplain that will ultimately expand the abundance and diversity of native vegetation communities on the back side of the riparian zone and floodplain. The loss of the stream side vegetation from one bank at this location in the river is not expected to appreciably impact stream water temperatures as a majority of the river bank will remain untouched, the openings are spaced apart to limit impacts (i.e., shade) and because the natural orientation of the river channel (east to west) already limits the influence of riparian shade to the river bottom during the warmest periods of the day. In more natural settings, breaks in the riparian canopy are common in areas where high river flows have the natural ability to scour and reshape access to their floodplain, such as the estuary - riverine interface. Such conditions were present prior to substantial anthropogenic change (Figure 4).

The removal of riparian vegetation along the Carmel River for the levee openings will result in a temporarily reduction in stream shelter, potential wood recruitment, and allochthonous material to the lower river and the lagoon. However, with the restoration of natural vegetation communities on the currently barren floodplain, and improved access for the distribution of this future material to the back portions of the South Arm of the lagoon, the loss of vegetation along the river is not expected to appreciably diminish the function or quality of critical habitat for S-CCC steelhead. NMFS anticipates that within a decade following construction and restoration, the native vegetation abundance and quality along the river, floodplain and upper lagoon will exceed current conditions and will more closely resemble historic conditions (Figure 4).

Based on the above, NMFS does not expect the temporary loss of this vegetation will diminish the ability of the lower Carmel River to continue providing the necessary PBFs for S-CCC steelhead migration and seasonal rearing.

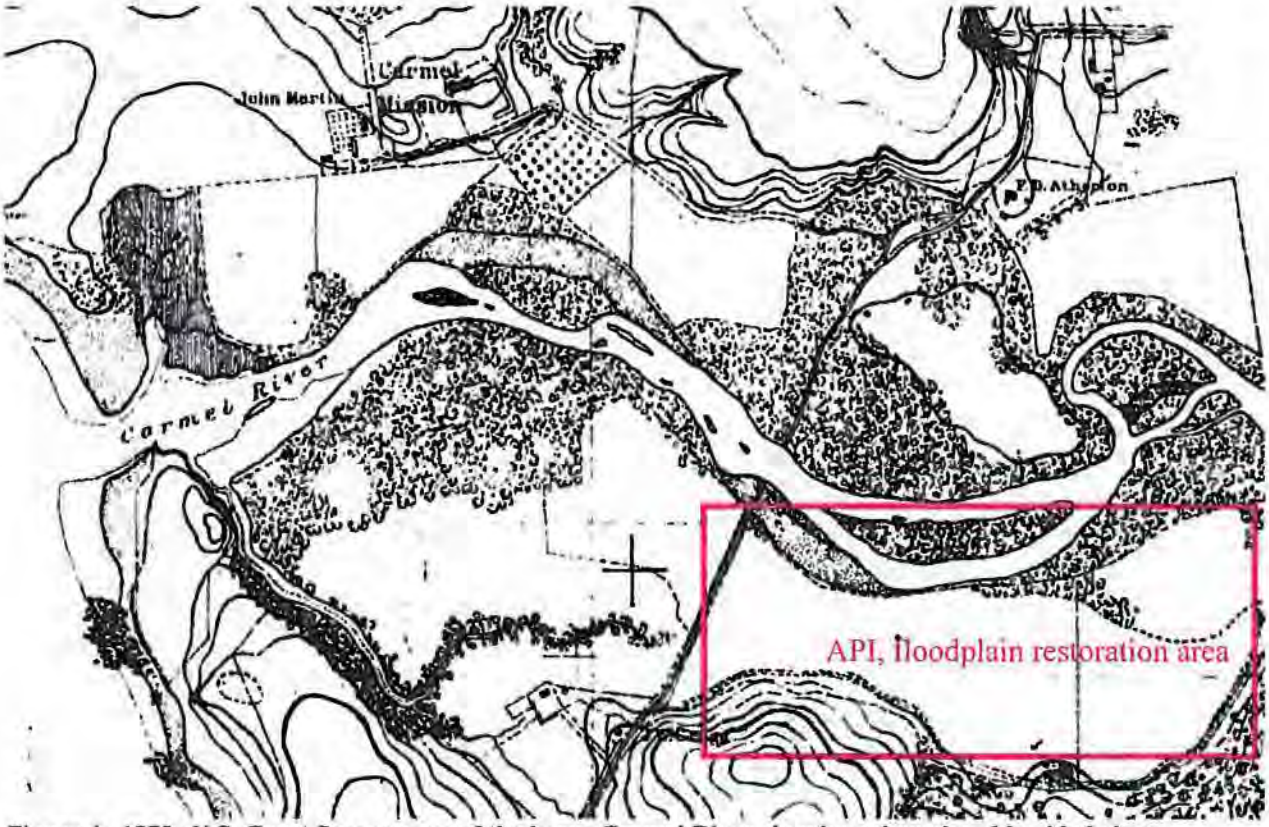

Figure 4. 1870s U.S. Coast Survey map of the lower Carmel River showing a broad and braided river channel with mixed aged vegetation communities along the lower river.

2.5.4. Erosion and Sedimentation

Construction activities, including grading, are not proposed within waters of the Carmel River or Carmel Lagoon. However, grading for the floodplain restoration component will result in substantial areas of floodplain disturbance on the existing agricultural field, which could result in sediment erosion and deposition within critical habitat during subsequent high flow events.

Sediment can affect fish in a variety of ways. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordon and Kelley 1961; Bjornn *et al.* 1977; Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High and prolonged turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Sigler *et al.* 1984; Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water can cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation. Increased sedimentation can fill pools or other habitats thereby reducing the amount of potential cover and habitat available, and smother or change substrate particle composition which can affect macroinvertebrate composition and abundance (Sigler *et al.* 1984, Alexander and Hansen 1986).

Although suspended sediment or turbidity may affect steelhead as described above, turbidity levels associated with this project following construction and the subsequent rewetting of the channel, are not expected to rise to the levels discussed above because the project proposes several avoidance measures to reduce or prevent the mobilization of sediment. For example, the Project applicants have proposed to follow various avoidance and minimization measures developed by the California Department of Fish and Wildlife (see Appendix D *in* Denise Duffy & Associates 2016). These include various erosion control measures on all exposed or disturbed surfaces, such as straw bales, mulching, and seeding/planting of native plants. Most of the API is above the OHWM and will be dry during construction, and therefore soil disturbance during construction and immediately following construction will not increase turbidity in downstream waters due to the lack of flow connected to the disturbed soils. The channels built within the floodplain will be lined with cobbles and gravels after construction which will reduce the area of exposed fine sediments. In addition, the inclusion of specific floodplain features (e.g., sediment traps) and extensive revegetation efforts of the floodplain area are expected to minimize sediment delivery and deposition to the Carmel Lagoon during these infrequent events.

NMFS anticipates any subsequent elevated turbidity levels would be small and well below levels and durations shown in the scientific literature as causing injury or harm to salmonids (see for example Sigler *et al.* 1984 or Newcombe and Jensen 1996). Furthermore, during a storm capable of interacting with the floodplain (≥ 5 year event), background sediment loads and turbidity levels are anticipated to be exceptionally high due to the magnitude of the storm and sediment sources from the entirety of the Carmel River watershed upstream of the action area. Therefore, NMFS does not anticipate steelhead will be exposed to increases in turbidity within the action area that would be measurably discernable from those occurring during a storm of this significance.

2.5.5. Beneficial Impacts

The floodplain restoration was designed to be activated (i.e., connected) to the Carmel River during 5-year or greater flood events. Although the expected frequency of connectivity between the river and floodplain will be brief, these connection events could result in minor indirect beneficial impacts to steelhead critical habitat by reducing flow velocities and scour potential in the river channel and by providing refuge (albeit brief) for any steelhead that may be present in the vicinity of the action area. As natural vegetation communities on the floodplain become established they, in addition to the levee openings, will also help to encourage sediment deposition on the floodplain and reduce contributions to the lagoon. Finally, some of the river flow that reaches the floodplain will contribute to aquifer recharge at the lower-river and lagoon interface which could help improve groundwater levels adjacent to and subsequent contributions to the lagoon.

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. NMFS does not anticipate any cumulative effects in the action area.

2.7 Integration and Synthesis

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

The S-CCC steelhead DPS is listed as threatened under the ESA and the Carmel River is considered a Core 1 population for the recovery of the DPS (NMFS 2013). Steelhead throughout the DPS have experienced substantial declines in large part due to anthropogenic influences associated with agriculture, mining, and urbanization activities that have resulted in the loss, degradation, simplification, and fragmentation of habitat (Hunt and Associates Biological Consulting Services 2008), and to some degree disease and predation. However, the greatest threats to the S-CCC steelhead DPS are the degradation and loss of habitats caused by impassable dams and water resource development (NMFS 2013). The decline of steelhead in the Carmel River watershed is also linked to the many anthropogenic factors described above, but particularly the extraction of ground and surface waters, construction of levees and fish passage impediments, alteration to the lagoon function, and the introduction of invasive species to the aquatic and riparian environments (NMFS 2013).

The proposed Project intends to reduce flood risk in the area during significant storm events and improve habitat quality and utilization on the adjacent floodplain by removing portions of the levees along the southern bank of the Carmel River, grading topographic improvements within the adjacent floodplain (agricultural field), and replacing portions of the SR 1 road prism with a causeway that will facilitate connection between the graded floodplain and the South Arm of the Carmel Lagoon. These actions are likely to result in impacts to S-CCC steelhead and their designated critical habitat.

While removal of portions of the levee will increase the chance of steelhead stranding and potential mortality within the constructed habitats on the floodplain, NMFS expects the annual number of juvenile steelhead that may become stranded and die on the floodplain to be low (no more than 15 juvenile steelhead annually, or 150 fish over 10 years). This number of mortalities could be less if rescue and relocation efforts are performed. The potential loss of up to 15 juvenile fish each year is not likely to impact future adult returns, due to the relatively large number of juveniles produced by each spawning pair, each year. Although a high degree of stranding is not anticipated for this project due to reasons described above, fish stranding on floodplains does occur naturally, particularly in rivers with flashy hydrographs (Nagrodski *et al.* 2012). The low number of juvenile steelhead that may be lost to stranding on this section of the lower Carmel River floodplain as a result of the Project is likely to be similar to or less than

natural rates during large storms. Therefore, NMFS does not believe the potential loss of up to 150 juveniles over a 10 year period will appreciably diminish the abundance, productivity, diversity, or spatial structure of the Carmel River steelhead population, or the S-CCC steelhead DPS as a whole.

The construction of the floodplain notches will require the removal of riparian vegetation from portions of one river bank within the action area. While this will result in some reduction in shade along the lower river, this portion of the lower river typically dries in summer and provides very limited rearing habitat for juvenile steelhead. In time, NMFS expects the revegetation efforts will replace some of this lost vegetation and partially restore some of the shade along the river bank. The added floodplain connectivity, although only accessible during exceptionally high streamflows, will offer velocity refuge for steelhead during their migrations between the lagoon and the upper watershed. Furthermore, the loss of vegetation as a source of allochthonous material to the estuarine and riverine environments will be replaced by a mosaic and greater abundance of floodplain vegetation and wood debris that will occupy the majority of the floodplain previously used for farming. It is during these larger storms that overbank flows will transport some of this material both onto and off of the floodplain and into the lagoon where it will enhance the food chain and habitat complexity in downstream habitats.

The slightly improved hydrological access to the floodplain will also promote sediment deposition on the floodplain during large storms. Following the recent removal of San Clemente Dam in the upper watershed (2016) and wet winter of 2016-17, substantial fine sediment (sand) was transported to and deposited in the lower mainstem river channel and lagoon. NMFS anticipates episodes of these finer grained sediments will continue to move through the watershed as it heals from these events and therefore during these large storms the floodplain will facilitate storage of some of this material before it reaches the downstream portions of the river channel (downstream of SR 1) and the lagoon.

The floodplain restoration actions will not provide the optimal benefit to the action area for steelhead due to several logistical constraints downstream of the API, including the potential for channel avulsion. While these constraints limit the ultimate utility of the floodplain for steelhead (e.g., floodplain connectivity at more frequent return intervals), the actions do contribute to climate resiliency by creating improved connectivity between the lagoon and both the river channel and floodplain. Climate change is likely to increase the range and degree of variability in ambient temperature, precipitation and duration and magnitude of runoff in the Carmel River watershed including the action area. This variability will either result in an increase in the frequency and duration of floodplain connectivity (a beneficial outcome), or limit the duration and frequency of floodplain connectivity (similar to baseline conditions). This increased variability in precipitation and temperature patterns is also likely to result in variability in the quality of estuarine habitat in the Carmel Lagoon for steelhead. However, NMFS does not expect such changes will be discernable in the near future and the project is intended to improve the resiliency of the riverine and estuarine habitats in the lower Carmel River by increasing their connectivity. For example, as sea levels continue to rise, this created connection may become increasingly important because it is anticipated that the area occupied by estuarine habitats will gradually creep inland. Finally, the majority of the API will remain an area where further

restoration actions may be implemented to enhance habitat for steelhead, perhaps in conjunction with the planned restoration actions for the adjacent Rancho Canada property.

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, any effects of interrelated and interdependent activities, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of threatened S-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). "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

The amount or extent of take described below is based on the analysis of effects of the action done in the preceding biological opinion. If the action is implemented in a manner inconsistent with the project description provided to NMFS, and as a result take of listed species occurs, such take would not be exempt from section 9 of the ESA.

In the biological opinion, NMFS determined incidental take of threatened S-CCC steelhead could occur as a result of the Project. NMFS anticipates juvenile steelhead (potentially including smolts) may become stranded during high flow events that briefly inundate areas of the restored floodplain. NMFS estimates no more than 15 juvenile steelhead per year may die as a result of stranding (or no more than 150 over the 10 years). If fish are able to be rescued from the floodplain, NMFS estimates approximately 30 fish (15 per inundation event, for the first 2 inundation events) will be captured with dip nets and relocated to suitable habitat, in lieu of becoming stranded and dying.

2.9.2. Effect of the Take

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

2.9.3. Reasonable and Prudent Measures

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

NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize and document take of S-CCC steelhead:

1. Undertake measures to evaluate whether or not stranding or mortality of S-CCC steelhead is occurring on the floodplain.

2. Prepare and submit annual reports, which summarize the post-construction site conditions (i.e., revegetation and BMP installation), and the annual surveys for stranded fish during applicable flood events.

2.9.4. Terms and Conditions

The terms and conditions described below are non-discretionary, and the USFWS or the applicants must comply with them in order to implement the reasonable and prudent measures (50 CFR 402.14). The USFWS or the applicants have 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 incidental take statement (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

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

   a. The USFWS or the project applicants will ensure a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids is available to conduct surveys during flood events capable of inundating the restored floodplain area. The USFWS or project applicants will ensure that all biologists working on the project are qualified to identify steelhead and conduct fish collections in a manner which minimizes all potential risks to steelhead.

   b. The biologists will monitor the floodplain area to determine if steelhead (carcasses or live fish) are present. If live fish are encountered on the floodplain that are isolated and at risk of dying, the biologists will capture and relocate these fish to suitable habitat in the Carmel River or Carmel Lagoon.

c. Steelhead will be handled with extreme care and kept in water to the maximum extent possible during rescue activities. All capture fish must be kept in cool, shaded, and aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish will not be removed from this water expect when released. To avoid predation, the biologists will have at least two containers and segregate small, or young, juvenile fish from larger, or older age-classes, and other potential predators. Captured steelhead will be relocated as soon as possible to a suitable instream location in which suitable habitat conditions are present to allow for adequate survival for transported fish and fish already present.

d. If any salmonids are found dead or injured, the biologists will contact NMFS biologist, Joel Casagrande, by phone immediately at (707) 575-6016 or the NMFS North Central Coast Office [Santa Rosa, California] at (707) 575-6050. The purpose of the contact is to review the activities resulting in take, determine if additional protective measures are required, and to ensure appropriate collection and transfer of steelhead mortalities and tissue samples. All steelhead mortalities will be retained. Tissue samples are to be acquired from each salmonid mortality per the methods identified in the NMFS Southwest Fisheries Science Center Genetic Repository protocols (contact the above NMFS staff for directions) and sent to: NOAA Coastal California Genetic Repository; Southwest Fisheries Science Center; 110 McAllister Way; Santa Cruz, California 95060.

e. The steelhead mortalities (following acquisition of genetic sample material) are to be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location of collection, and fork length, and be frozen as soon as possible. Frozen steelhead mortalities will be retained by the biological monitor until specific instructions are provided by the NMFS contact named above. Tissue samples are to be stored at ambient temperature. The biological monitor may not transfer steelhead mortalities to anyone other than the NMFS contact named above without obtaining prior written approval from NMFS' Central Coast Branch Chief. Any such transfer will be subject to such conditions as NMFS deems appropriate.

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

a. **Annual Fish Capture and Relocation** – On January 15th of each year, a report must be submitted, including the number of steelhead found and their disposition; a description of the location from which steelhead were located and their subsequent release site (if applicable) including photographs; the date and time; a description of the general environmental conditions at the site during the time of detection; and a description of the equipment and methods used to collect, hold, and transport steelhead.

b. **Annual Post Construction Site Conditions** - On January 15th of each year following construction, a report must be submitted to NMFS which will include a comprehensive summary of the work completed the previous year, a description of any unforeseen project impacts (if applicable), measures taken to resolve these unforeseen impacts (if applicable), installation of erosion control or other BMPs, and a brief summary of anticipated activities scheduled for the next year (if applicable). Each report will include photos of constructed facilities, which may serve as established photo sites used to track change in conditions over time.

2.10 Conservation Recommendations

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

NMFS recommends the Project applicants seek funding and support for the implementation of floodplain restoration projects along the Carmel River that maximize benefits for steelhead utilization. This may include future enhancements at the Odello Project site (as suggested by the applicant's consultants). For example, areas of the floodplain closest to the river channel within the upper end of the API could be re-contoured in the future to support more frequent inundation (e.g., annual) and restore some of the lost multi-channel forested floodplain habitat that used to exist in the vicinity (i.e., Figure 4). Other areas may include the former Rancho Canada Golf Course which is located just upstream of the action area of this project. A lack of floodplain connectivity was identified as a threat to the recovery of S-CCC steelhead in the Carmel River. Floodplains that are inundated at high frequencies (1-year return intervals or less) and longer durations provide valuable flood flow refugia, increased feeding opportunities, and access for the river to deposit sediment loads. The areas identified above (and presumably others) offer opportunities to reduce this threat and help contribute to species recovery, ecosystem resiliency, and increased flood protection for other downstream private property.

2.11 Reinitiation of Consultation

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

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (Section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the descriptions of EFH contained in the Pacific Coast Groundfish Fishery Management Plan (PFMC 2005) developed by the Pacific Fishery Management Council and approved by the Secretary of Commerce.

3.1 Essential Fish Habitat Affected by the Project

EFH managed under the Pacific Groundfish Fishery Management Plan may be adversely affected by the project. Project construction will be focused primarily in upland areas on former agricultural lands with no grading below the OHWM. However, a small portion of the proposed grading will result in the connection of the floodplain area upstream of SR 1 with the existing Odello West portion of the Carmel Lagoon. Areas of the Carmel Lagoon are known to support Pacific Groundfish species such as Starry Flounder (*Platichthys stellatus*). The lagoon is also designated as a Habitat Area of Particular Concern (HAPC). HAPCs are described in the regulations as subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPCs are not afforded any additional regulatory protection under MSA; however, federal projects that may adversely affect HAPC are more carefully scrutinized during the consultation process.

3.2 Adverse Effects on Essential Fish Habitat

The potential adverse effects of the project on EFH have been described in the preceding Biological Opinion. To summarize, the project may result of minor erosion and subsequent sedimentation in the Carmel Lagoon following initial winter storms, post construction. However, the Project includes specific design features and proposes extensive revegetation and other avoidance and minimization measures to avoid or minimize potential adverse effects to EFH of the project. Therefore, NMFS has no EFH recommendations at this time.

3.3 Supplemental Consultation

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

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

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

4.1 Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended users of this opinion are the Corps. Individual copies of this opinion were provided to the Corps. This opinion would be posted on the Public Consultation Tracking System web site (https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts). The format and naming adheres 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.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this 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 written by NMFS staff with training in ESA implementation and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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United States Department of the Interior

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IN REPLY REFER TO:
08EVEN00-2016-B-0112

November 7, 2018

Memorandum

To: Chief, Wildlife and Sport Fish Restoration Program, U.S. Fish and Wildlife Service, Sacramento, California

From: Acting Field Supervisor, Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service, Ventura, California

Subject: Carmel River Floodplain Restoration and Environmental Enhancement Project, Monterey County, California (FWS/R8/WSFR)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Monterey County Resource Management Agency's (County) and Big Sur Land Trust's (BSLT) Carmel River Floodplain Restoration and Environmental Enhancement Project, and its effects on the federally threatened California red-legged frog (*Rana draytonii*) and its designated critical habitat, in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). We received your October 7, 2016 request for formal consultation via electronic mail on October 13, 2016. The project would be partially funded through grants administered through the Service's Wildlife and Sport Fish Restoration Program (WSFR), which has been designated as the lead Federal agency as described at 50 CFR 402.07.

In your consultation request, you also requested our concurrence with your determination that the project is not likely to adversely affect the federally threatened California tiger salamander (*Ambystoma californiense*). The biological assessment (BA; DD&A 2016) prepared for the proposed project indicates that although suitable habitat occurs within the action area, the species has not been observed within 1.2 miles of the proposed project and no ponds within 1.2 miles of the project are utilized by the California tiger salamander for breeding or non-breeding purposes. All ponds within 1.2 miles have been surveyed multiple times over the last 15 years, with no observations of the species (DD&A 2016). Based on this information, you have determined the California tiger salamander is not likely to be adversely affected by the proposed project, and we agree with this determination. As such, we will provide no further discussion on the California tiger salamander in the remainder of this document.

We have based our biological opinion on information that accompanied your request for consultation, the BA, and information in our files. These documents and others relating to the consultation are located at the Ventura Fish and Wildlife Office (VFWO).

Consultation History

On January 6, 2017, Justin Cutler, of your staff, requested that the VFWO provide a draft of this biological opinion to allow for review of the document prior to issuance, and we agreed to this request. On February 21, 2017, due to heavy workload and staff turnover, the VFWO requested to extend the deadline for issuance of this biological opinion to March 25, 2017. Subsequently, on February 21, 2017, this extension was agreed to via email correspondence between Justin Cutler and Chad Mitcham, of our staff. On March 27, the VFWO provided you with a copy of this draft biological opinion for your review.

On June 6, 2017, you informed the VFWO that the project was on hold due to potential project impact concerns from adjacent landowners. On August 22, 2018, Justin Cutler informed Chad Mitcham that significant changes to the project description are not anticipated; thus, additional impacts not analyzed under this biological opinion are not expected to occur. Subsequently, Mr. Cutler requested that we proceed with issuing the biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The County and BSLT have partnered on the proposed project which would improve flood control, restore native riparian and floodplain habitat, and improve hydrologic function to a portion of the floodplain along the lower Carmel River. The proposed project is located at the downstream end of the Carmel River watershed, spanning immediately east and west of State Route (SR) 1, just south of the Carmel River Bridge. The proposed project is located on properties owned by the BSLT, California Department of Parks and Recreation, Monterey Peninsula Regional Park District, and Clinton and Margaret Eastwood. The proposed project would address long-standing problems regarding floodplain habitat loss and flood management while increasing and improving important habitat for several wildlife species, at the same time retaining agricultural resources. The proposed project consists of two interdependent components including floodplain restoration and causeway construction.

The floodplain restoration component consists of the following: removing approximately 1,470 linear feet of non-engineered earthen levees on the south side of the Carmel River channel; grading to elevate approximately 23 acres of existing farmland above the 100-year floodplain elevation to create an agricultural preserve; clearing, grading, and excavation on approximately 100 acres to restore the site's ecological function as a floodplain by creating the hydro-geomorphic characteristics necessary to support floodplain restoration activities; and, implementation of the Restoration Management Plan (RMP), which includes restoration of a

mosaic of native habitats across the site through restoration maintenance and monitoring to ensure success of revegetation.

The RMP would occur in two phases, referred to as Tier 1 and Tier 2. Tier 1 restoration would consist of compensatory mitigation on approximately 16 acres of the site for anticipated impacts to riparian and coastal scrub habitats, satisfying regulatory permit conditions. Tier 2 restoration would occur subsequent to the construction effort and throughout the remainder of the site. Tier 2 restoration is a voluntary, long-term endeavor to ensure a self-sustaining native floodplain habitat. Revegetation implementation would establish a mosaic of habitats across the site, including willow and cottonwood riparian forest, mixed riparian forest, coastal scrub, and grassland. This mosaic would feature various canopy heights and structures and a diverse array of foraging, breeding and nesting habitats for birds and wildlife.

The causeway component consists of replacing a portion of the SR 1 roadway embankment with a 360-foot long causeway section. This would accommodate flood flows that enter into the newly created south overbank area as a function of the removal of levees, which would restore hydrologic connectivity between the floodplain area and the south arm of Carmel Lagoon. The proposed project would result in the reconnection and restoration of approximately 100 acres of historic floodplain. Successful implementation of the proposed action is anticipated to:

1. Recover natural function and values that were present historically along the floodplain prior to modern anthropogenic influences through the hydrologic reconnection of the floodplain to the Carmel River channel.

2. Establish dense and diverse native habitat along the river corridor.

3. Restore approximately 100 acres of riparian and upland habitats within the historic floodplain thereby providing suitable habitat for native wildlife including the California red-legged frog.

4. Reduce flooding hazards to developed areas located north of the river.

5. Increase flow conveyance and habitat connectivity between the project site and Carmel Lagoon.

6. Provide storage and recharge of groundwater on the restored floodplain.

7. Improve quality of water entering the Carmel Lagoon by providing additional storage and filtration for sediment and nutrients through a functioning floodplain and associated riparian habitat.

8. Maintain an active organic agricultural operation on a portion of the project site in order to preserve historically important agricultural resources.

Vegetation management of access roads and trails, maintained flow conveyance areas (MFCAs), and the intermittent drainage channel would occur regularly following implementation of the project. Management of the MFCAs and intermittent drainage channel is necessary to limit the establishment of woody vegetation in areas that would alter the targeted roughness coefficient and impede flood flows. Management of these areas would primarily include mowing.

Conservation Measures

To minimize impacts to the California red-legged frog and its designated critical habitat, the County and BSLT have agreed to implement the following measures:

1. Before project activities begin, a qualified biologist will conduct an Employee Education Program for all construction personnel. Training will include: a) a review of the project boundaries including staging areas and access routes; b) information on the ecology of the California red-legged frog, its identifying characteristics and habitat requirements, status of the species and its protection under the Act; c) the conservation measures that must be followed; and d) the proper procedures to follow if a special status species is observed within an area to be impacted.

2. At least 30 days prior to the start of construction the project proponents will submit to the VFWO for approval the names and credentials of biologists proposed to work as Service-approved biologists on the project. Project activities will not begin until this approval is received.

3. A Service-approved biologist will survey areas of suitable habitat daily, prior to and concurrent with ground disturbing and vegetation removal activities, including mowing. Daily, prior to construction activities, a qualified biologist or biological monitor will survey all staging areas within the action area. The entire staging area including under and around all equipment, vehicles and construction materials must be surveyed. Daily survey reports that document survey times, observations, and relocations of California red-legged frogs will be prepared.

4. Excavated holes and trenches will be covered with plywood or similar material or provided with escape ramps to facilitate escape of trapped animals at the close of each working day. All excavated holes and trenches left open overnight will be inspected each morning for California red-legged frogs and other stranded animals which will be relocated to safe locations. Stored pipes, culverts, or similar structures will be inspected for animals before being moved, buried, or capped.

5. If any life stage of the California red-legged frog is observed, by anyone, in an area to be impacted or traversed at the project area, all work that could disturb the individual(s) shall cease and the Service-approved biologist immediately notified. The Service-approved biologist will capture and relocate the individual(s) the shortest distance possible to an area that contains suitable habitat and will not be affected by project activities. The Service-approved biologist will maintain detailed records of any individuals that are moved (e.g.,

size, coloration, distinguishing features, photographs) to assist in determining whether translocated animals are returning to the project area.

6. After ground disturbing and vegetation removal activities within suitable habitat are complete, the Service-approved biologist, in coordination with the project proponents, may designate a biological monitor to oversee daily compliance with all conservation measures. The Service-approved biologist will ensure that the biological monitor is sufficient in the identification of California red-legged frogs.

7. The Service-approved biologist and biological monitor will have the authority to stop work if there is a threat of harm to California red-legged frogs or if any measures are not being fulfilled, and will notify the VFWO within one working day of any work stoppage. The Service-approved biologist and/or biological monitor will complete a daily log summarizing activities and environmental compliance throughout the duration of the proposed project.

8. The number of access routes, number and size of staging areas, and total work area will be limited to the minimum necessary. Access routes and the limits of the work area will be clearly marked and located outside of riparian and wetland areas to the extent practicable. No work will occur outside marked work areas.

9. Prior to the initiation of construction activities, protective fencing will be installed to inform workers of the boundaries of the work area. Protective fencing will be installed under the supervision of a Service-approved biologist. Orange cyclone fencing or other materials that can entrap wildlife will not be used. Protective fencing will be maintained weekly to ensure its functionality.

10. If any work area is to be temporarily dewatered by pumping, intakes will be screened with wire mesh not larger than 5 millimeters to prevent California red-legged frogs from entering the pump system.

11. The Declining Amphibian Populations Task Force's Fieldwork Code of Practice (Appendix A) will be followed to minimize the possible spread of chytrid fungus (*Batrachochytrium dendrobatidis*) and other amphibian pathogens and parasites. This measure is applicable to all construction personnel and equipment as well as to biologists.

12. All trash that may attract predators will be properly contained and regularly removed from the work site. After construction, all trash and construction debris will be removed from work areas.

13. Cleaning and refueling of equipment and vehicles shall occur only within designated staging areas. All equipment and vehicles will be checked and maintained on a daily basis to ensure proper operation in order to avoid potential leaks or spills. No debris, soil, or pollutants shall be allowed to enter into or placed where they may be washed by rainfall or runoff into

riparian or aquatic habitats. All construction related spills of hazardous materials will be reported to the project biologist and be incorporated into the daily log.

14. Best Management Practices (BMPs), in satisfaction of County erosion control guidelines, will be employed by the project contractor to reduce the transport of sediment from the site into adjacent riparian vegetation and other sensitive habitats. If silt fencing is required, only high-quality silt fencing shall be used and will be installed in coordination with the Service-approved biologist in a way that does not, to the greatest extent feasible, inhibit movement of the California red-legged frog.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "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).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the rangewide condition of the California red-legged frog, the factors responsible for that condition, and the species' survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the California red-legged frog in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which identifies the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the California red-legged frog; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the California red-legged frog.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the California red-legged frog, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the California red-legged frog in the wild by reducing the reproduction, numbers, and distribution of that species.

Adverse Modification Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. A

final rule revising the regulatory definition of "destruction or adverse modification" was published on February 11, 2016 (81 FR 7214). The final rule became effective on March 14, 2016. The revised definition states: "Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features."

The revised "destruction or adverse modification" definition focuses on how Federal actions affect the quantity and quality of the physical or biological features (PBFs)[1] in the designated critical habitat for a listed species and, especially in the case of unoccupied habitat, on any impacts to the critical habitat itself. Specifically, the Service will generally conclude that a Federal action is likely to "destroy or adversely modify" designated critical habitat if the action results in an alteration of the quantity or quality of the essential physical or biological features of designated critical habitat, or that precludes or significantly delays the capacity of that habitat to develop those features over time, and if the effect of the alteration is to appreciably diminish the value of critical habitat for the conservation of the species.

The Service may consider other kinds of impacts to designated critical habitat. For example, some areas that are currently in a degraded condition may have been designated as critical habitat for their potential to develop or improve and eventually provide the needed ecological functions to support species' recovery. Under these circumstances, the Service generally concludes that an action is likely to "destroy or adversely modify" the designated critical habitat if the action alters it to prevent it from improving over time relative to its pre-action condition. The "destruction or adverse modification" definition applies to all PBFs; as described in the proposed revision to the current definition of "physical or biological features" (50 CFR 424.12), "[f]eatures may include habitat characteristics that support ephemeral or dynamic habitat conditions" (79 FR 27066).

The "destruction or adverse modification" analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which describes the rangewide condition of designated critical habitat for the California red-legged frog in terms of the essential physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the Environmental Baseline, which analyzes the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the PCEs and how that will influence the recovery role of the affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future non-Federal activities, that are reasonably certain to occur in the action area, on the PCEs and how that will influence the recovery role of affected critical habitat units.

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[1] The critical habitat rule for California red-legged frog uses the term "primary constituent elements" (PCEs) to describe the "physical and biological features" (PBFs) as used in the revised definition of "destruction or adverse modification of critical habitat." For this biological opinion, PCEs and PBFs are considered synonymous.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the critical habitat of the California red-legged frog are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat rangewide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the California red-legged frog.

STATUS OF THE SPECIES AND CRITICAL HABITAT

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 Federal Register (FR) 25813, Service 1996). Revised critical habitat for the California red-legged frog was designated on March 17, 2010 (75 FR 12816, Service 2010). The Service issued a recovery plan for the species (Service 2002). A detailed description of California red-legged frogs can be found in Storer (1925), Stebbins (2003), and Jennings and Hayes (1994).

The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Storer 1925, Jennings and Hayes 1985, Shaffer et al. 2004). The California red-legged frog has sustained a 70 percent reduction in its geographic range as a result of several factors acting singly or in combination (Davidson et al. 2001).

The California red-legged frog uses a variety of habitat types, including various aquatic systems, riparian, and upland habitats. California red-legged frogs have been found at elevations that range from sea level to about 5,000 feet. California red-legged frogs use the environment in a variety of ways, and in many cases they may complete their entire life cycle in a particular area without using other components (i.e., a pond is suitable for each life stage and use of upland habitat or a riparian corridor is not necessary). Populations appear to persist where a mosaic of habitat elements exists, embedded within a matrix of dispersal habitat. Adults are often associated with dense, shrubby riparian or emergent vegetation and areas with deep (greater than 28 inches) still or slow-moving water; the largest summer densities of California red-legged frogs are associated with deep-water pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). California red-legged frogs spend considerable time resting and feeding within dense riparian vegetation; it is believed the moisture and camouflage provided by the riparian plant community provide good foraging habitat and riparian vegetation provides cover during dispersal (Rathbun et al. 1993).

Breeding sites of the California red-legged frog are in aquatic habitats; larvae, juveniles, and adult frogs have been collected from streams, creeks, ponds, marshes, deep pools and backwaters within streams and creeks, dune ponds, lagoons, and estuaries. California red-legged frogs frequently breed in artificial impoundments such as stock ponds, given the proper management of hydro-period, pond structure, vegetative cover, and control of exotic predators. While frogs successfully breed in streams and riparian systems, high spring flows and cold temperatures in streams often make these sites risky egg and tadpole environments. An important factor influencing the suitability of aquatic breeding sites is the general lack of introduced aquatic

predators. When riparian vegetation is present, California red-legged frogs spend considerable time resting and feeding in it; the moisture and camouflage provided by the riparian plant community likely provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting population numbers and distribution.

During periods of wet weather, starting with the first rains of fall, some individual California red-legged frogs may make long-distance overland excursions through upland habitats to reach breeding sites. In Santa Cruz County, Bulger et al. (2003) found marked California red-legged frogs moving up to 1.7 miles through upland habitats, via point-to-point, straight-line migrations without apparent regard to topography, rather than following riparian corridors. Most of these overland movements occurred at night and took up to 2 months. Similarly, in San Luis Obispo County, Rathbun and Schneider (2001) documented the movement of a male California red-legged frog between two ponds that were 1.78 miles apart; this was accomplished in less than 32 days. However, most California red-legged frogs in the Bulger et al. (2003) study were non-migrating frogs and remained within 426 feet of their aquatic site of residence (half of the frogs always stayed within 82 feet of water). Rathbun et al. (1993) radio tracked several California red-legged frogs near the coast in San Luis Obispo County at various times between July and January; these frogs also stayed rather close to water and never strayed more than 85 feet into upland vegetation. Nine California red-legged frogs radio-tracked from January to June 2001, in East Las Virgenes Creek in Ventura County remained relatively sedentary as well; the longest within-channel movement was 280 feet and the furthest movement away from the stream was 30 feet (Scott 2002). Hayes and Tennant (1985) found juveniles to be active diurnally and nocturnally, whereas adults were largely nocturnal.

After breeding, California red-legged frogs often disperse from their breeding habitat to forage and seek suitable dry-season habitat. Cover within dry-season aquatic habitat could include boulders, downed trees, and logs; agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay-ricks; and industrial debris. California red-legged frogs use small mammal burrows and moist leaf litter (Rathbun et al. 1993, Jennings and Hayes 1994); incised stream channels with portions narrower and deeper than 18 inches may also provide habitat (61 FR 25813). This type of dispersal and habitat use, however, is not observed in all California red-legged frogs and is most likely dependent on the year-to-year variations in climate and habitat suitability and varying requisites per life stage.

Although the presence of California red-legged frogs is correlated with still water deeper than approximately 1.6 feet, riparian shrubbery, and emergent vegetation (Jennings and Hayes 1985), there are numerous locations in the species' historical range where these elements are well represented yet California red-legged frogs appear to be absent. The cause of local extirpations is not restricted solely to the loss of aquatic habitat. The most likely causes of local extirpation are thought to be changes in faunal composition of aquatic ecosystems (i.e., the introduction of non-native predators and competitors) and landscape-scale disturbances that disrupt California red-legged frog population processes, such as dispersal and colonization. The introduction of

contaminants or changes in water temperature may also play a role in local extirpations. These changes may also promote the spread of predators, competitors, parasites, and diseases.

Over-harvesting, habitat loss, non-native species introduction, and urban encroachment are the primary factors that have negatively affected the California red-legged frog throughout its range (Jennings and Hayes 1985, Hayes and Jennings 1988). Habitat loss and degradation, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Continuing threats to the California red-legged frog include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, competition or predation from non-native species including the bullfrog (*Rana catesbeiana*), catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquitofish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and signal crayfish (*Pacifastacus leniusculus*). Chytrid fungus is a waterborne fungus that can decimate amphibian populations, and is a threat to California red-legged frog populations.

Recovery Objectives

The recovery plan for the California red-legged frog (Service 2002) states that the goal of recovery efforts is to reduce threats and improve the population status of the California red-legged frog sufficiently to warrant delisting. The recovery plan describes a strategy for delisting, which includes (1) protecting known populations and reestablishing historical populations; (2) protecting suitable habitat, corridors, and core areas; (3) developing and implementing management plans for preserved habitat, occupied watersheds, and core areas; (4) developing land use guidelines; (5) gathering biological and ecological data necessary for conservation of the species; (6) monitoring existing populations and conducting surveys for new populations; and (7) establishing an outreach program. This species will be considered for delisting when:

1. Suitable habitats within all core areas are protected and/or managed for California red-legged frogs in perpetuity, and the ecological integrity of these areas is not threatened by adverse anthropogenic habitat modification (including indirect effects of upstream/downstream land uses);

2. Existing populations throughout the range are stable (i.e., reproductive rates allow for long-term viability without human intervention). Population status will be documented through establishment and implementation of a scientifically acceptable population monitoring program for at least a 15-year period, which is approximately 4 to 5 generations of the California red-legged frog. This 15-year period will preferably include an average precipitation cycle;

3. Populations are geographically distributed in a manner that allows for the continued existence of viable metapopulations despite fluctuations in the status of individual populations (i.e., when populations are stable or increasing at each core area);

4. The species is successfully reestablished in portions of its historic range such that at least one reestablished population is stable/increasing at each core area where California red-legged frogs are currently absent; and

5. The amount of additional habitat needed for population connectivity, recolonization, and dispersal has been determined, protected, and managed for California red-legged frogs.

The recovery plan identifies eight recovery units, which are based on the assumption that various regional areas of the species' range are essential to its survival and recovery. The recovery status of this species is considered within the smaller scale of recovery units as opposed to the overall range. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the California red-legged frog.

The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for long-term viability within existing populations. This management strategy will allow for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

Critical Habitat for the California red-legged frog

Critical habitat for the California red-legged frog was first designated on March 13, 2001 (Service 2001). On March 17, 2010, the Service published a revised critical habitat designation for California red-legged frog (Service 2010). The final rule for designation of critical habitat describes 48 separate units, encompassing approximately 1,636,609 acres, in 27 counties in California. In addition, the Service finalized a special rule pursuant to section 4(d) of the Act, associated with final listing of the California red-legged frog as threatened, for existing routine ranching activities (Service 2006).

In accordance with section 3(5)(A)(i) of the Act and Federal regulations at 50 CFR 424.12, in determining which areas to designate as critical habitat, we identified the physical or biological features essential to the conservation of the species, the Primary Constituent Elements (PCEs), which may require special management considerations or protection. Because not all life-history functions require all the PCEs, not all areas designated as critical habitat will contain all the PCEs. Based on our current knowledge of the life-history, biology, and ecology of the California red-legged frog, we determined the California red-legged frog's PCEs to consist of: (1) aquatic breeding habitat; (2) aquatic non-breeding habitat; (3) upland habitat, and (4) dispersal habitat. Detailed descriptions of these PCEs can be found in the final rule (75 FR 12816). The following is a brief summary of the PCEs:

1. Aquatic breeding habitat consists of standing bodies of fresh water (with salinities less than 4.5 parts per thousand), including natural and manmade (stock) ponds, slow moving streams or pools within streams and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years.

2. Aquatic non-breeding habitat consists of the freshwater habitats as described for aquatic breeding habitat but which may or may not hold water long enough for the subspecies to complete the aquatic portion of its lifecycle but which provide for shelter, foraging, predator avoidance, and aquatic dispersal habitat of juvenile and adult California red-legged frogs.

3. Upland habitat consists of upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of one mile in most cases (i.e., depending on surrounding landscape and dispersal barriers) including various vegetation types such as grassland, woodland, forest, wetland, or riparian areas that provide shelter, forage, and predator avoidance for the California red-legged frog. Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), small mammal burrows, or moist leaf litter.

4. Dispersal habitat consists of accessible upland or riparian habitat within and between occupied or previously occupied sites that are located within one mile of each other, and that support movement between such sites. Dispersal habitat includes various natural habitats, and altered habitats such as agricultural fields, that do not contain barriers (e.g., heavily traveled roads without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large lakes or reservoirs over 50 acres in size, or other areas that do not contain those features identified in PCEs 1, 2, or 3 as essential to the conservation of the species.

The proposed project occurs in critical habitat unit MNT-2 (Carmel River). Unit MNT-2 consists of approximately 119,492 acres of land and is located south and southeast of the city of Monterey, and includes locations in the Carmel River drainage and nearby San Jose Creek. Unit MNT-2 represents approximately 7 percent (in area) of the total critical habitat designated throughout the range of the California red-legged frog. Critical habitat unit MNT-2 is described in greater detail in the Environmental Baseline section of this document.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations 402.02). The action area for this biological opinion includes all areas of anticipated direct impact, all areas where people and

equipment would be working, and material storage, stockpiling and restoration areas (approximately 134.8 acres). The action area also includes areas where California red-legged frogs may be translocated and downstream aquatic and riparian habitats within the Carmel River corridor and Carmel Lagoon (approximately 159.3 acres), where California red-legged frogs may experience direct or indirect effects from increased vibration, sedimentation or other factors associated with project activities.

Habitat Characteristics and Existing Conditions in the Action Area

Habitats where people and equipment would be working within the action area include four vegetation types (DD&A 2016): riparian forest/scrub, ruderal/invasive weeds, non-native annual grasslands, and coastal scrub. Additionally, a small portion of the action area is developed.

Approximately 5.8 acres of riparian forest/scrub habitat is present within the construction area. Riparian habitats are found along the Carmel River and on the west side of SR 1. Vegetation ranges from dense thickets and closed canopies to degraded areas that are less densely vegetated with an understory of non-native weeds. Degraded portions of riparian habitat are primarily due to historic and on-going agricultural activities. These areas are dominated by arroyo willow (*Salix lasiolepis*), cottonwood (*Populus balsamifera*), California blackberry (*Rubus ursinus*), box elder (*Acer negundo* var. *californicum*), hoary nettle (*Urtica dioica*), and mugwort (*Artemisia douglasiana*). These areas provide upland and/or dispersal habitat for the California red-legged frog.

Approximately 100.7 acres of ruderal habitat occurs within the construction area. Ruderal areas have been subject to historic and ongoing disturbance by human activities including dirt roads, fill from levee and road construction, and former and active agricultural fields. These areas are dominated by non-native and/or invasive weeds such as slender oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), perennial ryegrass (*Festuca perennis*), and field mustard (*Brassica rapa*). Ruderal habitats provide dispersal habitat for the California red-legged frog.

Approximately 20 acres of non-native annual grassland habitat is present within the construction area and has been historically used for agriculture. Dominant grass species in these areas include slender oat, ripgut brome, soft chess (*Bromus hordeaceus*), and rattail fescue (*Vulpia myuros*). Non-native grassland provides dispersal habitat for the California red-legged frog.

Approximately 6.6 acres of coastal scrub habitat is present within the construction area. Coastal scrub is present in transition areas between riparian and ruderal areas, and in upland areas that surround the south arm of the lagoon. Portions of the coastal scrub habitat have been degraded due to historic and on-going agricultural activities. Coyote brush (*Baccharis pilularis*) is the dominant species within this habitat type, with an understory of annual grasses. Coastal scrub habitat may be utilized by California red-legged frogs primarily as dispersal habitat.

Approximately 1.7 acres of developed areas occur within the construction area. These areas are primarily devoid of vegetation.

Status of the California red-legged frog in the Action Area

Information used to develop this section was derived primarily from the BA (DD&A 2016). California red-legged frogs exhibit a wide distribution throughout the Carmel River watershed. The species is known to breed in the action area within the Carmel Lagoon; although, this is determined on a year to year basis depending on seasonal fluctuations in water quality and quantity. We cannot accurately determine the number of California red-legged frogs that may be present in the action area due to these seasonal fluctuations.

All vegetated habitats in the action area provide suitable upland and/or dispersal habitat for the species. California red-legged frog juveniles and adults can be expected to occur throughout the action area, as their mobility facilitates unimpeded movement throughout the Carmel River corridor and adjacent uplands within the project area.

Recovery

The action area is within the Central Coast Recovery Unit and the Carmel River – Santa Lucia Core Area; these are described in the recovery plan for the California red-legged frog (Service 2002). Within the Central Coast Recovery Unit, the California red-legged frog occurs in the Carmel River watershed and most of its tributaries. Core areas, which are distributed throughout portions of the historic and current range, represent a system of areas that, when protected and managed for California red-legged frogs, will allow for long-term viability of existing populations and reestablishment of populations within the historic range. The Carmel River - Santa Lucia Core Area is acknowledged in the recovery plan as a currently occupied source population which provides connectivity between populations.

Threats to California red-legged frogs in the Central Coast Recovery Unit include agriculture, livestock grazing and dairies, mining, non-native species, recreation, timber extraction, urbanization, and water management/diversions/reservoirs. The species' recovery status at the time the recovery plan was created was listed as high. Conservation needs identified for the Carmel River – Santa Lucia Core Area include: protect existing populations and restore the Carmel River watershed.

Critical Habitat for the California red-legged frog

The action area for the proposed project is within critical habitat for the California red-legged frog (Service 2010), and comprises a small portion of the approximately 119,492 acres of critical habitat unit MNT-2. However, the Carmel River is the central aquatic feature in unit MNT-2, and is vital to the continued existence of California red-legged frogs within MNT-2. MNT-2 is the largest critical habitat unit within Monterey County. MNT-2 is mapped from occurrence records at the time of listing and subsequent to the time of listing. MNT-2 contains the following features that are essential for the conservation of the subspecies: aquatic habitat for breeding and non-breeding activities, and upland habitat for foraging and dispersal activities. MNT-2 is occupied by the California red-legged frog and its designation is intended to prevent further fragmentation

of habitat in this portion of the subspecies' range. MNT-2 contains permanent and ephemeral aquatic habitats suitable for breeding and accessible upland areas for dispersal, shelter, and food. The unit consists of approximately 26,098 acres of Federal land, 374 acres of State land, and approximately 91,647 acres of private land. Threats that may require special management in this unit include removal and alteration of aquatic and upland habitat due to urbanization, dewatering of aquatic habitat due to water pumping and water diversions, and predation by non-native species.

All terrestrial or vegetated habitats within the action area provide suitable upland and/or dispersal habitat for the species. However, the majority of terrestrial habitat within the action area is of marginal quality due to historical anthropogenic uses of the property which primarily involves agriculture. Aquatic habitats potentially suitable for breeding and non-breeding activities in the action area include all areas within the Carmel River Channel and Carmel Lagoon.

EFFECTS OF THE ACTION

California red-legged frogs occur within and adjacent to the action area and could potentially utilize any portion of the action area at any time of year. However, we cannot anticipate the number of California red-legged frogs that may occur within the action area at any specific time due to their mobility and fluctuations in dispersal patterns. Additionally, dynamic changes in the quality and quantity of potential breeding habitat in the vicinity of the action area (primarily consisting of the Carmel Lagoon), further contribute to our inability to predict the number of individuals that may occur in the action area. However, we expect very few or no injury or mortality of individuals due to the numerous conservation measures that will be implemented.

All California red-legged frogs that occur in the action area could be adversely affected by project activities. Injury or mortality could occur from animals being crushed by heavy equipment, vehicles, debris, and worker foot traffic and activities such as grading and vegetation clearing. They may also become trapped and die in upland sheltering habitat if crushed or covered. The short-term loss of vegetated habitat within the project area may limit suitable forage and refuge opportunities for the species. California red-legged frogs may experience a temporary but significant disruption of normal behavioral patterns from work activities and associated noise and vibration. This disruption could cause California red-legged frogs to leave or avoid suitable habitat which may increase the potential for predation, desiccation, competition for food and shelter, or strike by vehicles on roadways. Pre-construction surveys, use of exclusion fencing, and the relocation of individuals by a Service-approved biologist would reduce these impacts.

Activities within and adjacent to breeding and non-breeding aquatic and wetland habitats could kill or injure California red-legged frogs and temporarily degrade their habitat. Use of heavy equipment and worker presence in these areas could kill or injure frogs. Downhill transport of excavated soil, oil, or other pollutants into adjacent wetlands and aquatic habitat could temporarily reduce water quality. Pumping equipment used to dewater aquatic habitats could

entrap and kill or injure adults, juveniles and larvae and destroy egg masses if present, and removal of water could strand eggs and larvae. Proposed avoidance measures, including implementing BMPs to reduce the transport of sediment downstream, installing fish screens on pumping equipment to prevent entrapment of amphibians, and the relocation of individuals by a Service-approved biologist would reduce these impacts.

Capture and relocation of California red-legged frogs could result in injury or death. Although survivorship for translocated California red-legged frogs has not been estimated, survivorship of translocated wildlife in general is reduced due to intraspecific competition, lack of familiarity with the location of potential breeding, feeding, and sheltering habitats, and increased risk of predation. This risk would be reduced by using Service-approved biologists, limiting the duration of handling, and requiring the proper transport of these species.

Observations of diseased and parasite-infected amphibians are now frequently reported. Releasing amphibians following a period of captivity, during which time they can be exposed to infections, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to localities containing species that have had little or no prior contact with such pathogens or parasites. Utilizing the Declining Amphibian Populations Task Force's Fieldwork Code of Practice to minimize the spread of chytrid fungus and other pathogens will reduce these risks to the California red-legged frog.

Trash left during or after project activities could attract predators to the work site, which could in turn prey upon California red-legged frogs. For example, raccoons (*Procyon lotor*) and feral cats (*Felis catus*) are attracted to trash and also prey opportunistically on the California red-legged frog. This potential impact would be reduced or avoided by the proposed control of waste products at all work sites.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality or upland habitat to a degree where California red-legged frogs are adversely affected or killed. The potential for this effect to occur would be reduced by thoroughly informing workers of the importance of preventing hazardous materials from entering the environment, locating staging and fueling areas away from wetland areas and water bodies, and having an effective spill response plan in place.

Uninformed workers could disturb, injure, or kill California red-legged frogs. The potential for this to occur would be reduced by educating workers on the presence and protected status of the species and the measures that are being implemented to protect them during project activities. The use of fencing/flagging to demarcate work areas would further reduce these potential impacts by preventing workers from encroaching into environmentally sensitive habitat.

In summary, the project could adversely affect California red-legged frogs that may be utilizing portions of the action area. However, numerous avoidance and minimization measures would be implemented to reduce these impacts. Based on these factors and the temporary nature of the

impacts, we anticipate that few California red-legged frogs are likely to be killed or injured during this work.

Effects on Recovery of the California red-legged frog

As stated above in the Status of the Species Section, the recovery status of the California red-legged frog is considered within the scale of the recovery unit as opposed to the overall range. The proposed project would not increase the threats currently impacting the California red-legged frog in this recovery unit or core area as identified in the recovery plan and described above, or preclude the Service's ability to implement recommended recovery actions (Service 2002). Project impacts would be temporary and ultimately beneficial as it is anticipated to result in the improvement of the quality of upland and dispersal habitat for the species, as well as remove a barrier to dispersal with the installation of a causeway immediately south of the Carmel River. The proposed project would not affect the capacity of this core area to provide connectivity between populations. We believe the proposed project would ultimately beneficially affect the conservation of the California red-legged frog within the Central Coast Recovery Unit.

Summary of effects to the California red-legged frog

Based on the temporary duration of effects and the conservation measures to be implemented by the project proponent, we conclude that few, if any, California red-legged frogs are likely to be killed or injured as a result of project activities. We anticipate beneficial long-term effects to the overall population, breeding and reproductive capacity, and recovery of the California red-legged frog due to the proposed activities.

Critical Habitat for the California red-legged frog

All terrestrial or vegetated habitats in the action area (approximately 134.8 acres) provide either upland or dispersal (PCEs 3 and 4) habitat for the species. The proposed action would temporarily directly affect approximately 133.1 acres of upland/dispersal critical habitat, and may permanently affect approximately 1.7 acres of upland/dispersal habitat as a result of a change in allowable land use from agricultural to Caltrans right-of-way.

All aquatic habitats in the action area (approximately 159.3 acres) provide aquatic breeding or non-breeding habitat (PCEs 1 and 2) for the species. The proposed action could temporarily indirectly affect approximately 159.3 acres of aquatic critical habitat (downstream areas within the Carmel River channel and lagoon) primarily due to potential sediment discharge.

Critical habitat unit MNT-2 for the California red-legged frog comprises approximately 119,492 acres, of which approximately 294.1 acres are in the action area. The action area represents a small portion (.25 percent) of critical habitat unit MNT-2, and only .018 percent of the 1,636,609 acres of total critical habitat throughout the range of the California red-legged frog. The proposed action would affect the critical habitat's primary constituent elements by temporarily affecting upland sheltering and dispersal capabilities (PCEs 3 and 4) of the California red-legged

frog in the action area. Additionally, proposed activities could temporarily affect aquatic habitat (PCEs 1 and 2) in areas adjacent to the construction area within the Carmel River and lagoon.

The majority of terrestrial or vegetated habitat within the action area is of marginal quality due to historical anthropogenic uses of the site, which primarily includes agriculture. All impacted upland and dispersal habitats (PCEs 3 and 4) within the action area would be restored following criteria established under the RMP. The RMP is focused on establishing vegetative conditions that provide a dense and diverse floodplain habitat. We anticipate proposed activities to result in increases in habitat assemblages and floral species diversity providing long-term beneficial effects to not only terrestrial or vegetated critical habitat that is directly impacted by the proposed project, but also to adjacent aquatic habitats that would benefit from having an expanded and hydraulically connected floodplain.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. We do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the Act. We are not aware of any non-Federal actions that are reasonably certain to occur and are likely to adversely affect the California red-legged frog in the action area.

CONCLUSION

The regulatory definition of "to jeopardize the continued existence of the species" focuses on assessing the effects of the proposed action on the reproduction, numbers, and distribution, and their effect on the survival and recovery of the species being considered in the biological opinion. For that reason, we have used those aspects of the status of the California red-legged frog and its critical habitat as the basis to assess the overall effect of the proposed action on this species.

Reproduction

Project activities in upland habitat could injure or kill California red-legged frogs sheltering or dispersing through the action area. Activities and work conducted in or adjacent to wetland and aquatic habitats could harm any life stage of the California red-legged frog and temporarily degrade or reduce habitat. The loss of reproductive individuals, eggs and larvae, and breeding habitat could temporarily lower the reproductive capacity of the local population. However, we expect such impacts to be small due to the temporary nature of impacts and the measures proposed to protect California red-legged frogs which include surveying for and relocating individuals from the work area, and using BMPs to prevent sedimentation into breeding habitats. Therefore, we expect the proposed project to result in minimal temporary impacts to breeding California red-legged frogs and conclude that it will not appreciably reduce reproduction of the species locally or rangewide. Ultimately, we expect the proposed project to result in long-term

beneficial effects to breeding California red-legged frogs in the area as upland and adjacent aquatic habitat is anticipated to improve in quality over the long-term.

Numbers

A small number of California red-legged frogs may be injured or killed as a result of project activities and capture and relocation efforts. The California red-legged frog is present within and around the action area and may occur onsite during project activities. However, the temporary nature of project impacts and the range of proposed conservation measures will minimize the number of California red-legged frogs injured or killed as a result of project activities. Therefore, we conclude that loss of a small number of individuals, if any, which may occur during the proposed project would not appreciably reduce the local or rangewide population of the California red-legged frog.

Distribution

The proposed project could injure, kill, or temporarily displace a small number of California red-legged frogs, but the project proponents have proposed conservation measures to minimize the risk of adverse effects on individuals. Construction activities may temporarily indirectly impact aquatic breeding and non-breeding habitat and temporarily directly affect upland and dispersal habitat, but affected work areas would be restored to better than pre-project conditions. The proposed project would temporarily affect a small proportion of the California red-legged frog habitat available in the vicinity and a very small proportion of the habitat available in the species' geographic range. Therefore, we conclude that the proposed project will not appreciably reduce the distribution of the California red-legged frog at the local or rangewide level.

Recovery

The action area lies within the Central Coast Recovery Unit and the Carmel River – Santa Lucia Core Area for the California red-legged frog. Project impacts to California red-legged frogs and their habitat would be temporary and minimized by the proposed conservation measures. The project would not increase the threats currently impacting the California red-legged frog in this recovery unit. We anticipate that the proposed project, over the long term, would beneficially affect reproduction, numbers and distribution of the species due to the proposed habitat improvements. The proposed project would not preclude the Service's ability to implement any of the measures identified in the recovery plan for the species. Therefore, we conclude that the proposed project would not reduce the likelihood of recovery of the California red-legged frog.

Conclusion for the California red-legged frog

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed Carmel River Floodplain Restoration and Environmental Enhancement Project and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the

California red-legged frog, because:

1. The project would not appreciably reduce reproduction of the species locally or rangewide;

2. The project would affect a small number of individuals, and would not appreciably reduce numbers of the California red-legged frog at the local level or rangewide;

3. The project would not reduce the species' distribution either locally or rangewide; and

4. The project would not cause any effects that would preclude our ability to recover the species.

California red-legged frog Critical Habitat

We expect proposed project activities to result in a small area of temporary impacts to California red-legged frog critical habitat unit MNT-2. The action area (up to approximately 294.1 acres) represents only .25 percent of unit MNT-2 and .018 percent of total critical habitat for the species.

The action area includes up to 134.8 acres of upland and/or dispersal habitat (PCEs 3 and 4) and approximately 159.3 acres of breeding and/or non-breeding aquatic habitat (PCEs 1 and 2). The proposed action will affect the critical habitat's primary constituent elements by temporarily directly affecting upland and dispersal habitats (PCEs 3 and 4) and may temporarily indirectly affect the quality and quantity of aquatic habitats (PCEs 1 and 2). Impact areas would be restored to better than pre-project conditions and is anticipated to result in long-term beneficial effects to all primary constituent elements of critical habitat for the California red-legged frog in or near the action area.

Conclusion for California red-legged frog Critical Habitat

After reviewing the current status of the critical habitat of the California red-legged frog, the environmental baseline of critical habitat for the action area, the effects of the proposed Carmel River Floodplain Restoration and Environmental Enhancement Project on critical habitat, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to result in the destruction or adverse modification of critical habitat of the California red-legged frog, because:

1. The project will have only temporary direct effects on a small portion of upland and/or dispersal habitat (PCEs 3 and 4) in critical habitat unit MNT-2;

2. The project would have only temporary indirect effects on aquatic habitats (PCEs 1 and 2); and

3. We anticipate that the project will provide long-term benefits to the overall function and conservation value of PCEs 1, 2, 3 and 4 in critical habitat unit MNT-2.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

In June 2015, the Service finalized new regulations implementing the incidental take provisions of section 7(a)(2) of the Act. The new regulations also clarify the standard regarding when the Service formulates an Incidental Take Statement [50 CFR 402.14(g)(7)], from "...if such take may occur" to "...if such take is reasonably certain to occur." This is not a new standard, but merely a clarification and codification of the applicable standard that the Service has been using and is consistent with case law. The standard does not require a guarantee that take will result, only that the Service establishes a rational basis for a finding of take. The Service continues to rely on the best available scientific and commercial data, as well as professional judgment, in reaching these determinations and resolving uncertainties or information gaps.

All California red-legged frogs in the action area may be subject to take as a result of project activities. Take could occur in the form of capture during relocation activities and in the form of harm, injury, or death as a result of construction activities, or if they are accidentally injured during capture and relocation. Incidental take of California red-legged frogs will be difficult to detect because of their small body size; therefore, finding a dead or injured specimen may be unlikely. California red-legged frogs injured or killed during translocation efforts are likely to be observed; however, mortality from other sources, including the indirect effects of translocation, would be difficult to observe.

Consequently, we are unable to reasonably anticipate the actual number of California red-legged frogs that would be taken by the proposed project; however, we must provide a level at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of this biological opinion indicate that we expect some California red-legged frogs to be present in the action area, but that adverse effects to the species would likely be low given the nature of the proposed activities and conservation measures. Therefore, we anticipate that take of California red-legged frogs would also be low. We also recognize that for every California red-legged frog found dead or injured, other individuals may be killed or injured that

are not detected, so when we determine an appropriate take level we are anticipating that the actual take would be higher and we set the number below that level.

> If more than 10 California red-legged frog adults or juveniles, 20 tadpoles, or 1 egg mass are captured and relocated during project activities in any single calendar year, any operations causing such take should cease pending reinitiation of consultation. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions.
>
> If more than 2 California red-legged frog adults or juveniles, 2 tadpoles, or 1 egg mass are found dead or injured during project activities in any single calendar year, any operations causing such take should cease pending reinitiation of consultation. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the impacts of the incidental take of California red-legged frogs:

1. Take of California red-legged frog must be minimized by using qualified individuals to implement the conservation measures included in the Description of the Proposed Action section of the Biological Opinion.

Our evaluation of the effects of the proposed action includes consideration of the measures to minimize the adverse effects of the proposed action on the California red-legged frog that were provided by WSFR and repeated in the Description of the Proposed Action portion of this biological opinion. Any subsequent changes in these measures proposed by WSFR may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to supplement the protective measures that were proposed by WSFR as part of the proposed action.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, WSFR must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

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

    a. WSFR or the project proponents must request our approval of any biologists that they or their contractors employ to conduct capture and relocation activities associated with the California red-legged frog pursuant to this biological opinion. Such requests must be in writing, and be received by the VFWO at least 30 days prior to any such activities being conducted. Please be advised that possession of a 10(a)(1)(A) permit for the California red-legged frog does not substitute for the implementation of this measure. Authorization of Service-approved biologists is valid for this project only.

    b. Prior to the onset of any project related activities, the Service-approved biologist must identify appropriate locations to receive California red-legged frogs from the project area in the event that they need to be relocated. These locations must be in proximity to the project site, contain suitable habitat, not be affected by project activities, and be free of exotic predatory species (i.e., bullfrogs, crayfish) to the best of the approved biologist's knowledge.

REPORTING REQUIREMENTS

WSFR must report the progress of the action, including compliance with the above measures and the impact of the action on the species, to the VFWO (2493 Portola Road, Suite B, Ventura, California 93003) within 90 days following completion of the construction portion of the project.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 days of locating any dead or injured California red-legged frogs, you must notify the VFWO by telephone (805) 644-1766. The report must include the date, time, location of the carcass, a photograph, cause of death (if known), and any other pertinent information.

Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. Remains of California red-legged frogs should be placed with educational or research institutions holding the appropriate State and Federal permits.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend the relocation of other native reptiles or amphibians found within work areas to suitable habitat outside of project areas if such actions are in compliance with State laws.

2. We recommend the elimination of non-native aquatic animals such as bullfrogs and crayfish, which may prey on California red-legged frogs and other native amphibians whenever these are detected.

The VFWO requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the request for formal consultation. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the Service's action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the Service's action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may have lapsed and any further take could be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions about this biological opinion, please contact Chad Mitcham of my staff at (831) 768-7794, or by electronic mail at chad_mitcham@fws.gov.

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The Declining Amphibian Populations Task Force Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each work site.

2. Boots, nets, traps, and other types of equipment used in the aquatic environment should then be scrubbed with 70 percent ethanol solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond, wetland, or riparian area.

3. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or "base camp." Elsewhere, when washing-machine facilities are available, remove nets from poles and wash in a protective mesh laundry bag with bleach on the "delicates" cycle.

4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable vinyl[2] gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean them as directed above and store separately at the end of each field day.

5. When amphibians are collected, ensure that animals from different sites are kept separately and take great care to avoid indirect contact (e.g., via handling, reuse of containers) between them or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected and disposable husbandry equipment.

6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.

7. Used cleaning materials and fluids should be disposed of safely and, if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions. For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK, e-mail: DAPTF@open.ac.uk.

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[2] Do not use latex gloves as latex is toxic to amphibians.

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2021-F-0462

July 22, 2021

Greg Brown
Regulatory Division
U.S. Army Corps of Engineers
450 Golden Gate Avenue, 4th Floor
San Francisco, California 94102

Subject: Biological Opinion on the Calle La Cruz Pipeline Replacement Project, Monterey County, California (Corps File No. 2017-00521S)

Dear Greg Brown:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Army Corps of Engineers' (Corps) proposed issuance of a permit, pursuant to section 404 of the Clean Water Act, to the Carmel Area Wastewater District (District), to implement the Calle La Cruz Pipeline Replacement Project in the Carmel Lagoon, and its effects on the federally threatened California red-legged frog (*Rana draytonii*) and its critical habitat, in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act). The Corps has determined that issuing the proposed permit is likely to adversely affect the California red-legged frog and its critical habitat, and has determined that the project meets criteria for inclusion under the Programmatic Biological Opinion for Projects That May Affect the California Red-legged Frog, Authorized by the Corps Under Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act (08VEN00-2020-F-0226) (Service 2020) (PBO). Therefore, the Corps has requested that the effects of the proposed action be addressed via the PBO.

The Corps originally initiated consultation on June 18, 2018, but withdrew the request on May 2, 2019, due to project redesign. We received your revised request for formal consultation on May 17, 2021. In response to your May 17, 2021, consultation request, we sent you a letter (Service 2021) indicating that due to reduced funding and excessive workload, this consultation may be delayed. However, we opted to prioritize this project based on its contribution to greater California red-legged frog recovery efforts in the lower Carmel Valley; thus, the project was assigned to staff on July 13, 2021.

In your May 17, 2021, consultation request, you determined that the project may affect, but is not likely to adversely affect California red-legged frog designated critical habitat. You also determined that the project would have no effect on the Smith's blue butterfly (*Euphilotes enoptes smithi*). Based on electronic mail correspondence between Corps and Service staff regarding anticipated impacts to critical habitat of the California red-legged frog, and the presence of Smith's blue butterfly host plants within the action area, you revised your determinations. Therefore, on July 16, 2021, you revised your determination regarding anticipated effects of the project on California red-legged frog critical habitat to likely to adversely affect, and also revised your determination for Smith's blue butterfly to may affect, but is not likely to adversely affect (G. Brown, Corps, pers. comm. 2021).

We have based this biological opinion on information that accompanied your May 17, 2021, request for consultation, including the biological assessment (BA) (Johnson Marigot Consulting, LLC 2020), electronic mail correspondence between Corps and Service staff, and information in our records.

You requested our concurrence with your determination that the project may affect, but is not likely to adversely affect, the federally endangered Smith's blue butterfly, beach layia (*Layia carnosa*), coastal dunes milk-vetch (*Astragalus tener var. titi*), Hickman's cinquefoil (*Potentilla hickmanii*), marsh sandwort (*Arenaria paludicola*), Monterey gilia (*Gilia tenuiflora ssp. arenaria*), Yadon's piperia (*Piperia yadonii*), and the federally threatened Monterey spineflower (*Chorizanthe pungens var. pungens*). We concur with your determination based on the following:

- The closest observation of the Smith's blue butterfly is approximately 1 mile south of the action area.

- If project activities occur within the flight season of the Smith's blue butterfly (June 15 to September 15), a qualified biologist will conduct Smith's blue butterfly surveys. The qualified biologist will survey for Smith's blue butterfly prior to and during all activities that occur within 300 feet of a Smith's blue butterfly host plant. If a Smith's blue butterfly is detected during project activities, all work that could disturb the species must cease and the Service immediately notified.

- All Smith's blue butterfly host plants will be avoided.

- Rare plant surveys in 2018 and 2020 did not detect federally listed plant species.

- All equipment that may have come in contact with invasive plants prior to arriving onsite will be carefully cleaned prior to arriving onsite.

- The District will develop a habitat restoration plan for areas of temporary disturbance. The habitat restoration plan will be submitted to the Corps and Service at least 14 days prior to project initiation.

- The District will conduct a worker environmental awareness training by a qualified biologist.

- Immediately prior to project implementation, protocol-level rare plant surveys will be conducted by a qualified botanist in areas of suitable habitat in the action area.

- If any federally listed plant species are detected during rare-plant surveys, the area would be flagged and avoided during construction.

Project Description

The purpose of the project is to avoid impacts to pipeline infrastructure resulting from anticipated increases in water velocity in the Carmel Lagoon. Increased water velocities are anticipated to occur subsequent to implementation of the Carmel River Floodplain Restoration and Environmental Enhancement Project, which we formally consulted on in 2016 (08VEN00-2016-B-0112), and is scheduled for implementation as early as 2023.

The District proposes to replace existing wastewater pipelines that currently span the south arm of the Carmel Lagoon with new pipelines installed below the bed of the lagoon. The District would install an approximately 1,000-foot segment of two parallel pipelines under the Carmel Lagoon using horizontal directional drilling. To facilitate construction access and staging, portions of existing access roads and adjacent upland areas on the east and west sides of the lagoon would be widened to accommodate vehicular access, equipment and material storage, and pipeline lay-down. Project activities are anticipated to take 8 months to complete. Please refer to the BA (Johnson Marigot Consulting, LLC 2020) for a detailed description of project activities.

The District has committed to implementing all measures contained on pages 12 through 17 of the PBO. However, the District is requesting flexibility to conduct both in-water and terrestrial project activities outside of the PBO's recommended timeframes. Although conducting work activities outside of the PBO's recommended timeframes increases the chances of incidental take of California red-legged frogs, we believe that this work can occur with little risk to California red-legged frogs if thorough surveys and subsequent translocations are conducted prior to and concurrent with these project activities. Therefore, the District must conduct daily surveys for California red-legged frogs within site mobilization, access, and active work areas, prior to and concurrent with project activities taking place outside of PBO timeframes.

The District has proposed several additional conservation measures that would be implemented for the California red-legged frog, due to the high likelihood of frogs occurring in the action area at any time of year. These additional measures are detailed in Table 2 (pages 25 through 33) of the BA.

California Red-legged Frog and Critical Habitat

All life stages of the California red-legged frog have been observed in the action area. As stated in the BA (Johnson Marigot Consulting, LLC 2020), the south arm of Carmel Lagoon provides breeding habitat for the species. Terrestrial California red-legged frogs may occur at any time of year in the action area, and larval California red-legged frog and egg masses may be encountered if in-water work occurs between October 31 to May 31.

Project activities would result in temporary impacts to approximately 0.12 acre of breeding or non-breeding aquatic habitat and 0.3 acre of upland or dispersal habitat. No permanent losses of habitat would occur, and all areas of temporary disturbance would be restored.

Conclusion

This project meets the criteria outlined in the PBO for projects that may result in adverse effects to the California red-legged frog and its critical habitat, but would not affect the long-term viability of the population in the action area. The Service has analyzed projects that fit these criteria in the PBO under the Effects of the Action section (Service 2020). Project activities would result in the temporary alteration of approximately 0.42 acre of California red-legged frog habitat (and critical habitat). The District would restore areas temporarily affected by project activities.

We have determined that the Calle La Cruz Pipeline Replacement Project is consistent with and appropriate for inclusion under the PBO. The District must implement all relevant avoidance and minimization measures, reasonable and prudent measures, and terms and conditions found within the PBO. With this approval, the project may proceed without further consultation. If the proposed action changes in any manner that may adversely affect a listed species or critical habitat not addressed by this biological opinion, you must contact us immediately to determine whether additional consultation is required. If you have any questions regarding this biological opinion, please contact Chad Mitcham by electronic mail at chad_mitcham@fws.gov.

Sincerely,

LEILANI TAKANO

Digitally signed by LEILANI TAKANO
Date: 2021.07.22 14:57:56 -07'00'

Leilani Takano
Assistant Field Supervisor

LITERATURE CITED

Johnson Marigot Consulting, LLC. 2020. Biological Assessment for Resources Regulated by the United States Fish and Wildlife Service. Carmel River Floodplain Restoration and Environmental Enhancement (CRFREE) Mitigation Pipeline Underground Project.

[Service] U.S. Fish and Wildlife Service. 2020. Programmatic biological opinion for projects that may affect the California red-legged frog, authorized by the Corps under Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act (08EVEN00-2020-F-0226). Ventura Fish and Wildlife Service, Ventura, California.

[Service] U.S. Fish and Wildlife Service. 2021. Subject: Request to Initiate Formal Consultation on the Calle La Cruz Pipeline Replacement Project, Monterey County, California (File No. 2017-00521).

PERSONAL COMMUNICATION

Brown, Greg. 2021. Electronic mail to Chad Mitcham, Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service from U.S. Army Corps of Engineers. Dated July 16, 2021.

CRFREE Mitigation Pipeline Undergrounding Project
Updated Avoidance and Minimization Measures (USFWS)
June 2021

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
General Construction BMPs	Trash Management, Post-construction Cleanup	2020 PBO	6	During project activities, the applicant will properly contain all trash that may attract predators by removing it from the work site and disposing of it regularly. Following construction, the applicant will remove all trash and construction debris from work areas.
General Construction BMPs		2018 BA	5	No firearms will be allowed on the Action Area except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.
General Construction BMPs		2018 BA	6	Project personnel will not be permitted to have dogs or cats in the Action Area.
General Construction BMPs		2018 BA	7	Project personnel will not be permitted to smoke in the Action Area.
Habitat Protection		2018 BA	10	All equipment including excavators, trucks, hand tools, etc., that may have come in contact with invasive plants or the seeds of these plants, will be carefully cleaned before arriving on the site and shall also be carefully cleaned before removal from the site to prevent spread of these plants.
Habitat Protection		2018 BA	11	Disturbance or removal of vegetation will not exceed the minimum necessary to complete construction.
Habitat Protection		2018 BA	17	Site conditions will be returned to pre-construction contours and will be revegetated with native habitat-appropriate species.
Habitat Protection	Habitat Restoration Plan	2020 PBO	17	The applicant will develop a ~~habitat restoration plan~~ Revegetation Plan for areas of temporary disturbance and submit it to the USACE and the Service, RWQCB, CDFW, and Commission at least 14 days prior to project initiation. This plan will be developed in coordination with the ~~Service~~ natural resource agencies. The applicant will revegetate areas of temporary disturbance within the project site with an assemblage of native riparian, wetland, and upland vegetation suitable for the area. The applicant will use locally collected plant materials to the extent practicable. The applicant will control invasive, exotic plants to the maximum extent practicable. The applicant will monitor the success of revegetation efforts and submit

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
				documentation of revegetation success to the ~~USACE and the Service~~ appropriate agencies ~~within three years from project initiation.~~ as stipulated in the Revegetation Plan. ~~If restoration is not successful after three years, the Service and the USACE will require the applicant to provide compensatory mitigation as a permanent loss, as detailed below in Mitigation of adverse effects.~~ This measure will be implemented in all areas disturbed by activities associated with the project, unless the ~~USACE and the Service~~ natural resource agencies determine that it is not feasible or practical.
Aquatic Resource Protection	General Water Quality BMPs	2020 PBO	~~10~~12	To control sedimentation during and after project implementation, the USACE will require the applicant to implement best management practices outlined in any authorizations or permits issued under the authorities of the Clean Water Act that it receives for the specific project. If best management practices are ineffective, as determined by the Service-approved biologist or biological monitor, the USACE will require the applicant to remedy the situation immediately, in coordination with the Service.
Aquatic Resource Protection	General Water Quality BMPs	2018 BA	1	Implementation of the following Stormwater Pollution Prevention and General Site Best Management Practices (BMPs) will reduce construction related water quality impacts: a. Burlap bags filled with drain rock will be installed around storm drains to route sediment and other debris away from the drains. b. Earthmoving or other dust-producing activities will be suspended during periods of high winds. c. All exposed or disturbed soil surfaces will be watered at least twice daily to control dust as necessary. d. Stockpiles of soil or other materials that can be blown by the wind will be watered or covered. Trenched fiber rolls will be installed around the base of stockpiles. e. All trucks hauling soil, sand, and other loose materials will be covered and all trucks will be required to maintain at least two feet of freeboard. f. All paved access roads, parking areas, staging areas, and residential streets adjacent to the construction sites will be swept daily (with water sweepers) and all construction exits will be stabilized to prevent tracking.
Aquatic Resource Protection	General Water Quality BMPs	2018 BA	3	All staging, maintenance, and storage of construction equipment will be performed in a manner to preclude any direct or indirect discharge of fuel, oil, or other petroleum products into jurisdictional waters. No other debris, rubbish, creosote-treated wood, soil, silt, sand, cement, concrete or washings thereof, or other construction-related materials or wastes will be allowed to enter into or be placed where they may be washed by rainfall or runoff into jurisdictional waters. All such debris and waste shall be picked-up daily and properly disposed of at an appropriate site.

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
Aquatic Resource Protection	General Water Quality BMPs	2020 PBO	7	Prior to the onset of work, the USACE will ensure that a plan is in place for prompt and effective response to any accidental spills. All workers will be informed of the importance of preventing spills and of the appropriate measures should a spill occur.
Aquatic Resource Protection	General Water Quality BMPs	2020 PBO	8	The applicant will conduct all refueling, maintenance, and staging of equipment and vehicles at least 60 feet from aquatic or riparian habitat and not in a location from where a spill would drain directly toward aquatic habitat. The Service-approved biologist or biological monitor will ensure contamination of aquatic or riparian habitat does not occur during such operations by implementing the spill response plan described in measure 7.
Aquatic Resource Protection	General Water Quality BMPs	2018 BA	9	No equipment will be operated in areas of flowing or standing water. No fueling, cleaning, or maintenance of vehicles or equipment will take place within any areas where an accidental discharge to jurisdictional waters may occur.
Aquatic Resource Protection	Jurisdictional Waters Work Window	2020 PCN	10	Work within waters of the U.S./state would be restricted to the dry season work window of May 31st to October 15th.
Aquatic Resource Protection	Estuary Protection	~~NEW~~2020 PCN	1	To protect water quality during pipeline removal activities, permeable turbidity curtains long enough to enclose the work area while not dragging on the bottom of the lagoon would be installed around the pipeline removal work locations. To maintain fish passage and water flow, turbidity curtains would not be installed across the entire lagoon. Rather, curtains would be moved as dismantling activities progress, encircling the work location. Curtains would not be moved until silt settles out of the water column and the water column returns to pre-construction conditions.
Aquatic Resource Protection	Estuary Protection	~~NEW~~2020 PCN	11	To contain debris during pipeline removal activities, a permeable curtain would be placed below cutting locations. A permeable curtain is necessary because the pipelines are periodically submerged due to fluctuations in lagoon water levels.
Aquatic Resource Protection	Wetland Protection	~~NEW~~2020 PCN	2	The perennial and seasonal wetlands on the maintenance road east of the lagoon would be protected using 2-inch-thick perforated HDPE mats (see specifications in Appendix C). The proposed mats would be open-celled and interlocking. These mats would protect wetlands and facilitate vehicular access.
Aquatic Resource Protection	Site Stabilization	~~NEW~~2020 PCN	3	During pipeline removal activities, the pedestrian trail on the west side of the lagoon would be stabilized with plywood, or similar material.
Aquatic Resource Protection	Remove Temp. Fills	~~NEW~~2020 PCN	4	Upon construction completion, all temporary fills would be removed in their entirety.

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
Biological Resource Protection	Worker Environmental Awareness training (WEAT)	2018 BA	2	Prior to project-implementation, all construction personnel working on vegetation removal, earthmoving, and/or construction activities will attend a mandatory environmental education program, led by an approved biologist. This program will include information regarding special status plant and animal species occurring within the Action Area.
Biological Resource Protection	Access Restrictions	2018 BA	12	To minimize harassment, injury, death, and harm in the form of temporary habitat disturbances, all project-related vehicle traffic will be restricted to established roads, construction areas, equipment staging, parking, and stockpile areas.
Biological Resource Protection	Access Restrictions	2020 PBO	9	The applicant will limit the number of access routes, size of staging areas, and the total area of the activity to the minimum necessary to achieve the project goals. The applicant will delineate Environmentally Sensitive Areas to confine access routes and construction areas to the minimum area necessary to complete construction and minimize the impact to CRLF habitat; this goal includes locating access routes and construction areas outside of wetlands and riparian areas to the maximum extent practicable.
Biological Resource Protection	ESA Fencing	~~NEW~~2020 PCN	5	Prior to the date of initial ground disturbance within the Action Area, equipment staging areas and work areas would be identified, surveyed by the USFWS-approved biologist, and clearly identified with 3-foot-tall bright orange silt fencing that is trenched into the soil to a depth of 6 inches, and installed such that it angles away from the Action Area in an approximately 30% angle (either the entire fence profile or the top 12 inches). All construction access roads would be delineated with construction flagging. The fencing and flagging would be inspected by the approved biologist immediately after installation and maintained daily by the project proponent until the last day that construction equipment is at the project.
Biological Resource Protection	Construction Monitoring	2018 BA	18	Prior to commencement of work each day, the biological monitor will check for animals under any equipment such as vehicles and stored pipes. In order to prevent inadvertent entrapment of terrestrial wildlife during the proposed project, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 2-foot-high vertical barrier, independent of exclusionary fences, may be used to further prevent the inadvertent entrapment of terrestrial wildlife. If it is not feasible to cover an excavation or provide an additional 2-foot-high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed. Before such holes or trenches are filed, they will be thoroughly inspected for trapped animals.
Biological Resource Protection	Construction Monitoring	2018 BA	19	An approved biologist(s) will be onsite during all work within the south arm of the Carmel River Lagoon and during all activities that could result in impacts to special-status species. The approved biologist will have the authority to stop any work that may result in adverse impacts to special-status species. If determined to be necessary for project implementation and wildlife

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
				safety, only approved biologists will capture, handle, and monitor special-status species observed onsite. Otherwise, all wildlife will be allowed to leave the site of their own accord.
Biological Resource Protection	Veg Removal for Wildlife Observation	~~NEW~~2020 PCN	6	All vegetation which obscures the observation of wildlife movement within the impact areas will be completely removed by hand just prior to the initiation of ground moving activities to remove cover that might be used by listed species. The Service-approved biologist will survey these areas immediately prior to vegetation removal to find, capture and relocate any observed listed species, as approved by the Service.
Biological Resource Protection	Migratory Bird Protection	2018 BA	21	If vegetation removal or ground disturbance are scheduled to occur between February 15 and August 31, a preconstruction nesting bird survey of all suitable nesting habitat on the Action Area and within the zone of influence (the area immediately surrounding the Action Area that supports suitable nesting habitat that could be impacted by the project due to visual or auditory disturbance associated with the removal of vegetation and construction activities scheduled to occur during the nesting season) will be conducted by a qualified biologist within 14 days prior to commencement of vegetation removal or ground disturbance. If no nesting birds are observed during the survey, the vegetation removal and/or ground disturbance may commence as planned. If nesting birds are observed during the survey, a non-disturbance buffer of 50 feet for passerine birds and 250 feet for raptors will be established. This buffer will remain in place until such a time as the young have been determined (by a qualified biologist) to have fledged.
Biological Resource Protection	Rare Plant Protection	2018 BA	22	~~In the Spring and Summer immediately prior to project implementation,~~ Protocol-level rare plant surveys will be conducted on the Action Area. Rare plant surveys will be conducted by a qualified botanist, in accordance with all applicable survey guidelines including those published by USFWS (USFWS 2000), CDFW (CDFW 2018) and California Native Plant Society (CNPS, 2001). If determined to be necessary, reference site surveys will be conducted to confirm plant phenology (flowering periods).
Biological Resource Protection	CRLF Protection - WEAT	2020 PBO	4	Before any activities begin on a project, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the CRLF and its habitat, the specific measures that are being implemented to conserve the CRLF for the current project, and the boundaries within which the project may be accomplished. The USFWS-approved biologist may use brochures, books, and briefings in the training session, provided that a qualified person is on hand to answer any questions.
Biological Resource Protection	CRLF Protection – Work Window	2020 PBO	10	Work activities would be scheduled for times of the year when impacts to the CRLF would be minimal. For example, work that would affect large pools that may support breeding will take place between May 1 and October 31, to the maximum extent practicable, in order to avoid the breeding season of the CRLF. The applicant will avoid isolated pools that are important to maintain CRLFs through the driest portions of the year, to the maximum degree practicable, during the late summer and early fall. Habitat assessments, surveys, and coordination between

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
				the USACE and the USFWS during project planning will be used to assist in scheduling work activities to avoid sensitive habitats during key times of the year.
Biological Resource Protection	CRLF Protection – USFWS Approval of Biological Monitors	2020 PBO	2	Only USFWS-approved biologists will participate in activities associated with the capture, handling, and monitoring of CRLFs. The applicant will not begin ground disturbance until they receive written approval from the USFWS that the biologist is qualified to conduct the work. Biologists approved under this biological opinion do not need to re-submit their qualifications for subsequent projects conducted pursuant to this biological opinion, unless we have revoked their approval at any time during the life of this biological opinion.
Biological Resource Protection	CRLF Protection – Pre-construction Survey	2018 BA	23	Within 48 hours prior to the initiation of work that may impact CRLF, a preconstruction survey will be conducted by an approved biologist within the boundaries of the Action Area. The approved biologist would investigate all areas that could be used by CRLF for feeding, breeding, sheltering, movement, and other essential behaviors. This survey will be likewise conducted immediately prior to commencement of project-related work that may impact CRLF. If any adults, sub adults, juveniles, tadpoles, or eggs are found, the approved biologist would contact the appropriate agencies to determine next steps.
Biological Resource Protection	CRLF Protection - Relocation	2020 PBO	3	A USFWS-approved biologist will survey the project site no more than 48 hours before the onset of work activities. If the USFWS-approved biologist finds any life stage of the CRLF and these individuals are likely to be killed or injured by work activities, the applicant will allow the USFWS-approved biologist sufficient time to move them from the site before work begins. The USFWS-approved biologist will relocate the CRLFs the shortest distance possible to a location that contains suitable habitat and that will not be affected by activities associated with the proposed project. The relocation site should be in the same drainage to the extent practicable.
Biological Resource Protection	CRLF – Biological Monitor Training	2020 PBO	5	A USFWS-approved biologist will be present at the work site until all CRLFs have been relocated out of harm's way, workers have been instructed, and disturbance of habitat has been completed. After this time, the USFWS-approved biologist will designate a person to monitor on-site compliance with all minimization measures. The USFWS-approved biologist will ensure that this monitor receives the training outlined in measure 4 above and in the identification of CRLFs. If the monitor or the USFWS-approved biologist recommends that work be stopped because CRLFs would be affected in a manner not anticipated by the USACE and the USFWS during review of the action, they will notify the resident engineer (the engineer that is directly overseeing and in command of construction activities) immediately. The resident engineer will either resolve the situation by eliminating the adverse effect immediately or require that all actions causing these effects be halted. If the engineer stops work, the USFWS will be notified as soon as possible.
Biological Resource Protection	CRLF Protection –	2020 PBO	11	The USFWS-approved biological monitor will inspect all holes and trenches each morning. A USFWS-approved biologist will relocate any CRLFs found in a hole or trench.

Category	Sub-Category	Source	Source #	Avoidance and Minimization Measure
	Construction Monitoring			
Biological Resource Protection	CRLF Protection – Removal of Invasive Species	2020 PBO	15	Any biologist approved by the USFWS to conduct activities under this biological opinion will also permanently remove any individuals of non-native species, such as bullfrogs (*Rana catesbeiana*), signal and red swamp crayfish (*Pacifasticus leniusculus; Procambarus clarkii*), and centrarchid fishes from the project area, to the maximum extent possible. The USFWS-approved biologist will be responsible for ensuring his or her activities are in compliance with the California Fish and Game Code (https://fgc.ca.gov/Regulations/Current).
Biological Resource Protection	CRLF Protection – Disease Prevention	2020 PBO	16	To ensure that diseases are not conveyed between sites, the USFWS-approved biologist, will follow the fieldwork code of practice developed by the Declining Amphibian Populations Task Force at all times. A copy of the code of practice is enclosed and will be provided by the USACE with any authorization it issues under this biological opinion.
Biological Resource Protection	CRLF Protection	2018 BA	24	If requested, before, during, or upon completion of groundbreaking and construction activities, CAWD will allow access by the USFWS and/or CDFW personnel to the Action Area to inspect project effects to the CRLF and their habitats. Due to safety concerns, CAWD requests that USFWS and/or CDFW staff contact the applicant prior to accessing the construction site.
Biological Resource Protection	CRLF Protection - Restoration	2020 PBO	18	The applicant will return habitat contours to their original configuration at the end of project activities in all areas that have been temporarily disturbed by activities associated with the project, unless the USACE and the USFWS determine that it is not feasible, or modification of original contours would benefit the CRLF.
Biological Resource Protection	CRLF Protection	2020 PBO	20	The activities the USFWS evaluated under this biological opinion are those that would not cause ecosystem-scale changes and are not likely to contribute to the decline of the CRLF. These activities would also not preclude any of the potentially affected critical habitat units from providing the physical and biological features necessary to support the essential life history functions (i.e., reproduction, feeding, and sheltering) of the CRLF.
Biological Resource Protection	SBB Protection	2018 BA	28	During protocol-level rare plant surveys conducted on the Action Area, an approved botanist will also search for SBB host plant species.
Biological Resource Protection	SBB Protection	~~NEW~~2020 PCN	7	Temporary protective fencing or flagging would be installed around any SBB host plants if found within vegetation clearing areas. To the extent practical, fencing would be installed to create a buffer of 20 feet around each plant. The approved biologist would monitor installation of protective fencing/flagging prior to clearing of vegetation.
Biological Resource Protection	SBB Protection	~~NEW~~2020 PCN	8	If construction activities are scheduled to occur during the June 15 to September 15 flight season, the approved biologist will conduct SBB surveys at the beginning and end of flight season. Additionally, the project biologist would survey for SBB during preconstruction surveys, monitor for SBB during all activities that occur within 300-feet of a SBB host plant during the flight season, and stop any work that may result in take of SBB.

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2021-F-0462

September 2, 2021

Alessandro Amaglio
Environmental Officer, Region 9
Federal Emergency Management Agency
1111 Broadway, Suite 1200
Oakland, California 94607

Subject: Endangered Species Act Section 7(a)(2) Consultations for the Carmel River Floodplain Restoration and Environmental Enhancement Project and the Calle La Cruz Pipeline Replacement Project, Monterey County, California

Dear Alessandro Amaglio:

The U.S. Fish and Wildlife Service (Service) completed formal consultations, in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA), on the Carmel River Floodplain Restoration and Environmental Enhancement Project on November 7, 2018 (2016-B-0112) (Service 2018), and on the Calle La Cruz Pipeline Replacement Project on July 22, 2021 (2021-F-0462) (Service 2021). We understand that the Federal Emergency Management Agency (FEMA) provided grant funding associated with implementation of the subject projects; however, this is not acknowledged in the subject projects' biological opinions. Therefore, FEMA is requesting confirmation that they are eligible to receive ESA section 7 coverage for portions of the subject projects that they have funded.

We conclude that FEMA's ESA section 7 obligation to consult on their proposed action with the Service has been satisfied because portions of the projects funded by FEMA are described along with the analysis of project effects to listed species in the subject projects' biological opinions. As a reminder, FEMA must comply with all reasonable and prudent measures and terms and conditions set forth in the biological opinions.

If you have any questions regarding this matter, please contact Chad Mitcham by electronic mail at chad_mitcham@fws.gov.

Sincerely,

Leilani Takano
Assistant Field Supervisor

cc: David Cohen, FEMA

LITERATURE CITED

[Service] U.S. Fish and Wildlife Service. 2018. Carmel River Floodplain Restoration and Environmental Enhancement Project, Monterey County, California (FWS/R8/WSFR). Ventura Fish and Wildlife Office, Ventura, California.

[Service] U.S. Fish and Wildlife Service. 2021. Biological Opinion on the Calle La Cruz Pipeline Replacement Project, Monterey County, California (Corps File No. 2017-00521). Ventura Fish and Wildlife Office, Ventura, California.

Appendix E. Floodplain Management and Wetland Protection Eight-Step

Executive Order 11988 Floodplain Management Checklist (44 CFR Part 9)

Project Information

Date: 4/17/25

Reviewer: Abbie Woodruff

Disaster/Program: HMGP

Project Number: 4344-539-094

Project Title: Carmel River Floodplain Restoration and Environmental Enhancement Projec

Latitude: 36.533472

Longitude: -121.915124

Description of Proposed Action:

Monterey County and Big Sur Land Trust (BSLT) are proposing to restore the floodplain of the Carmel River. The floodplain restoration component of the project includes the removal of portions of existing levees along the south side of the river channel, widening of the floodplain, and creation of new distributary channels. The causeway component of the project includes the replacement of the existing roadway embankment with a new

Applicability

Actions which have the potential to affect floodplains or their occupants, or which are subject to potential harm by location in floodplains.

Will the proposed action potentially adversely affect the floodplain or support floodplain development?

Yes ☒ No ☐

Will the proposed action potentially be adversely affected by the floodplain?

Yes ☒ No ☐

Critical Action

Determine whether the proposed action is an action for which even a slight chance of flooding is too great. Critical actions must be reviewed against the 500-year floodplain.

Is the action a critical action?

☐ Yes, review against the 500-year floodplain

☒ No, review against the 100-year floodplain.

☐ Not Applicable, the action is located in wetlands only

Step 1: Determine Proposed Action Location

Determine whether the proposed action is located in the 100-year floodplain (500-year floodplain for critical actions); and whether it has the potential to affect or be affected by a floodplain or wetland (44 CFR Section 9.7).

Floodplain Determination

Flood Hazard Data (Check the box that applies)

Is the project located in a 100 year floodplain as mapped by a FEMA FIRM?

Yes ☒ No ☐

FIRM Panel Number: 06053C0316H and 06053C0320H (Zone AE, Zon

Date: 6/21/2017

Is the project located in a 500 year floodplain as mapped by a FEMA FIRM?

Yes ☒ No ☐

FIRM Panel Number: 06053C0316H and 06053C0320H

Date: 6/21/2017

Is the project located in a floodplain as mapped by a FEMA draft/preliminary study?

Yes ☐ No ☒

Study Name:

Date:

Is the project located in a floodplain as mapped by another agency (State, USACE, USGS, NRCS, local community, etc)?

Yes ☐ No ☒

Study Name:

Date:

Is the project outside the floodplain but has potential to affect the floodplain, including support of floodplain development?

Yes ☐ No ☒

Flood Hazard Data Not Available

Is the proposed action subject to flooding based on an evaluation from soil surveys, aerial photos, site visits, and other available data?

Yes ☐ No ☒

Evaluation material:

Does FEMA assume the Proposed Action is subject to flooding based on previous flooding of the facility/structure?

Yes ☐ No ☒

Floodway/Coastal High Hazard Area

Is the project located in a floodway or coastal high hazard area (full 8 step process is required)?

Yes ☒ No ☐

Source, other than FIRM:

Wetland Determination

Is the project in a wetland as mapped by the National Wetlands Inventory?

Yes ☒ No ☐

Wetland Classification: Freshwater Forested/Shrub Wetland

Date: 10/7/2022

Is the project in a wetland as mapped by another agency (USACE, state, local community)?

Yes ☐ No ☐

Name of study:

Date:

Scope

Select the appropriate block for the steps required.

☐ Steps 1, 4, 5, and 8 (44 CFR Part 9.5(g))

☐ Steps 1, 2, 4, 5, and 8. (44 CFR Part 9.5(d))

☒ All 8 steps

Step 2: Early Public Notice

Notify the public at the earliest possible time of the intent to carry out an action in a floodplain and involve the affected and interested public in the decision-making process (44 CFR Section 9.8).

Was notice provided as part of a disaster cumulative notice?

Yes ☒ No ☐ Not Applicable ☐

Was a project specific notice provided?

Yes ☐ No ☒ Not Applicable ☐

If yes, select the type of notice:

☐ Newspaper, name:

☒ Post Site, location: https://www.fema.gov/disaste

☐ Broadcast, station:

☐ Direct Mailing, area:

☐ Public Meeting, dates:

☐ Other:

Date of Public Notice: December 4, 2017

Step 3: Analysis of Practicable Alternatives

Identify and evaluate practicable alternatives to locating the proposed action in a floodplain (including alternate sites, actions, and the "no action" option). If a practicable alternative exists outside the floodplain, FEMA must located the proposed action at the alternative site (44 CFR Section 9.9).

Alternative Options

Is there a practicable alternative site location outside the 100-year floodplain (or 500-year floodplain for critical actions?)

Yes ☐ No ☒ Not Applicable ☐

If yes, describe the alternative site:

Other alternatives were considered to restore the floodplain and address the flooding hazards along the Carmel River. The proposed action is the only practicable alternative. Minimization of harm to or within the floodplain can be achieved using all practicable means.

Is there an alternative action which has less potential to affect or be affected by the floodplain?

Yes ☐ No ☒ Not Applicable ☐

If yes, describe the alternative action:

Is the "no action" alternative the most practicable alternative?

Yes ☐ No ☒ Not Applicable ☐

If any answer is yes, that FEMA shall take that action and the review is concluded.

Floodway

Is the action new construction (i.e. construction of new structure, demolition/ rebuilding, reconstruction, replacement) or substantial improvement (for structures damaged in equal or excess of 50% of its market value or the total replacement cost of the structure)?

Yes ☐ No ☐ Not Applicable ☒

If Yes, is the action a functional dependent use (cannot perform its intended purpose unless it is located or carried out in close proximity to water) or a facility or structure that facilitates open space use?

Yes ☐ No ☐ Not Applicable ☒

If yes, explain:

If no, FEMA cannot fund this action

Is the action an alteration of a structure or facility listed on the National Register of Historic Places or a State Inventory of Historic Places?

Yes ☐ No ☐ Not Applicable ☒

If yes, then this is not substantial improvement and the action may proceed as long as it does not cause any increase of flood levels within the community during the occurrence of the base flood discharge.

Coastal High Hazard Zone

Is the action new construction (i.e. construction of new facility or structure, demolition/ rebuilding of facilities or structures, reconstruction of facilities or structures, replacement of facilities or structures)?

Yes ☐ No ☒ Not Applicable ☐

If Yes, is the action a functional dependent use (cannot perform its intended purpose unless it is located or carried out in close proximity to water) or a facility or structure that facilitates open space use?

Yes ☐ No ☐ Not Applicable ☒

If yes, explain:

If no, FEMA cannot fund this action.

Step 4: Identify Impacts

Identify the potential direct and indirect impacts associated with the occupancy or modification of the floodplains and the potential direct and indirect support of floodplain development that could result from the proposed action (44 CFR Section 9.10).

Is the proposed action based on incomplete information?

Yes ☐ No ☒ Not Applicable ☐

Is the proposed action in compliance with the NFIP?

Yes ☒ No ☐ Not Applicable ☐

Does the proposed action increase the risk of flood loss?

Yes ☐ No ☒ Not Applicable ☐

Will the proposed action result in an increased base discharge or increase the flood hazard potential to other properties or structures?

Yes ☒ No ☐ Not Applicable ☐

Does the proposed action minimize the impact of floods on human health, safety, or welfare?

Yes ☒ No ☐ Not Applicable ☐

Will the proposed action induce future growth and development, which will potentially adversely affect the floodplain?

Yes ☐ No ☒ Not Applicable ☐

Does the proposed action involve dredging and/or filling of a floodplain?

Yes ☒ No ☐ Not Applicable ☐

Will the proposed action result in the discharge of pollutants into the floodplain?

Yes ☐ No ☒ Not Applicable ☐

Does the proposed action avoid the long and short term impacts associate with the occupancy and modification of floodplains?

Yes ☐ No ☒ Not Applicable ☐

Note: If wetlands are near or potentially affected, refer review to an Environmental Specialist.

Will the proposed action forego an opportunity to restore the natural and beneficial values served by floodplains?

Yes ☐ No ☒ Not Applicable ☐

Does the proposed action restore and/or preserve the natural and beneficial values served by floodplains?

Yes ☒ No ☐ Not Applicable ☐

Will the proposed action result in an increase to the useful life of a structure or facility?

Yes ☒ No ☐ Not Applicable ☐

Will the action encroach on the Floodway in manner that causes any increase of flood levels within the community during the occurrence of the base flood discharge?

Yes ☐ No ☐ Not Applicable ☒

Step 4 Remarks:

The floodplain restoration component of the project would restore the natural and beneficial values of the Carmel River floodplain. Construction earthwork activities would include clearing, grading, excavation, and revegetation with native plants in the floodplain. The proposed action would reduce flooding in developed areas north of the

Step 5: Minimize Impacts

Minimize the potential adverse impacts and support to or within floodplains as identified under Step 4; restore and preserve the natural and beneficial values served by floodplains (44 CFR Section 9.11).

Minimization Measures

Were flood hazard reduction techniques (see NFIP technical bulletins) applied to the proposed action to minimize flood impacts? Note: New construction or substantial improvement of a structure (i.e. walled or roofed building) requires elevation or flood proofing (non-residential), except for listed Historic Structures.

Yes ☒ No ☐ Not Applicable ☐

Identify any flood hazard reduction techniques required as a condition of the grant:

Flood mitigation would include undergrounding the CAWD's pipeline crossing of the Carmel Lagoon and the construction of two earthen berms or the elevation of historic structures above the projected base flood elevation to

Were avoidance and minimization measures applied to the proposed action to minimize the short-term and long-term impacts on the floodplain?

Yes ☒ No ☐ Not Applicable ☐

Identify minimization measures required as a condition of the grant:

The proposed project would include a Restoration Management Plan. All ground-disturbing activity would be subject to erosion control requirements and an Erosion Control Plan would be developed and implemented. Water

Were measures implemented to restore and preserve the natural and beneficial values of the floodplain?

Yes ☒ No ☐ Not Applicable ☐

Identify any restoration or preservation measures required as a condition of the grant:

The proposed action would restore the Carmel River floodplain, increasing flood capacity and reducing the risk of flooding in developed areas north of the Carmel River and reducing the risk of floodwaters overtopping and

Floodway/Coastal High Hazard Areas

Is there a practicable alternative site location or action outside of the Floodway or coastal high hazard area (CHHA) (but within the floodplain)?

Yes ☐ No ☒ Not Applicable ☐

Site Location:

Is there a practicable alternative action outside of the Floodway or CHHA that will not affect the Floodway or CHHA?

Yes ☐ No ☒ Not Applicable ☐

Alternative Action:

Are functionally dependent new construction in the CHHA elevated on adequately anchored pilings or columns such that lowest portion of the structural members of the lowest floor are above base flood elevation? (**Note: The use of fill for elevation is prohibited in the CHHA**.)

Yes ☐ No ☐ Not Applicable ☒

Step 5 Remarks:

There is no practicable alternative site location or action outside of the CHHA. Some staging and access areas for the CAWD pipeline seaward of the pipeline alignment lie within the CHHA. There would be no modification to the CHHA as a result of the

Step 6: Reevaluate Practicable Alternatives

Reevaluate the proposed action to first determine if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain values. Second, evaluate if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain unless it is the only practicable location (44 CFR Section 9.9)

Is the action still practicable at a floodplain site in light of the exposure to flood risk and ensuing disruption of natural values?

Yes ☒ No ☐ Not Applicable ☐

Is the floodplain site the only practicable alternative?

Yes ☒ No ☐ Not Applicable ☐

Is there any potential to limit the scope or size of the action to increase the practicability of previously-rejected non-floodplain sites or alternative actions?

Yes ☐ No ☒ Not Applicable ☐

Can minimization of harm to or within the floodplain be achieved using all practicable means?

Yes ☒ No ☐ Not Applicable ☐

Does the need for action in a floodplain clearly outweigh the requirements of Executive Order 11988?

Yes ☒ No ☐ Not Applicable ☐

Step 6 Remarks:

The proposed action is still practicable at a floodplain site (the only practicable alternative) in light of the exposure to flood risk and ensuing disruption of natural values; however, minimization of harm to or within the floodplain and wetlands

Step 7: Final Public Notice

Prepare and provide the public with a finding and public explanation of any final decision that the floodplain is the only practicable alternative (44 CFR Section 9.12).

Was notice provided as part of a disaster cumulative notice?

Yes ☐ No ☒ Not Applicable ☐

Was a project specific notice provided?

Yes ☒ No ☐ Not Applicable ☐

If yes, select the type of notice:

☐ Newspaper, name:

☐ Post Site, location:

☐ Broadcast, station

☐ Direct Mailing, area:

☐ Public Meeting, dates:

☐ Other:

Date of Public Notice: TBD

After providing the final notice, FEMA shall, without good cause shown, wait at least 15 days before carrying out the proposed action.

Step 8: Implementation

Review the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes.

Was grant conditioned on review of implementation and post-implementation phases to ensure compliance of Executive Order 11988?

Yes ☒ No ☐ Not Applicable ☐

The following conditions are not reflected in the Scope of Work and are required:

The Subapplicant must coordinate with the local floodplain administrator and obtain any required permits prior to initiating work. Coordination correspondence with the Floodplain administrator, including any required permits, and implementation documentation to any permit conditions need to be forwarded to the State and FEMA for inclusion in the permanent project files.

The Subapplicant is responsible for proper identification of wetlands. Under EO11990 - Protection of Wetlands, the Subapplicant is responsible for coordinating with and obtaining any required Section 404 Permit(s) from the USACE prior to initiating work. The Subapplicant shall comply with all conditions of the required permit. All coordination pertaining to these activities shall be documented and copies forwarded to the State and FEMA as part of the permanent project files.

The Subapplicant shall ensure that best management practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent