United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2016-F-0093

July 28, 2016

Holly Costa, Acting Chief, Regulatory Division
Department of the Army
San Francisco District, Corps of Engineers
1455 Market Street
San Francisco, California 94103

Subject: Biological Opinion for the California Department of Fish and Wildlife Fisheries Restoration Grant Program Regional General Permit 12 Renewal in San Luis Obispo, Monterey, Santa Cruz, and San Benito Counties, California

Dear Ms. Costa:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the San Francisco District of the U.S. Army Corps of Engineers (Corps) proposed renewal of a Regional General Permit (RGP), authorizing projects funded by the California Department of Fish and Wildlife's (CDFW) Fisheries Restoration Grant Program (Program), and its effects on the federally threatened California red-legged frog (*Rana draytonii*) and its designated critical habitat. We received your November 20, 2015 request for consultation on November 23, 2015. Your request and our response are made in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

You have also requested our concurrence that the proposed project may affect, but is not likely to adversely affect the federally endangered least Bell's vireo (*Vireo bellii pusillus*) and tidewater goby (*Eucyclogobius newberryi*), the federally threatened marbled murrelet (*Brachyramphus marmoratus*), and their respective designated critical habitats; however, based on communication between the Corps, CDFW, and Service staff, the Corps will withdraw the tidewater goby from the current consultation and will request a separate consultation if any program projects are determined to affect tidewater gobies in the future (J. Yee, Corps, in litt. 2016). In addition, least Bell's vireo critical habitat does not occur within the area covered under this consultation and will not be addressed further.

We have based this biological opinion on information that accompanied your November 20, 2015, request for consultation, including the associated attachments, proposed changes, and communications between the Corps, CDFW, and Service staff. We can make a record of this consultation available at the Ventura Fish and Wildlife Office (VFWO).

The current authorization would include Program activities in various locations for 5 years. This biological opinion addresses listed species and their habitats within the jurisdictional area of the

North Coast Division of the VFWO and the San Francisco District of the Corps. This area includes portions of San Luis Obispo, Monterey, Santa Cruz, and San Benito Counties. Species within other parts of the Program area included in the consultation request that do not pertain to these jurisdictional areas are the federally endangered California freshwater shrimp (*Syncaris pacifica*) and southwestern willow flycatcher (*Empidonax traillii extimus*), and the federally threatened northern spotted owl (*Strix occidentalis caurina*). Effects to these species will be addressed by the appropriate field offices or geographical divisions.

Informal Consultation for Least Bell's Vireo and Marbled Murrelet

Least Bell's Vireo
The California Natural Diversity Database (CNDDB) shows least Bell's vireo occurrences in Monterey, San Benito, and San Luis Obispo Counties, with the majority of occurrences noted along the Salinas River (CNDDB 2016a). Although there are records of least Bell's vireo in the counties covered under this consultation, this species is known to be primarily concentrated in southern California (CNDDB 2016a, Service 2006).

Impacts to the species have the potential to occur if riparian vegetation occurs during the spring and summer, or if disturbance occurs within a 0.25-mile radius of known or potential habitat. Removal of riparian vegetation during project activities typically does not occur; however, is minimal if it does. Harvesting of willow branches for revegetation at restoration sites may disturb existing vireo habitat, and noise from heavy equipment has the potential to cause nesting birds to abandon nests; however, project-related impacts are anticipated to be temporary and will be minimized to avoid adverse effects to the species. Project activities would not degrade existing habitat appreciably, and many projects would include restoration of riparian corridors

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the least Bell's vireo and its habitat. Our concurrence is based on least Bell's vireos being relatively uncommon in the project counties and the low likelihood of disturbance to least Bell's vireos with implementation of the following measures:

1. Work will not be conducted within 0.25 mile of any site with known or potential habitat for the Least Bell's Vireo between March 1 and September 15.

2. Harvest of willow branches at any site with potential habitat for the least Bell's vireo will not occur between March 1 and September 15.

3. The work window at individual work sites may be modified, if protocol surveys determine that nesting birds do not occur within 0.25 miles of the site during the breeding season.

4. The Corps will ensure that the grantee or responsible party is aware of this site-specific condition, and will inspect the work site before, during, and after completion of the action item.

5. If for some reason these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential impacts to least Bell's vireo or their habitat, then activity at that work site will be discontinued.

Marbled Murrelet

In the VFWO's area of jurisdiction, marbled murrelets and designated critical habitat are present in project areas within Santa Cruz County. Project areas may be located within or near marbled murrelet breeding habitat; however, marbled murrelets nest in old-growth forests and projects will not remove, degrade, or downgrade suitable marbled murrelet breeding habitat. Effects to marbled murrelets from project activities would likely be limited to noise disturbances during the breeding season if activities are conducted from March to August. Noise from heavy equipment has the potential to cause nesting birds to abandon nests. Limiting this type of work (e.g. culvert removal or placement of large woody debris) to the fall and winter months would reduce the potential adverse effects.

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect the marbled murrelet and designated critical habitat. Our concurrence is based on the low likelihood of disturbance to marbled murrelets and critical habitat and implementation of the following measures:

1. Restoration work in areas considered by the VFWO will not be conducted within 0.25 mile of occupied or un-surveyed suitable marbled murrelet habitat between March 24 and September 15.

2. The work window at individual work sites near suitable habitat may be modified if protocol surveys determine that habitat quality is low and occupancy is very unlikely.

3. If these mitigation measures cannot be implemented or the project actions proposed at a specific work site cannot be modified to prevent or avoid potential adverse effects to marbled murrelet or their habitat, then activity at that work site will be discontinued.

4. For projects contained in streams and watersheds included in a Habitat Conservation Plan, the mitigation measures contained within those Habitat Conservation Plans will be followed.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The purpose of the project is to restore anadromous fisheries habitat in non-tidal reaches of rivers and streams, improve watershed conditions affecting salmonid streams, and improve the survival, growth, migration, and reproduction of anadromous fish. The CDFW, through the

Program, uses funds mandated to restore degraded anadromous fish habitat in coastal streams for a variety of salmonid habitat restoration projects. Restoration projects must be consistent with procedures found in CDFW's California Salmonid Stream Habitat Restoration Manual, Third Edition (Flosi et al. 1998).

The Program supports a variety of projects from sediment reduction to watershed education throughout coastal California. Projects selected for funding have 2 years to implement the projects, and most of the habitat restoration activities take place during the dry summer season. The majority of this funding is awarded for habitat restoration projects that improve overhead cover, spawning gravels, and pool habitat; reduce or eliminate erosion and sedimentation impacts; screen diversions, and remove barriers to fish passage. Funds are also awarded for indirect habitat restoration activities.

Description of Proposed Activities

Habitat restoration activities and practices, covered in more detail below, include fish passage projects, bank stabilization treatments, upslope road decommissioning or repair, and replacement or modification of culverts that are barriers to fish passage.

Proposed structures would provide predator escape and resting cover, increase spawning habitat, improve upstream and downstream migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Some structures would be designed to reduce sedimentation, protect unstable banks, stabilize existing slides, provide shade, and create scour pools. Drawings are included as Attachment C.

The following habitat restoration activities conform with State laws and would be implemented consistent with the California Salmonid Stream Habitat Restoration Manual (Flosi et al., 1998). Detailed descriptions of these restoration activities can be found in that manual.

1. Instream habitat improvements may include cover structures, boulder structures and log structures.

2. Unanchored large woody debris may be used to enhance pool formation and improve stream reaches.

3. Fish screens would be used to prevent entrainment of juvenile salmonids in water diverted for agriculture, power generation, or domestic use, and are needed on both gravity flow and pump diversion systems.

4. Fish passage at stream crossings include activities to provide fish crossings where the crossing width is at least as wide as the active channel, with culvert passes designed to withstand a 100-year storm flow, and crossing bottoms buried below the streambed. Examples include replacement of barrier stream crossings with bridges, bottomless arch culverts, embedded culverts, and/or fords.

5. Fish passage improvements include removal of obstructions such as log jams, beaver dams, waterfalls and chutes and landslides. Suitable large woody debris removed from fish passage barriers that are not used by the project for habitat enhancement would be left within the riparian zone to provide a source for future recruitment of wood into the stream. Logjam barriers are typically less than 10 cubic yards.

6. Upslope restoration activities would be performed to reduce sediment delivery to anadromous streams. Activities include road decommissioning, road upgrading, and storm-proofing roads. Storm-proofing roads involves replacing high risk culverts with bridges, installing critical dips, installing armored crossings, and removing unstable side cast and fill materials from steep slopes.

7. Watershed and streambank stability activities would reduce sediment from watershed and stream bank erosion. Examples of these activities include slide stabilization, stream bank stabilization, boulder and log stream bank stabilization structures, tree revetment, native material revetment, mulching, revegetation, willow wall revetment, brush mattress, checkdams, brush checkdams, waterbars, and exclusionary fencing.

The following project types have been subsequently proposed and added to the overall project description (National Marine Fisheries Service 2015).

8. Off-channel/side channel projects for juvenile salmonid survival and rearing would reconnect existing and naturally formed side channel habitats, improve hydrologic connections, create new side- or off-channel habitats, and reconnect still water floodplain features using large woody debris or boulder structures.

9. Engineered logjams and complex wood jams may be used to recreate pool-forming features in riverine channels. These would generally be larger in structure and scale than wood placement projects identified in the California Salmonid Stream Habitat Restoration Manual.

10. Removal of small dams to improve fish passage may include removal of small permanent, flashboard, and seasonal dams that are not considered high risk. These projects may require the use of heavy equipment.

11. Water conservation projects to provide more efficient use of water extracted from stream systems to increase flows to benefit aquatic species may include off-channel water storage, changes in the timing or source of water supply, moving points of diversion, irrigation ditch lining and/or piping, stock-water systems, and agricultural tailwater recovery/management systems.

Program projects vary in size based on locations and the nature of projects. Projects implemented or proposed in the Program area in the past have, for example included

enhancement activities along 5 miles of the Carmel River in Monterey County (CDFW 2013); installation, operations, and maintenance of a stream flow gage in the Big Sur River, Monterey County (CDFW 2014); and treatment of salmonid rearing and refuge habitat along 0.57 mile along lower Scotts Creek in Santa Cruz County (CDFW 2016).

General Protective Measures for Biological Resources

These general measures are outlined in the application for the Department of the Army permit for the CDFW Fisheries Restoration Grant Program (CDFW 2015a) and the Mitigated Negative Declaration for the proposed project (CDFW 2015b)

1. All habitat improvements would be carried out in accordance with techniques in the California Salmonid Stream Habitat Restoration Manual (Flosi et al., 1998).

2. To avoid impacts to aquatic habitat, the activities undertaken in the restoration program typically occur during the summer dry season. This is generally between June 15 and November 1 or the first rainfall.

3. Location of staging/storage areas for equipment, materials, fuels, lubricants, and solvents, will be located outside of the stream's high water channel and associated riparian area. The number of access routes, number and size of staging areas, and the total area of the work site activity will be limited to the minimum necessary to complete the restoration action. To avoid contamination of habitat during restoration activities, trash will be contained, removed, and disposed of throughout the project.

4. Any equipment work within the stream channel will be performed in isolation from the flowing stream. If there is any flow when the work is done, the contractor will construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam.

5. If it is necessary to divert flow around the work site either by pump or by gravity flow, the suction end of the intake pipe will be fitted with fish screens meeting CDFW and the National Oceanic and Atmospheric Administration criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state will be disposed of in an upland location where it will not drain directly into any stream channel.

6. For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), then measures will be put in place immediately downstream of the work site to capture suspended sediment.

7. The spread or introduction of invasive exotic plants will be avoided to the maximum extent possible.

8. Wildlife encountered during the course of construction, will be allowed to leave the construction area unharmed.

9. Work sites containing turtle or amphibian species will use exclusion measures to prevent impacts to any individuals that could occur on the site.

10. Ground-disturbance that has the potential to affect cultural resources will be avoided through implementation of mitigation measures, including completing cultural resource surveys, fencing, on-site monitoring, and redesigning proposed work to avoid disturbance of cultural resources.

11. All equipment operators will be trained in the procedures to be taken should an accident occur. Prior to the onset of work, CDFW will ensure the grantee has prepared a Spill Prevention/Response plan to help avoid spills and allow a prompt and effective response should an accidental spill occur. All workers will be informed of the importance of preventing spills. Operators will have spill clean-up supplies on site and be knowledgeable in their proper deployment.

12. All staging, fueling, and maintenance of vehicles and other equipment will occur at least 65 feet from any riparian habitat or water body. Fuel absorbent mats will be placed under pumps while fueling. The Corps and CDFW will ensure contamination of habitat does not occur during such operations.

13. To control erosion during and after project implementation, CDFW will implement best management practices, as identified by the appropriate Regional Water Quality Control Board.

14. If CDFW determines that turbidity/siltation levels resulting from an activity or activities constitute a threat to aquatic life, all activities associated with the turbidity/siltation will cease until effective CDFW approved sediment control devices are installed and/or abatement procedures are implemented.

Protective Measures for California Red-Legged Frog

The following measures are proposed to minimize project-related effects to California red-legged frog (CDFW 2015b).

1. Project activities in potential California red-legged frog habitat will be restricted to the period between July 1 and October 15. The work window at individual work sites may be modified, if protocol surveys determine that this species is not present and is not likely to be present during construction.

2. At least 15 days prior to the onset of project activities, CDFW will submit the names(s) and credentials of biologists who would conduct activities specified in the following

measures. No project activities will begin until CDFW has received written approval from the Service that the biologist(s) is qualified to conduct the work.

3. Service-approved biologist(s) who handle California red-legged frogs will ensure that their activities do not transmit diseases. To ensure that diseases are not conveyed between work sites by the Service-approved biologist, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (Appendix A) will be followed at all times.

4. A CDFW monitoring plan will be developed to determine the level of impacts to the California red-legged frog associated with Program funded activities in the area. The monitoring plan will include a standardized mechanism to report any observations of dead or injured California red-legged frog to the appropriate Corps and Service offices.

5. A Service-approved biologist will survey the project site at least 2 weeks before the onset of activities. If California red-legged frogs are found in the project area and these individuals are likely to be killed or injured by work activities, the Service-approved biologist will allow sufficient time to move them from the site before work activities resume. Only Service-approved biologists will conduct capture, handling, and monitoring activities for California red-legged frogs.

6. Before any project-related activities, the approved biologist must identify appropriate areas to receive California red-legged frog adults and tadpoles from the project areas. These areas must be in proximity to the capture site, contain suitable habitat not affected by project activities, and be free of exotic predatory species, i.e. bullfrogs (*Rana catesbiana*), nonnative crayfish (*Procambarus* spp., *Pacifastacus* spp., etc.) to the best of the approved biologist's knowledge.

7. Prior to the onset of project activities, 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 importance of the California red-legged frog and its habitat, the general measures being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

8. A Service-approved biologist will be present at the work site until removal of California red-legged frogs, instruction of workers, and habitat disturbance has been completed. The Service-approved biologist will have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and Service during review of the proposed action. If work is stopped, the Service-approved biologist or on-site biological monitor will notify the Corps and the Service immediately.

9. If California red-legged frogs are found and these individuals are likely to be killed or injured by work activities, the Service-approved biologists must be allowed sufficient time to move them from the site before work activities resume. The Service-approved biologist will relocate the California red-legged frogs the shortest distance possible to one of the predetermined areas. The Service-approved biologist will maintain detailed records of any individuals that are moved (e.g., size, coloration, any distinguishing features, photographs (digital preferred) to assist in determining whether translocated animals are returning to the point of capture. Only California red-legged frogs at risk of injury or death by project activities may be moved.

10. If a work site is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 0.125 inch to prevent California red-legged frogs from entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during construction activities and eliminate the possibility of ponded water. Upon completion of construction activities, any barriers to flow will be removed in a manner that would allow flow to resume with the lease disturbance to the substrate.

11. Ponded areas will be monitored for California red-legged frogs that may become trapped. Any trapped California red-legged frog will be relocated to a pre-determined receiving area by a Service-approved biologist.

12. A Service-approved biologist will permanently remove from the project area, any individuals of exotic species, such as bullfrogs, centrarchid fishes, and non-native crayfish to the maximum extent possible. The biologist will have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.

13. The CDFW or Corps will report any observation of effects to California red-legged frogs associated with the implementation of Program projects in accordance with RGP12. The Service and the Corps must review the circumstances surrounding the incident to determine whether any patterns of repeated authorized or unauthorized activities are occurring that may indicate that additional protective measures are required. If, after completion of the review, the Corps and the Service agree that additional protective measures are required and can be implemented within the existing scope of the action, the Corps must require the CDFW to implement the agreed-upon measures within a reasonable time frame; if the corrective actions cannot be implemented with the scope of the existing action, the Corps and Service will determine whether re-initiation of consultation is appropriate.

14. During all activities at project work sites, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

15. If these mitigation measures cannot be implemented or the project activities proposed at a specific work site cannot be modified to prevent or avoid potential impacts to California red-legged frog or its habitat, then project activity at that work site will be discontinued.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Endangered Species 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 range-wide condition of the California red-legged frog, the factors responsible for that condition, and its 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 California red-legged frog; (3) the Effects of the Action, which determines 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 Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of designated critical habitat. A final rule revising the definition of "destruction or adverse modification of critical habitat" was published on February 11, 2016 (81 FR 7214). 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[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 physical or biological features; 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 adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which describes the range-wide condition of designated critical habitat for the California red-legged frog in terms of the essential physical or 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 essential physical and biological features 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 essential physical and biological features and how that will influence the recovery role of affected critical habitat units.

1 The critical habitat rule for California red-legged frog uses the term "primary constituent elements" (PCEs) to describe the "physical or 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.

STATUS OF THE SPECIES AND ITS CRITICAL HABITAT

The California red-legged frog was federally listed as threatened on May 23, 1996 (Service 1996). The Service published a recovery plan in 2002 (Service 2002). Critical habitat was designated in 2010 (Service 2010a).

The California red-legged frog was once recognized as two conspecific subspecies, *Rana aurora aurora* and *Rana aurora draytonii*. Recent genetic analysis of the *Rana aurora/draytonii* complex has concluded that the two *Rana aurora* subspecies are in fact separate species (Shaffer et al. 2004, Frost et al. 2006, as cited in Service 2009); this change in nomenclature was acknowledged in the final rule for revised designation of critical habitat for the California red-legged frog (Service 2010a).

The California red-legged frog is the largest native frog in the western United States, ranging from 1.5 to 5.1 inches in length. The abdomen and hind legs of adults are largely red; the back is characterized by small black flecks and larger, irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers, and dorsolateral folds are prominent on the back. Tadpoles range from 0.6 to 3.1 inches in length and are dark brown and yellow with dark spots.

California red-legged frogs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs. Deep pools with dense stands of overhanging willows and an intermixed fringe of cattails are considered optimal habitat. Eggs, larvae, transformed juveniles, and adults also have been found in ephemeral creeks and drainages and in ponds that do not have riparian vegetation. 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. Some California red-legged frogs have moved long distances overland between water sources during winter rains. Adult California red-legged frogs have been documented to move more than 2 miles in northern Santa Cruz County "without apparent regard to topography, vegetation type, or riparian corridors" (Bulger et al. 2003). Most of these overland movements occur at night. In another study conducted at the Point Reyes National Seashore and Golden Gate National Recreation Area in Marin County, radio tagged frogs often moved in a straight line between breeding and upland habitats up to 1.7 miles, again with no apparent regard to topography. Some of these frogs remained at breeding ponds all year, while others moved to non-breeding areas, even when the breeding sites retained water (Fellers and Kleeman 2007).

California red-legged frogs breed from November through March with earlier breeding records occurring in southern localities. California red-legged frogs are often prolific breeders, typically laying their eggs during or shortly after large rainfall events in late winter and early spring. Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water. Egg masses contain about 2,000 to 5,000 moderate-sized (0.08 to 0.11 inch in diameter), dark reddish-brown eggs. Embryos hatch 6 to 14 days after fertilization. Larvae generally undergo metamorphosis 3.5 to 7 months after hatching, but some larvae overwinter and metamorphose after up to 13 months (Fellers et al. 2001). Tadpoles

probably experience the highest mortality rates of all life stages, with less than 1 percent of eggs laid reaching metamorphosis. Sexual maturity normally is reached at 3 to 4 years of age. California red-legged frogs may live 8 to 12 years. Juveniles can be active diurnally and nocturnally, whereas adults are mainly nocturnal.

The diet of California red-legged frogs is highly variable. Invertebrates are the most common food items for adults, although vertebrates such as Pacific treefrogs (*Hyla regilla*) and California mice (*Peromyscus californicus*) can constitute over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Larvae eat algae and detritus.

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 (Jennings and Hayes 1985, Storer 1925). The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, California red-legged frogs were found throughout the Central Valley and Sierra Nevada foothills. California red-legged frogs have been documented in 46 counties in California, but now remain in only 238 streams or drainages in 31 counties in California and one region in Baja California, Mexico (Grismer 2002, Fidenci 2004, Smith and Krofta 2005, Service 2009).

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). Ongoing causes of decline include direct habitat loss due to stream alteration and disturbance to wetland areas, indirect effects of expanding urbanization, and competition or predation from non-native species. Other causes of declines in amphibian species have been studied by Davidson et al. (2001). Results indicate that ozone depletion resulting in an increase in ultraviolet radiation is a potential factor of amphibian decline. In addition, upwind pesticides and/or other chemicals used for agricultural purposes have been identified as factors in a number of declining California amphibians.

An additional threat affecting amphibians worldwide is the chytrid fungus *Batrachochytrium dendrobatidis*. *Batrachochytrium dendrobatidis* causes chytridiomycosis, a skin disease that has been found to disrupt osmoregulatory function in the skin of amphibians, resulting in an imbalance of electrolytes and death (Voyles et al. 2009). Chytridiomycosis in amphibians may be marked by deformed mouthparts in tadpoles, wherein most infected tadpoles will die at metamorphosis (Service 2002). Infected boreal toads (*Anaxyrus boreas boreas*) showed few clinical signs of the disease but many appeared weak or lethargic, exhibited excessive shedding of skin and were reluctant to flee at the approach of humans (U.S. Geological Service 2000, as cited in Service 2002). Chytrid fungi are widespread in the environment where they act as decomposers of keratin, chitin, cellulose, and other plant material, and are known parasites of fungi, algae, higher plants, protozoa, invertebrates, and most recently in vertebrates. Chytrid fungi reproduce asexually by means of minute, fragile, motile spores, and are probably spread directly from amphibian to amphibian in water. These fungi most likely move from one water

source to another on migrating amphibians, waterbirds, or flying insects (Daszak et al. 1999 as cited in Service 2002).

Since its discovery in 1998, chytrid fungus has likely been responsible for die-offs of a number of amphibian species, including remaining populations of the endangered boreal toad (*Bufo boreas boreas*) in the southern Rocky Mountains, and Chiricahua leopard frogs (*Rana chiricahuensis*) in Arizona (Colorado Herpetological Society 2000, as cited in Service 2002). Occurrences of infection have been observed in two amphibian species in the Sierra Nevada, the mountain yellow-legged frog (*Rana muscosa)* and the Yosemite toad (*Bufo canoris*). An infected California red-legged frog tadpole was collected in Calabasas Pond on the Ellicott Slough National Wildlife Refuge in Santa Cruz County (Service 2002).

The chytrid fungus *Batrachochytrium dendrobatidis* is now recognized for its ability to spread quickly through amphibian populations and infect numerous species, causing high rates of mortality, and persisting at low host densities (Voyles et al. 2009). These recent findings validate the importance of taking precautions to prevent the spread of chytrid fungus or any disease agent into and/or between amphibian populations.

The recovery plan and listing rule discuss the following threats to California red-legged frog in further detail: the present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or education purposes; disease and predation; the inadequacy of existing regulatory mechanisms; and other natural, or manmade factors affecting their continued existence (Service 1996, 2002)

Critical Habitat for the California Red-legged Frog

On March 17, 2010, the Service designated critical habitat for the California red-legged frog (Service 2010a). In total, 1,636,609 million acres were designated as critical habitat for the California red-legged frog in 27 California counties. The current designation better reflects the lands containing those essential habitat features necessary for the conservation of the California red-legged frog than did earlier designations that had been subject to litigation. A detailed discussion of the methods used in developing proposed critical habitat can be found in the final rule (Service 2010a).

We have identified the physical or biological features, or PCEs, essential to the conservation of the species that 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 (Service 2010a). 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 part 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 species 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 PCE 1, 2, or 3 as essential to the conservation of the species.

Recovery Objectives

The recovery plan for the California red-legged frog describes the overall strategy for recovery (Service 2002):

1. Protecting existing populations by reducing threats;
2. restoring and creating habitat that will be protected and managed in perpetuity;
3. Surveying and monitoring populations and conducting research on the biology of and threats to the species; and reestablishing populations of the species within its historic range.

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). For the purposes of this

biological opinion, we consider the action area to include all areas where people and equipment would be working within project footprints. This includes any areas subject to Program activities in immediate work areas, downstream and upstream areas indirectly affected by Program activities, and staging and access areas.

The exact locations of Program activities are not known at this time. All of the activities will take place in counties within the jurisdiction of the San Francisco District of the Corps and the VFWO. This includes various watersheds in the counties of San Luis Obispo, Monterey, Santa Cruz, and San Benito. The CDFW will provide the Service with notification of specific project information including the names and types of projects to be conducted, and the locations of projects including creeks, watersheds, cities or towns at least 90 days prior to project implementation. Notification will be made via mail or electronic mail to the appropriate contact at the VFWO (CDFW 2015b).

Habitat Characteristics and Existing Conditions of the Action Area

Program activities typically occur in watersheds that have been subject to significant levels of logging, road building, mining, grazing, and other activities that have reduced the quality and quantity of stream habitat available for native anadromous fish. Coastal watersheds previously dominated by mature redwood (subfamily Sequoioideae) and Douglas fir (*Pseudotsuga menziesii*) forests contain extensive road and skid trail systems from tractor logging. These previously mature and forested areas are now found in various seral stages of vegetative recovery and are predominate in the coastal Program region. Inland locations are usually in watersheds dominated by pine (*Pinus* spp.) and fir (*Abies* spp.) forests, often with steep unstable terrain; some inland locations are in valley areas in agricultural use.

Previous Consultations in the Action Area

In 2004 and again in 2010, we issued biological opinions for the Fisheries Restoration Grant Program RGP for restoration activities (Service 2004, 2010b). Annual reporting from 2010-2015 indicate California red-legged frogs were not observed or in need of relocation during activities in VFWO's north coast counties (CDFW 2016, 2014, 2013, 2011).

Condition (Status) of the Species in the Action Area

California red-legged frog occurs in all counties considered in this biological opinion. The California Natural Diversity Database (CNDDB) reports the following historical and current occurrences for California red-legged frogs in these counties (CNDDB 2016b).

Table 1. Number of California red-legged frog occurrences by county

COUNTY	PRESUMED EXTANT	POSSIBLY EXTIRPATED
San Luis Obispo	126	2
Monterey	102	0
Santa Cruz	77	0
San Benito	48	0

Table 2. Number of streams per county where California red-legged frogs are present, post-1985 (Service 2002).

COUNTY	NUMBER OF STREAMS
San Luis Obispo	30
Monterey	32
Santa Cruz	17
San Benito	5

San Luis Obispo County
In San Luis Obispo County, California red-legged frogs are found in many streams, stock ponds, dune ponds, and springs on the coastal plain and western slopes of the Santa Lucia Range from San Carpoforo Creek in the north to the Santa Maria River in the south. Sites include Pico, Little Pico, and Toro Creeks; Pico Pond; and San Simeon, Santa Rosa, Chorro, and Arroyo Grande Creeks. On Camp San Luis Obispo of the California National Guard, frogs occur in Whiskey Spring, tributaries to Chorro Creek and Chorro Reservoir, and other sites (Jennings et al. in litt. 1992, U.S. Fish and Wildlife Service 1996a). Additional details and locations are available in the CNDDB records for the species in San Luis Obispo County (CNDDB 2016b)

Monterey County
This species is widespread in Monterey County; nearly all coastal drainages from Garrapata Creek south to Salmon Creek, including the Little and Big Sur drainages and the vicinity of Pfeiffer Beach, support frogs. Some of these locations include the Salinas River, Elkhorn Slough watershed, and Carmel River. Additional details and locations are available in the CNDDB records for the species in Monterey County (CNDDB 2016b).

Santa Cruz County
Almost all coastal drainages from the Santa Cruz - San Mateo County line south to the City of Santa Cruz are occupied by California red-legged frogs (CNDDB 2016b, EIP Associates 1993). Some locations include Scott Creek, Liddell Creek, Wilder Ranch State Park, and Watsonville Slough. Additional details and locations are available in the CNDDB records for the species in Santa Cruz County (CNDDB 2016b).

San Benito County
In San Benito County, California red-legged frogs are found in a number of waterways, including Quien Sabe and Tres Pinos Creeks, the Pajaro and San Benito Rivers, and the general vicinity of Hollister in Santa Ana Creek, Tequisquita Slough, and the Hollister Hills State Vehicular Recreation Area. Numerous populations exist in Pinnacles National Park, particularly in Chalome and Bear Gulch Creeks (CNDDB 2016b, M. Jennings in litt. 1998). Additional details and locations are available in the CNDDB records for the species in San Benito County (CNDDB 2016b).

Recovery
The action area is located primarily in recovery units 5 and 6: Unit 5, Central Coast and Unit 6, Diablo Range and Salinas Valley. Unit 5 includes the following watersheds: San Francisco Coastal South (partial), San Lorenzo-Soquel, Central Coastal, and Carmel. The recovery plan identified Unit 5 as supporting the greatest number of occupied drainages. Unit 6 includes the Panoche-San Luis Reservoir, Pajaro, Upper Gatos, Estrella, Tulare-Buena Vista Lakes (partial), Carrizo Plain, Alisal-Elkhorn Sloughs, and Salinas Watersheds.

Within recovery units, several areas are identified as core areas where recovery actions will be focused. Core areas are distributed throughout portions of the historic and current range and represent a system of areas that will allow for long-term viability of existing populations and reestablishment of populations within the historic range when protected and managed for California red-legged frogs. The core areas were chosen for focused recovery either because they represent viable populations (possibly even source populations for larger metapopulations), or because the locations will contribute to the connectivity of habitat and thus increase dispersal opportunities between populations. Preservation and enhancement of each core area is important to maintain and expand the distribution of California red-legged frog populations range-wide. Core areas will require long-term protection and management so existing and reestablished populations remain viable. Recovery and delisting will be facilitated by meeting recovery criteria in all core areas (Service 2002).

The action area includes the following core areas by county:

San Luis Obispo County
Core Areas: Estero Bay, Estrella River, Arroyo Grande Creek

Monterey County
Core Areas: Watsonville Slough–Elkhorn Slough, Carmel River–Santa Lucia

Santa Cruz County
Core Areas: Watsonville Slough–Elkhorn Slough, South San Francisco Bay

San Benito County
Core Areas: Santa Clara Valley, Gabilan Range, East San Francisco Bay

Condition (Status) of Critical Habitat in the Action Area
As discussed in the Status of the Species section, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical and biological features essential to the conservation of the species that may require special management considerations or protection to be the PCEs laid out in the appropriate quantity and spatial arrangement essential to the conservation of the species. The PCEs for the California red-legged frog are (1) aquatic breeding habitat, (2) aquatic non-breeding habitat, (3) upland habitat, and (4) dispersal habitat (Service 2010). The proposed project has the

potential to occur in the following critical habitat units. California red-legged frogs are present in these units (Service 2010).

Table 3. Critical habitat in the action area

UNIT	ACRES	WATERSHEDS	PCEs and HABITAT
SLO-2	82,673	Arroyo de los Chinos, Lower Arroyo de la Cruz, Arroyo del Corral, Oak Knoll Creek, Broken Bridge Creek, Pico Creek, Upper San Simeon Creek, Lower San Simeon Creek, Steiner Creek, Upper Santa Rosa Creek, Lower Santa Rosa Creek, and Lower Green Valley Creek.	PCEs 1, 2, 3, 4 Provides connectivity Contains high-quality habitat
SLO-3	116,517	Old Creek, Whale Rock Reservoir, the southern portion of Hale Creek, Morro Bay, San Luisito Creek, the western and southern portions of Santa Margarita Creek, Choro Reservoir, Stenner Lake, Reservoir Canyon, Trout Creek, and Big Falls Canyon.	PCEs 1, 2, 3, 4 Provides connectivity
SLO-4	34,463	Horse Mesa, Douglas Canyon, American Canyon, and Coyote Hole.	PCEs 2, 3, 4 Provides connectivity
MNT-1	519	Eastern edge of the Elkhorn Slough watershed and the western edge of the Strawberry Canyon watershed	PCEs 1, 2, 3, 4 Large estuary/freshwater slough system
MNT-2	119,492	Southern portion of Carmel Bay, Carmel Valley, Robinson Canyon, San Jose Creek, Las Garces Creek, Hitchcock Canyon, the western portion of Lower Tularcitos Creek, Klondike Canyon, Black Rock Creek, Pine Creek, Danish Creek, Cachagua Creek, Lower Finch Creek, Bear Canyon, Bruce Fork, and Miller Canyon.	PCEs 1, 2, 3, 4 Largest unit within Monterey County
MNT-3	27,542	Point Sur, Big Sur River, Ventana Creek, Sycamore Canyon, and Partington Creek.	PCEs 1, 2, 3, 4 Provides connectivity Largest coastal habitat within Monterey Bay region
SCZ-1	72,249	Green Oaks Creek, Waddell Creek, East Waddell Creek, Scott Creek, Big Creek, Little Creek, San Vicente Creek, Laguna Creek, and Majors Creek	PCEs 1, 2, 3, 4 Provides connectivity Contains high-quality habitat
SCZ-2	4,057	Portions of the Corralitos Lagoon and mouth of the Pajaro River	PCEs 1, 2, 3, 4 Provides connectivity
SNB-1	36,294	Southern portions of San Justo Reservoir, Northeast Hollister Hills, and Upper Bird Creek; Left Fork Bird Creek; Sulfur Canyon; and the western portions of Arroyo Hondo, Willow Grove School, Paicines Ranch, and Lower Pescadero Creek	PCEs 1, 2, 3, 4 Provides connectivity between the coast plain and inner Coast Range
SNB-2	17,356	Tres Pinos Creek drainage within the Antelope Creek watershed	PCEs 1, 2, 3, 4 Expected to prevent further fragmentation of habitat in this portion of the range
SNB-3	63,753	Gloria Lake, Bickmore Canyon, Sulfur Creek, and George Hansen Canyon	PCEs 1, 2, 3, 4 Expected to prevent further fragmentation of habitat in this portion of the range

EFFECTS OF THE ACTION

Effects of the Proposed Action on California Red-Legged Frog

Direct effects to California red-legged frog adults, sub-adults, and/or tadpoles in the footprint of projects would include injury or mortality from being crushed by earth-moving equipment, construction debris, and worker foot traffic. Measures proposed by the Corps, including restricting timing of projects to the dry season in California red-legged frog habitat, pre-project surveys, training of construction personnel, minimizing and clearly demarcating the boundaries of the project areas, and monitoring, would avoid or minimize these effects. Because ground-disturbing activities in potential California red-legged frog habitat will be restricted to the period between July 1 and October 15, California red-legged frog egg masses should not be encountered.

Relocating California red-legged frogs out of harm's way would reduce injuries or mortalities due to project activities; however, California red-legged frog could be injured or killed from improper handling, containment, transport of individuals, or releasing them into unsuitable habitat (e.g., where nonnative predators are present). Ensuring biologists are qualified and pre-approved by the Service would minimize these effects.

Releasing amphibians following a period of captivity, during which they can contract infections or disease, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can be carried between habitats on the hands, footwear, or equipment of field personnel, spreading them to areas that have had little or no prior exposure. Relocation of California red-legged frogs captured from the project area could contribute to the spread of chytrid fungus or other disease. In addition, infected equipment or footwear could introduce chytrid fungus into areas where it did not previously occur. Following the Declining Amphibian Populations Task Force (DAPTF) Fieldwork Code of Practice (DAPTF 1998) (Appendix A), in conjunction with the use of a Service-approved biologist would minimize these effects.

Work activities, including noise and vibration, may cause California red-legged frogs to leave the work area, increasing the potential for predation and/or desiccation. Measures proposed by the Corps, including restricting timing of projects to the dry season in California red-legged frog habitat, pre-project surveys, training of construction personnel, minimizing and clearly demarcating the boundaries of the project areas, and monitoring, would avoid or minimize these effects.

California red-legged frogs are more likely to disperse in mesic conditions. Because the projects would be conducted in the dry season in California red-legged frog habitat, dispersal during project activities is less likely; however, California red-legged frog may disperse if an unseasonable rain event occurs. Unseasonable and substantial rainfall events (greater than 0.5 inch of rain in a 24-hour period) could make California red-legged frog vulnerable to the effects of project activities.

Tadpoles may be injured or killed if entrained by pump or water diversion intakes. The Corps proposes to screen intakes with wire mesh no larger than 0.125 inch to prevent California red-legged frog from entering the pump system. This measure would greatly reduce the potential for tadpoles to become caught in the inflow.

Ponded water can create favorable habitat for nonnative predators such as bullfrogs, crayfish, and centrarchid fishes, exposing California red-legged frogs to higher than normal rates of predation. The Corps proposes to minimize the potential for ponding by releasing diverted water during construction activities. Any areas that may become ponded will be monitored for California red-legged frogs. These measures would minimize the effects to California red-legged frog due to ponded water.

Trash left during or after project activities may attract predators to work sites that could injure or kill California red-legged frogs. Raccoons (*Procyon lotor*), coyotes (*Canis latrans*), and feral cats (*Felis catus*) are attracted to trash and prey opportunistically on California red-legged frogs. Properly containing and removing trash from the work site regularly would minimize this effect.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality or upland habitat, potentially injuring California red-legged frogs. Proposed measures to ensure spill prevention and response plans are in place and performing all fueling and maintenance activities at least 65 feet from any riparian habitat or waterbody would reduce the minimize the potential for these impacts.

Work in live streams or in floodplains could cause siltation downstream. This siltation could alter the quality of the habitat to the extent that use by California red-legged frogs is precluded. Implementing best management practices for erosion and sediment control and restricting work areas would minimize these effects.

Uninformed workers could disturb, injure, or kill California red-legged frogs if they are present and are not detected. Holding a training session for all personnel on California red-legged frog biology, habitat, and protective measures in place would minimize the potential for these impacts.

Program projects are intended to provide additional habitat for and increased populations of salmonids. The effects of increasing numbers of potential predators on California red-legged frogs cannot be accurately predicted. Although we anticipate that some predation of California red-legged frogs by salmonid fishes may occur, this level of predation is not expected to appreciably alter the population structure within the project areas. The recovery plan identifies coho salmon (*Oncorhynchus kisuch*) and steelhead trout (*O. mykiss*) as species associated with the California red-legged frog and its habitat, emphasizing multi-species protection strategies, recognizing interactions of organisms and their environments. Restoration and protection of processes that maintain diversity and healthy ecosystems is a goal (Service 2002). Although some native predators are identified in the listing rule, salmonid species are not named. Nonnative predators, particularly bullfrogs and crayfish, are of particular concern (Service 1996).

Restoration and enhancement of riparian vegetation in Program areas is likely to increase the number and quality of forage and cover sites and the diversity and abundance of prey species for California red-legged frogs. The Program will also contribute to California red-legged frog populations by removing non-native predators such as bullfrogs and crayfish. The proposed authorization is expected to improve conditions for California red-legged frog overall.

Effects of the Proposed Action on Critical Habitat of the California Red-Legged Frog
As described in Table 3 in the Environmental Baseline, the critical habitat units in the action area contain the physical and biological features that are essential for the conservation of the species. The units are currently occupied by California red-legged frogs and contain permanent and ephemeral aquatic habitat for breeding and non-breeding activities (PCEs 1 and 2), and upland habitat for foraging, dispersal, and shelter (PCEs 3 and 4). Some of these units include areas with high quality habitat, while others provide important connectivity between habitats or unique habitat characteristics. We consider the PCEs in the action area to be functioning at an overall high level.

Project locations and size will vary throughout the life of the RGP. Specific locations and project areas are not known until projects are awarded grant funding, and the CDFW provides the Service a notification of projects for each individual year. Based on projects funded in the past, the size of the projects are small relative to the acres of critical habitat in the action area.

Access and construction activities, including excavation and removal of vegetation, may temporarily reduce the quality and/or availability of foraging, dispersal, and sheltering habitat for California red-legged frogs. Creek diversion and dewatering may temporarily reduce the quality and/or availability of permanent and ephemeral aquatic habitat for California red-legged frog. Working in the dry season, restricting the size of project areas, and implementing best management practices for dewatering and erosion control will help minimize effects to these habitats. Ultimately, creek stabilization and restoration will reduce erosion in and downstream of the action area, and placement of structures such as large woody debris would create sheltering habitat, enhance pool formation. Though Program projects may cause temporary impacts to critical habitat during implementation, these projects are expected to enhance habitat for California red-legged frogs and improve the condition of critical habitat in these stream reaches overall.

Effects on Recovery
As discussed in the Environmental Baseline, recovery core areas represent a system of areas that will allow for long-term viability of existing populations and reestablishment of populations within the historic range when protected and managed for California red-legged frogs. Though individual California red-legged frog may be affected by Program activities and habitat would be temporarily disturbed, the Program projects will ultimately restore and create habitat. The Program also reduces threats by removal of nonnative predators such as bullfrogs and crayfish. The enhancement of these stream reaches for salmonids is likely to support productivity of California red-legged frog populations in these areas.

The recovery plan identifies coho salmon and steelhead trout species as associated with California red-legged frog. The recovery plan reiterates the Service's commitment to applying an ecosystem approach to conservation, with restoration and protection of processes that maintain diversity and healthy ecosystems as a goal. The restoration and protection of associated salmonid species is expected to contribute to the recovery of the California red-legged frog.

Summary of Effects

The proposed project may cause adverse effects to California red-legged frogs if they are within the project area during project activities and not detected by biological monitors or construction personnel, or if they are found and relocated. Although Program activities are proposed to occur in the dry season, California red-legged frogs may disperse if an unseasonable rain event occurs. Unseasonable rain events could make California red-legged frog vulnerable to the effects of project activities if they are dispersing through work areas and are not detected.

Critical habitat in the action area is occupied and contains all four PCEs for the species. These critical habitat units contain high-quality habitat, providing connectivity and preventing further fragmentation. Program activities may temporarily reduce the quality and/or availability of foraging, dispersal, and sheltering habitat, and may temporarily reduce the quality and/or availability of permanent and ephemeral aquatic habitat for California red-legged frogs. Though Program projects may cause temporary impacts to critical habitat during implementation, these projects are expected to enhance habitat for California red-legged frogs and maintain or improve the condition and function of critical habitat in these stream reaches overall.

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.

Currently, a habitat conservation plan (HCP) is in development for the City of Santa Cruz (City) Water Department in Santa Cruz County. This plan is for the construction, operation, and maintenance of water supply facilities, the construction and maintenance of roads, waste management activities, storm water management, and the operation and maintenance of recreation and open space areas. The total watershed and water service/urban areas containing the City's activities are approximately 176 square miles and include three geographically distinct areas: the North Coast watersheds, the San Lorenzo River watershed, and the Santa Cruz urban center, as well as the water service areas outside of the City limits; however, California red-legged frogs occur only within the North Coast Unit of the plan area. Program project areas may overlap within watersheds covered in the City's habitat conservation plan.

California red-legged frog is a covered species under the City's HCP. The HCP identifies potential direct and indirect effects to California red-legged frog and critical habitat due to

construction, operations, and maintenance activities. Potential effects include habitat disturbance and relocation of California red-legged frog in the work areas. The HCP provides measures to avoid and minimize effects to California red-legged frog, and a strategy to mitigate for impacts that cannot be avoided.

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 California red-legged frog's status as the basis to assess the overall effect of the proposed action on the species.

Reproduction

The majority of habitat restoration projects under the Program would improve overhead cover, spawning gravels, and pool habitat; reduce or eliminate erosion and sedimentation impacts; screen diversions; and remove barriers to fish passage for salmonids. California red-legged frog aquatic breeding habitat includes slow moving streams or pools within streams and other ephemeral or permanent water bodies that are not subject to sedimentation. Program projects may cause temporary disturbance to California red-legged frog individuals and their habitat; however, the projects would create or improve breeding habitat, or at the very least, improve or create aquatic non-breeding habitat. Aquatic non-breeding habitat is a PCE that provides for shelter, foraging, predator avoidance, and aquatic dispersal habitat for juveniles and adults. Based on these factors, we conclude that Program projects will not reduce the reproductive capacity of the species; instead, the Program is expected provide benefits toward the reproductive capacity of California red-legged frogs.

Numbers and Distribution

Although the proposed action may cause adverse effects to individual California red-legged frogs if they are present in the project areas, we do not expect these effects would result in a reduction in numbers or distribution to the species as a whole. As described in the Status of the Species, California red-legged frogs are present in all four counties within multiple watersheds. The CNDDB lists numerous extant occurrences for the species. The critical habitat units in the Program areas contain all four PCEs and contain high-quality habitat, providing connectivity and preventing further fragmentation. Though Program projects may cause temporary disturbance to California red-legged frog individuals and their habitat, the projects would create or improve habitat for shelter, foraging, predator avoidance, aquatic dispersal, and potentially for breeding. Based on these factors, we conclude that Program projects will not appreciably reduce the numbers and/or distribution of California red-legged frog range-wide and may facilitate an increase in numbers and distribution with restoration of habitat.

Recovery

As discussed in the Status of the Species, protection and recovery of the California red-legged frog will require reduction of the threats from the present or threatened destruction, modification,

or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or education purposes; disease and predation; the inadequacy of existing regulatory mechanisms; and other natural, or manmade factors affecting their continued existence; habitat loss and alteration being the primary factors negatively affecting the California red-legged frog throughout its range.

The overall strategy for recovery of the California red-legged frog is (1) protecting existing populations by reducing threats; (2) restoring and creating habitat that will be protected and managed in perpetuity; and (3) surveying and monitoring populations and conducting research on the biology of and threats to the species; and (4) reestablishing populations of the species within its historic range (Service 2002).

Though individual California red-legged frog may be affected by Program activities and habitat that would be temporarily disturbed, the Program projects will ultimately restore and create habitat. The Program also reduces threats by removal of nonnative predators such as bullfrogs and crayfish. The enhancement of these stream reaches for salmonids is likely to support productivity of California red-legged frog populations in these areas. The recovery plan recognizes that salmonid species and their habitats are associated with California red-legged frogs, and reiterates the Service's commitment to applying an ecosystem approach to conservation, with restoration and protection of processes that maintain diversity and healthy ecosystems as a goal. Habitat restoration for salmonids will benefit California red-legged frogs by creating and/or restoring habitat for shelter, foraging, predator avoidance, aquatic dispersal, and potentially breeding. Based on these factors, we conclude that Program projects will not appreciably reduce the recovery of California red-legged frog range-wide and may instead contribute to the overall recovery of the species.

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed Program, and the cumulative effects, it is the Service's biological opinion that authorization of the Restoration Grant Program Regional General Permit 12, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog.

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 authorization of the Restoration Grant Program Regional General Permit 12 on critical habitat, and the cumulative effects, it is the Service's biological opinion that the authorization, as proposed, is not likely to result in the destruction or adverse modification of critical habitat of the California red-legged frog because the proposed action is expected to enhance habitat for California red-legged frogs and maintain or improve the condition and function of critical habitat overall.

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. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined 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.

We anticipate that some California red-legged frog could be taken as a result of the proposed action. We expect the incidental take to be in the form of wounding or killing of individuals if they are within the project area during project activities and not detected by biological monitors or construction personnel, or if they are found and mishandled during relocation.

We cannot quantify the precise number of California red-legged frog that may be taken as a result of the actions that the Corps has proposed because California red-legged frogs move over time; for example, animals may have entered or departed the action area since the time of pre-construction surveys. Other individuals may not be detected due to their cryptic nature, small size, and low mobility. Finding dead or injured California red-legged frogs is unlikely. The protective measures proposed by the Corps are likely to prevent mortality or injury of most individuals.

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 adverse effects to California red-legged

frogs would likely be low given the nature of the proposed activities, and we, therefore, 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.

Similarly, for estimating the number of California red-legged frogs that would be taken by capture, we cannot predict how many may be encountered for reasons stated earlier. While the benefits of relocation (i.e., minimizing mortality) outweigh the risk of capture, we must provide a limit for take by capture at which consultation would be reinitiated because high rates of capture may indicate that some important information about the species in the action area was not apparent (e.g., it is much more abundant than thought). Conversely, because capture and relocation can be highly variable, depending upon the species and the timing of the activity, we do not anticipate a number so low that reinitiation would be triggered before the effects of the activity were greater than what we determined in the Effects Analysis.

Therefore, if 2 adult or juvenile California red-legged frogs or 10 percent of tadpoles encountered are wounded or killed at any given project site, the Corps must contact our office immediately to reinitiate formal consultation. If six adults or juveniles are captured and relocated at any given project site, the Corps must contact our office immediately to evaluate if reinitiation is necessary. Any California red-legged frogs wounded or killed as a result of relocation activities will be counted toward the totals. 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. Incidental take limits are depicted in Table 4.

Table 4. Incidental take limits per project site

INJURY OR MORTALITY	LIMIT
ADULTS/JUVENILES	2
TADPOLES	10%

CAPTURE AND RELOCATION	LIMIT
ADULTS/JUVENILES	6

REASONABLE AND PRUDENT MEASURES

The measures described below are non-discretionary, and must be undertaken by the Corps or made binding conditions of any grant or permit issued to the CDFW, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the CDFW to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of California red-legged frogs:

1. Only Service-approved biologists will conduct capture and relocation activities of California red-legged frogs;

2. Effects to California red-legged frog caused by project activities must be minimized.

3. The CDFW will notify the Service of specific locations of Program projects prior to onset of project activities.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Corps 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. Only qualified personnel authorized under this biological opinion may handle California red-legged frogs. Based on the information provided on June 1, 2016 (K. Carpio, CDFW in litt. 2016), we authorize Derek Acomb, Mark Allaback, Sierra Cantor, Jonathan Koehler, Jennifer Michaud, and Dawn Kathleen Smith Reis, to independently monitor for, capture, handle, and relocate California red-legged frogs during Program activities as analyzed in this biological opinion. Joseph D. Scriven is authorized to independently monitor for California red-legged frogs, and conduct capture, handling, and relocation activities under the supervision of an independently authorized biologist to gain experience necessary to conduct these activities independently in the future. The supervising biologist must be on site and within close enough proximity to observe, answer questions, or provide guidance whenever necessary.

    b. If the CDFW wishes to use other biologists to capture, handle, and relocate California red-legged frogs in the future, they must submit the credentials of the biologists who will conduct these activities to us for review and approval at least 15 days prior to the onset of any such activities.

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

    a. Any California red-legged frogs within active project areas that may be adversely affected by project activities will be captured and relocated.

b. If an unseasonable substantial rainfall (greater than 0.5 inch of rain in a 24-hour period) occurs, the Service-approved biologist must search the work and staging areas for California red-legged frogs prior to work activities. The Service-approved biologist must also monitor work areas during periods of rain. Work activities may continue if the Service-approved biologist determines that California red-legged frogs are not present in the work area.

3. The following term and condition implements reasonable and prudent measure 3:

   a. For activities in Monterey, San Benito, San Luis Obispo, and Santa Cruz counties, the Corps or the CDFW must provide the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B; Ventura, California 93003) with notification of projects that are authorized through the RGP at least 90 days prior to project implementation. This notification will contain specific project information including the names and types of projects to be conducted and the locations of projects including creeks, watersheds, city or towns, and counties.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the Corps must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement. For San Luis Obispo, Monterey, Santa Cruz, and San Benito Counties, the CDFW will submit an annual report describing implemented projects to the Ventura Fish and Wildlife Office by January 31 of each year.

The report will include:

1. A table documenting the number of California red-legged frogs killed, injured, and handled during each Program project under the Corps authorization.

2. A summary of how the terms and conditions of the biological opinion and the protective measures worked.

3. Any suggestions of how the protective measures could be revised to improve conservation of this species while facilitating compliance with the Act.

DISPOSITION OF DEAD OR INJURED SPECIMENS

As part of this incidental take statement and pursuant to 50 CFR 402.14(i)(1)(v), upon locating a dead or injured California red-legged frog, initial notification within 3 working days of its finding must be made by telephone and in writing (or electronic mail) to the Ventura Fish and Wildlife Office (805-644-1766). The report must include the date, time, location of the carcass, a photograph, cause of death or injury, if known, and any other pertinent information.

The Corps must take care in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. The applicant and/or its representative must transport injured animals to a qualified veterinarian. Should any treated California red-legged frogs survive, the applicant and/or its representative must contact the Service regarding the final disposition of the animal(s). The remains of California red-legged frogs must be placed with the California Academy of Sciences (Contact: Jens Vindum, Collections Manager, California Academy of Sciences Herpetology Department, Golden Gate Park, San Francisco, California, 94118, (415) 750-7037).

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 that the Service-approved biologist(s) relocate any other native reptiles or amphibians found within work areas, using methods that will not adversely affect California red-legged frogs, if such actions are in compliance with State laws.

2. The Corps should investigate the efficacy of capture and moving of California red-legged frogs to determine if use of this minimization measure reduces adverse effects of project actions on the species. As part of this, information on repeat capture and behavior of individuals post-movement should be noted.

The Service 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 action(s) outlined in the request. 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 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 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 Jake Martin of my staff at (831) 768-6953, or by e-mail at Jacob_Martin@fws.gov.

Sincerely,

Stephen P. Henry
Field Supervisor

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APPENDIX A

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.

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2 Do not use latex gloves as latex is toxic to amphibians.

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.