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In Reply Refer to:
2022-0038599-S7

December 5, 2022

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Subject: Formal Consultation on the Lightning Complex Fires Fence Replacement on San Francisco Public Utilities Commission Property in Santa Clara County, California (Federal Emergency Management Agency file number DR 4558-PW260)

Dear Kenneth Sessa:

This letter is in response to the Federal Emergency Management Agency's (FEMA) May 25, 2022, request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Lightning Complex Fires Fence Replacement Project (proposed project) in Santa Clara County, California. Your initiation request was received by the Service on May 25, 2022; however, all the information necessary to begin consultation was not received until October 26, 2022. At issue are the proposed project's effects on the federally threatened California red-legged frog (*Rana draytonii*) (frog); California tiger salamander – Central California Distinct Population Segment (DPS) (*Ambystoma californiense*) (salamander); Alameda whipsnake (*Masticophis lateralis euryxanthus*) (snake); and critical habitat for these three species. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is FEMA providing federal financial assistance to the City and County of San Francisco (subapplicant) to repair fencing facilities that were damaged in Santa Clara County during the Presidentially declared August 2020 wildfires major disaster. FEMA's consultation request was initially provided in accordance with the process described in the Service's March 27, 2019, *Programmatic Formal Section 7 Consultation on Federal Emergency Management Agency's Disaster, Mitigation, and Preparedness Programs within the Sacramento Fish and Wildlife Office's Jurisdiction, California* (Service File 08ESMF00-2018-F-3331-1; hereafter, 2019 Programmatic Biological Opinion).

Pursuant to 50 CFR 402.12(j), you submitted an *Endangered Species Act Review Form for FEMA Funded Projects to be Covered Under the Programmatic Biological Opinion from the*

Sacramento Fish and Wildlife Office Jurisdiction in California (ESA Review Form) for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the frog, the salamander, and the snake. The findings also conclude that the proposed project may affect, but is not likely to adversely affect, the designated critical habitat for the three species.

In considering your request, we based our evaluation on the following:

1) FEMA's request for technical assistance beginning on February 4, 2022, and the subsequent request for initiation of formal consultation using the draft ESA Review Form dated May 18, 2022;

2) The 2019 Programmatic Biological Opinion;

3) Telephone and email correspondence between the Service and FEMA to clarify proposed impacts and conservation measures;

4) The final ESA Review Form submitted to the Service on September 16, 2022;

5) A revised project site map that portrays the proposed project footprint provided by FEMA on October 26, 2022; and

6) Other information available to the Service.

Upon review of the proposed project, we determined that the proposed project activities are not fully compatible with the 2019 Programmatic Biological Opinion due to deviations from the conservation measures in the 2019 Programmatic Biological Opinion. Therefore, we are issuing this document as a "stand-alone" Biological Opinion for the proposed action.

Critical Habitat for the Frog, Salamander, and Snake

The Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect, designated critical habitat for the frog, the salamander, or the snake.

Most of the proposed project is located along previously disturbed existing fence lines and access roads. Direct permanent effects will be centered around ground disturbance caused by auger holes for fencepost placement and have been estimated by the subapplicant to total approximately 1.2 acres of ground disturbance for the entire proposed project. The proposed project's total footprint is estimated to be 309.1 acres from the 25.5 miles of fencing plus a buffer of 100 feet to account for temporary effects of offroad vehicle travel required for site access in areas not located directly along existing access roads. However, ground disturbance will be minimal or nonexistent due to the relatively small sized equipment such as small trucks and all-terrain vehicles. No removal of live vegetation will occur throughout the entirety of the proposed project area, and any work to occur within or near live vegetation will be conducted using handheld tools. No in-stream work will occur. Additionally, a full-time biological monitor will be present onsite during project implementation and will monitor the proposed project area to ensure adherence to avoidance measures, which include flagging and avoiding onsite small mammal burrows.

After reviewing all of the available information, the Service believes the proposed project-related effects to critical habitat for the species will be extremely small and temporary, and so are

insignificant for the purposes of this consultation. Portions of the proposed project transect critical habitat units for all three species. However, project-related disturbance (i.e., damaged fence removal and fencepost installation or repair) will be temporary and limited in nature. Upon completion of proposed project activities, the subapplicant will restore the proposed project footprint to pre-construction contours and conditions. Additionally, implementation of general measures combined with species-specific conservation measures will act to further minimize potential adverse effects to onsite critical habitat.

The remainder of this document provides our biological opinion on the effects of the proposed project on the frog, salamander, and snake.

Consultation History

August 22, 2020: The President issued a Major Disaster Declaration (DR-4558-CA) for the California August 2020 Wildfires.

March 1, 2021: San Francisco City and County began work replacing critically important fencing that protects drinking water.

August 27, 2021: FEMA first contacted the Service about the proposed project and requested recommendations to minimize the effects of the response activities on listed species and critical habitat.

Sept. 1, 2021: Coordination call between FEMA and the Service to discuss the proposed project, potential species presence, and critical habitat.

Feb.–Apr. 2022: The Service provided technical assistance to FEMA in assessing the effects of the proposed fence repair action and provided reviews of draft documents.

May 25, 2022: The Service received a draft ESA Review Form from FEMA via email to request to initiation of formal consultation on the proposed project.

Sept. 16, 2022: The Service received the final ESA Review Form from FEMA containing the remaining information necessary to initiate formal consultation.

Aug.–Oct. 2022: Correspondence between the Service and FEMA to discuss additional information required to complete consultation.

BIOLOGICAL OPINION

Description of the Proposed Action

General Project Overview

The proposed project activities include repair, removal, and replacement of 25.5 miles of fencing that was damaged as a result of the 2020 Lightning Complex fires. Proposed project activities will occur within the existing footprint plus a 100-foot butter. The purpose of the fencing is to contain grazing livestock and provide security for San Francisco Public Utilities Commission (Commission) property. The Commission's property contains water delivery infrastructure that necessitates the protection of the quality/safety of drinking water located in the Calaveras

Reservoir. The purpose of the proposed project is to restore existing facilities to pre-disaster design, capacity, and function.

Location

The proposed project site is located on properties owned by the Commission that are sited east of Fremont and north of Calaveras Valley in Santa Clara County, California (approximate latitude/longitude center point of proposed project: 37.468312°, -121.808419°). The subapplicant will remove and replace segments of fencing within onsite uplands, valleys, and near the boundaries of Calaveras Reservoir and its associated tributaries.

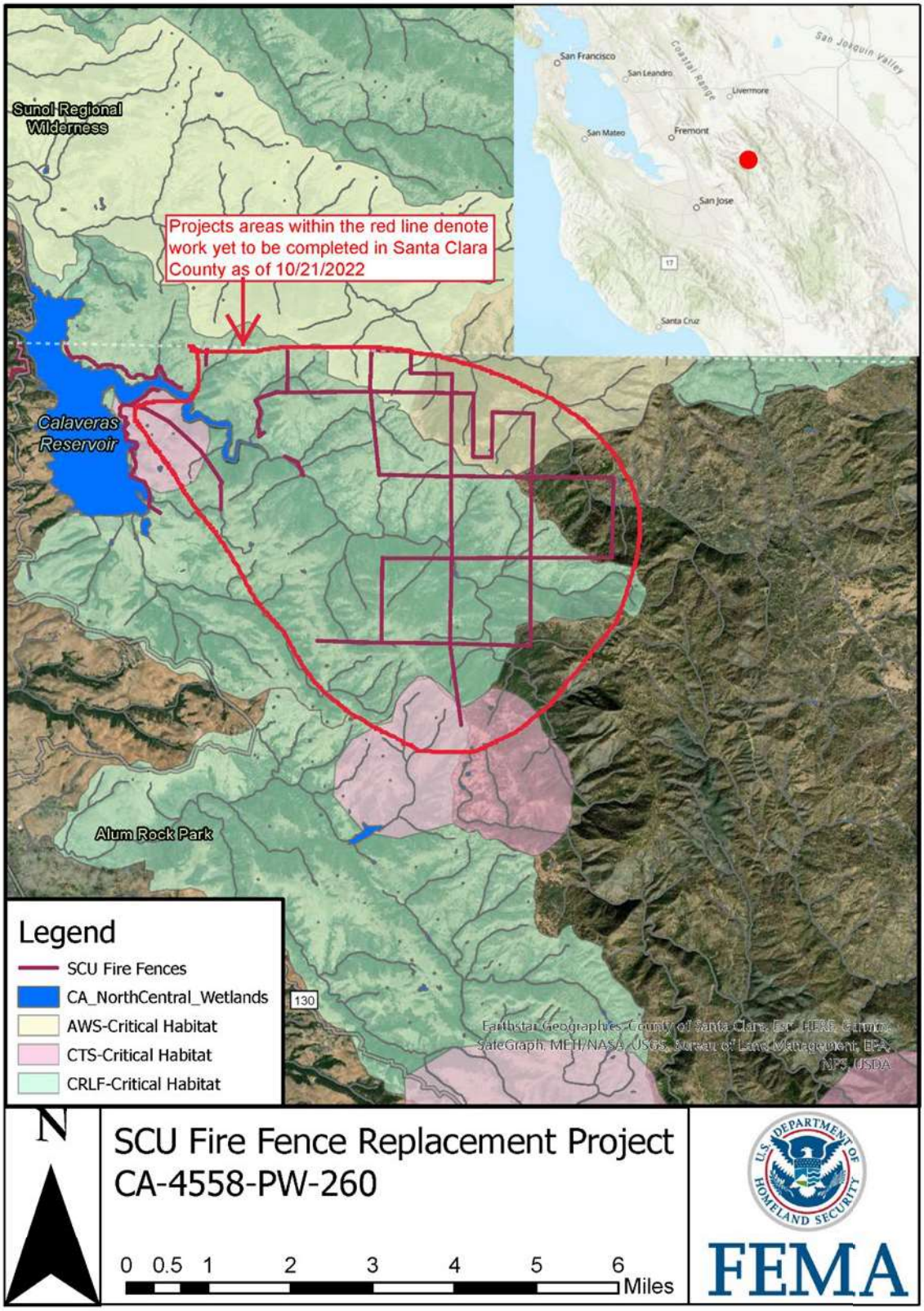
Proposed Project Activities

The proposed project activities include replacement of a total of 25.5 miles of fencing along an existing fence facility footprint (Figure 1). The replacement fencing will generally follow the existing damaged fence line, will be 52 inches tall, and will contain new 6-strand barbed wire with new metal posts placed every 10 feet. Additionally, 15 metal swing gates measuring 12 feet wide will also be removed and replaced throughout the proposed project footprint. Most of the work is hand work. However, trucks, all-terrain vehicles, and skid steers will also be used at times to transport materials and/or create the fencepost holes with an auger.

No in-water work is proposed. Additionally, no clearing of live vegetation is proposed for site access or staging. Only handheld tools will be used in vegetated scrub and brush areas (no motorized vehicles/equipment). Site access will occur along existing roads and then will follow along existing fence lines. Equipment and construction material staging areas are generally located adjacent to existing roads or on previously disturbed areas. In some instances, the fence alignment will be slightly adjusted uphill or downhill to make access easier for the contractor, to make future maintenance easier, to reduce impacts to ecological resources, or to avoid extreme terrain that would reduce the long-term integrity of the new fence.

The proposed work was started by the City/County outside of this consultation and is scheduled to end on December 31, 2023. Work will proceed year-round but will stop during fire danger days. Work will slow down or completely stop during rain events in observance of species work windows/rain event conservation measures and road conditions that will make some areas inaccessible. The number of work hours per day involves four 10-hour days, Monday–Thursday and one 8-hour day on Fridays, with no work to occur during the night.

Figure 1. Site plan for the proposed project.



Conservation Measures

FEMA will require the implementation of nearly all the relevant General Avoidance and Minimization Measures and Species-Specific Conservation Measures from the 2019 Programmatic Biological Opinion to avoid and minimize adverse effects to species. Key differences include not installing temporary wildlife exclusionary fencing because the impacts of installing temporary fencing would likely outweigh the benefits due to the fast-paced timing of the proposed project's ground disturbing activities along a linear and relatively narrow path. Further, species-specific seasonal avoidance will not be possible due to the urgency of completing the fence repair work.

General Conservation Measures (for complete descriptions, refer to Appendix A - Applicable Conservation Measures from 2019 Programmatic Biological Opinion):
GEN AMM-1: Erosion and Sedimentation Prevention Measures
GEN AMM-3: Dust Control Measures
GEN AMM-4: Spill Control Planning
GEN AMM-5: Spill Prevention and Pollution Control Measures
GEN AMM-6: Equipment Inspection and Maintenance
GEN AMM-7: Fueling Activities
GEN AMM-8: Equipment Staging
GEN AMM-9: Materials Storage and Disposal
GEN AMM-10: Fire Prevention
GEN AMM-11: Waste Management
GEN AMM-13: Work Area Designation to Minimize Disturbance
GEN AMM-14: Access Routes and Staging Areas
GEN AMM-15: Environmental Awareness Training for Construction Personnel
GEN AMM-16: Biological Monitor
GEN AMM-17: Daily Work Hours
GEN AMM-18: Entrapment Prevention
GEN AMM-19: Water Quality Protection
GEN AMM-21: Restoration of Upland Areas to Pre-Project Conditions

Frog- and Salamander-Specific Conservation Measures:
CRLF-CTS-1: Biological Monitor
CRLF-CTS-3: Rain Event Limitation
CRLF-CTS-4: Pre-construction Survey
CRLF-CTS-5: Daily Clearance Surveys
CRLF-CTS-6: Environmentally Sensitive Areas
CRLF-CTS-8: Entrapment Prevention
CRLF-CTS-9: Encounters with Species
CRLF-CTS-10: Species Observations and Handling Protocol
CRLF-CTS-11: Environmental Awareness Training
CRLF-CTS-12: Disease Prevention and Decontamination Procedures
CRLF-CTS-14: Hand Clear Vegetation
CRLF-CTS-16: Accidental Spills, SWPPP, Erosion Control, and BMPs
CRLF-CTS-17: Site Restrictions
CRLF-CTS-18: Suitable Erosion Control Materials
CRLF-CTS-21: Invasive Non-Native Plant Species Prevention
CRLF-CTS-23: Removal of Non-Native Species
CRLF-CTS-24: Restore Contours of Temporarily Disturbed Areas

Snake-Specific Conservation Measures:
AWS-1: Environmental Awareness Training
AWS-2: Site Restrictions
AWS-3: Biological Monitor
AWS-4: Habitat Avoidance
AWS-7: Pre-construction Survey
AWS-8: Clearance Surveys
AWS-9: Entrapment Prevention
AWS-12: Using Cover Boards
AWS-13: Reporting
AWS-14: Suitable Erosion Control Materials
AWS-16: Encounters with Species

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." For the proposed project, the action area totals 309.1 acres, which encompasses the cumulative 25.5 miles of fencing with a 100-foot buffer to account for equipment access and construction-related noise, vibration, and dust.

Analytical Framework for the 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 considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the proposed action, 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 determines all consequences to listed species that are caused by the proposed federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of the listed species.

Status of the Species

California Red-legged Frog

Listing Status:
The California red-legged frog (frog) was listed as a threatened species on May 23, 1996 (Service 1996). The Service's *Recovery Plan for the California red-legged frog (Rana aurora draytonii)* (Recovery Plan) was published for the frog on September 12, 2002 (Service 2002). Critical habitat was designated for this species on April 13, 2006 (Service 2006), with revisions to the critical habitat designation published on March 17, 2010 (Service 2010b). At that time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010). The Service is in the process of finalizing its most current 5-year review for the species.

Description:
The frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while 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 (Stebbins 2003) and dorsolateral folds are prominent on the back. The frog is sexually dimorphic; the females are larger than the males (Dodd 2013a, b). Tadpoles range from 0.6 inch to 3.1 inches in length and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

Current Status and Distribution:
The historical range of the frog extended from central Mendocino County and western Tehama County south in the California Coast Range to northern Baja California, Mexico, and in the Sierra Nevada/Cascade Ranges from Shasta County south to Madera County (Jennings and Hayes 1994). The species historically occurred from sea level to elevations of about 5,200 feet in 46 counties; however, currently the taxon is extant in 238 streams or drainages within only 22 counties, representing a loss of 70 percent of its former range (Service 2002). Isolated populations persist in several Sierra Nevada foothill locales and in Riverside County (Barry and Fellers 2013; Backlin et al. 2017; CDFW 2017; Gordon, R. and J. Bennett, pers. comm., 2017). The species is no longer considered extant in California's Central Valley due to significant declines caused by habitat modifications and exotic species (Fisher and Shaffer 1996). Currently, the frog is widespread in the San Francisco Bay nine-county area (CDFW 2017). They are still locally abundant within the California coastal counties from Mendocino County to Los Angeles County and presumed extirpated in Orange and San Diego counties (CDFW 2017; Yang, D. and J. Martin, pers. comm., 2017; Gordon, R. and J. Bennett, pers. comm., 2017). Baja California represents the southernmost edge of the species' current range (Peralta-García et al. 2016).

Barry and Fellers (2013) conducted a comprehensive study to determine the current range of the frog in the Sierra Nevada, concluding that it differs little from its historical range; however, the current Sierra Nevada populations appear to be small and tend to fluctuate. Since 1991, eleven frog populations have been discovered or confirmed, including eight probable breeding populations (Barry and Fellers 2013; Mabe, J., pers. comm., 2017). Microsatellite and mitochondrial DNA analysis by Richmond et al. (2014) confirmed the Sierra Nevada populations of the frog are genetically distinct from each other, as well as from other populations throughout the range of this species. The research concluded that the Sierra Nevada populations are persisting at low levels of genetic diversity and no contemporary gene flow across populations exist. On a larger geographic scale, range contraction has left a substantial gap between Sierra Nevada and Coast Range populations, similar to the gap separating the Southern California and Baja California populations (Richmond et al. 2014).

Habitat and Life History:

Habitat

The frog generally breeds in still or slow-moving water associated with emergent vegetation, such as cattails, tules (hardstem bulrush), or overhanging willows (Storer 1925; Fellers 2005). Aquatic breeding habitat predominantly includes permanent water sources such as streams, marshes, and natural and constructed ponds in valley bottoms and foothills (Jennings and Hayes 1994; Bulger et al. 2003; Stebbins 2003). Since the 1850s, constructed ponds may supplement stream pool breeding habitat and can be capable of supporting large populations of this species. Breeding sites may hold water only seasonally, but sufficient water must persist at the beginning of the breeding season and into late summer or early fall for tadpoles to successfully complete metamorphosis. Breeding habitat does not include deep lacustrine water habitat (e.g., deep lakes and reservoirs 50 acres or larger in size) (Service 2010b). Within the coastal lagoon habitats, salinity is a significant factor on embryonic mortality or abnormalities (Jennings and Hayes 1990). Jennings and Hayes (1990) conducted laboratory studies and field observations concluding salinity levels above 4.5 parts per thousand detrimentally affected the frog embryos. Aquatic breeding habitat does not need to be available every year, but it must be available at least once within the frog's lifespan for breeding to occur (Service 2010b).

Non-breeding aquatic habitat consists of shallow (non-lacustrine) freshwater features not suitable as breeding habitat, such as seasonal streams, small seeps, springs, and ponds that dry too quickly to support breeding. Non-breeding aquatic and riparian habitat is essential for providing the space, food, and cover necessary to sustain the frog. Riparian habitat consists of vegetation growing near, but not typically in, a body of water on which it depends, and usually extends from the bank of a pond or stream to the margins of the associated floodplain (Service 2010b). Adult frogs may avoid coastal habitat with salinity levels greater than 6.5 parts per thousand (Jennings and Hayes 1990).

Cover and refugia are important habitat characteristic preferences for the species (Halstead and Kleeman 2017). Refugia may include vegetation, organic debris, animal burrows, boulders, rocks, logjams, industrial debris, or any other object that provides cover. Agricultural features such as watering troughs, spring boxes, abandoned sheds, or haystacks may also be utilized by the species. Incised stream channels with portions narrower and depths greater than 18 inches may also provide important summer sheltering habitat. During periods of high-water flow, frogs are rarely observed; individuals may seek refuge from high flows in pockets or small mammal burrows beneath banks stabilized by shrubby riparian growth (Jennings and Hayes 1994). Accessibility to cover habitat is essential for the survival of frogs within a watershed and can be a factor limiting frog population numbers and survival.

Breeding

In the Coast Range and at lower elevations, the frog typically breeds between November and April (Storer 1925; Jennings and Hayes 1994; Fellers 2005). However, breeding phenology varies by location and across years, largely based on differences in climatic conditions (McHarry et al. 2019). At sites that routinely experience winter temperatures below freezing, the beginning of breeding generally corresponds with the onset of spring's warmer air temperatures, such as in the Sierra Nevada where breeding typically occurs in late February and March (McHarry et al. 2019). Dependent on weather conditions, breeding in the Sierra Nevada can occur into late April (Barry 2002).

Females deposit their egg masses on emergent vegetation, floating on or near the surface of the water. The frog is often a prolific breeder, laying eggs during or shortly after large rainfall events. Egg masses containing 300–4,000 eggs hatch after six to fourteen days (Storer 1925; Jennings and Hayes 1994; Fellers 2005). Historically, the frog in the Sierra Nevada likely bred within stream pools, which tend to be small with limited forage, constraining the size and number of populations (Barry and Fellers 2013).

Frog tadpoles undergo metamorphosis three to seven months following hatching. Most males reach sexual maturity in two years, while it takes approximately three years for females (Jennings and Hayes 1985; Fellers 2005). Under favorable conditions, frogs may live eight to ten years (Jennings et al. 1992). Of the various life stages, tadpoles likely experience the highest mortality rates; only one percent of each egg mass completes metamorphosis (Jennings et al. 1992).

Diet

The frog has a variable diet that changes with each of its life history stages. The feeding habits of the early stages are likely similar to other ranids, whose tadpoles feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005). Hayes and Tennant (1985) found invertebrates to be the most common food items of adult frogs collected in southern California; however, they speculated that this was opportunistic and varied based on prey availability. Vertebrates, such as Pacific tree frogs (*Pseudacris regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs, although invertebrates were the most numerous food items. Feeding typically occurs along the shoreline and on the surface of the water; juveniles appear to forage during both daytime and nighttime, whereas adults appear to feed at night (Hayes and Tennant 1985).

Movement

Frogs do not have a distinct breeding migration (Fellers 2005), rather they may move seasonally from non-breeding pools or refugia to breeding pools. Some individuals remain at breeding sites year-round while others disperse to neighboring water features or moist upland sites when breeding is complete and/or when breeding pools dry (Service 2002; Bulger et al. 2003; Fellers and Kleeman 2007; Tatarian and Tatarian 2008; Tatarian 2008). Studies in the several San Francisco Bay counties showed movements are typically along riparian corridors (Fellers and Kleeman 2007; Tatarian 2008). However, some individuals, especially on rainy nights and in more mesic areas, travel without apparent regard to topography, vegetation type, or riparian corridors, and can move directly from one site to another through normally inhospitable habitats such as heavily grazed pastures or oak-grassland savannas (Bulger et al 2003).

Frogs show high site fidelity (Tatarian and Tatarian 2008) and typically do not move significant distances from breeding sites (Bulger et al. 2003; Fellers and Kleeman 2007; Tatarian and Tatarian 2008; Tatarian 2008). When traveling between aquatic sites, frogs typically travel less than 0.31 miles (Fellers and Kleeman 2007; Tatarian and Tatarian 2008), although they have been documented to move more than two miles in Santa Cruz County (Bulger et al. 2003). Various studies have found that the frogs typically do not make terrestrial forays farther than 200 feet from aquatic habitat (Bulger et al. 2003; Fellers and Kleeman 2007; Tatarian and Tatarian 2008; Tatarian 2008). Upland movements are typically associated with precipitation events and usually last for one to four days (Tatarian 2008).

Threats:
Factors associated with declining populations of the frog throughout its range include degradation and loss of habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native species, impoundments, water diversions, erosion and siltation altering upland and aquatic habitat, degraded water quality, use of pesticides, and introduced predators (Service 2002, 2010b). Urbanization often leaves isolated habitat fragments and creates barriers to frog dispersal.

Non-native species pose a major threat to the recovery of frogs. Several researchers have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976; Barry 1992; Hunt 1993; Fisher and Shaffer 1996). The decline of the California red-legged frog due to these non-native species has been attributed to predation, competition, and reproduction interference (Twedt 1993; Bury and Whelan 1984; Storer 1933; Emlen 1977; Kruse and Francis 1977; Jennings and Hays 1990; Jennings 1993).

Chytridiomycosis, an infectious disease caused by the chytrid fungus, *Batrachochytrium dendrobatidis* (*Bd*), has been found to adversely affect amphibians globally (Davidson et al. 2003; Lips et al. 2006). While *Bd* prevalence in wild amphibian populations in California is unknown (Fellers et al. 2011), chytrid is expected to be widespread throughout much of the frog's range. The chytrid fungus has been documented within the frog populations at Point Reyes National Seashore, two properties in Santa Clara County, Yosemite National Park, Hughes Pond, Sailor Flat, Big Gun Diggings, and Spivey Pond (Padgett-Flohr and Hopkins 2010; Tatarian and Tatarian 2010; Fellers et al. 2011; Barry and Fellers 2013). However, no chytrid-related mortality has been reported in these populations, suggesting that frogs are less vulnerable to the pathogenic effects of chytrid infection than other amphibian species (Tatarian and Tatarian 2010; Barry and Fellers 2013; Fellers et al. 2017). While chytrid infection may not directly lead to mortality in frogs, Padgett-Flohr (2008) states that this infection may reduce overall fitness and could lead to long-term effects. Therefore, it is difficult to estimate the full extent and risk of chytridiomycosis to frog populations.

Recovery Plan:
The Recovery Plan identifies eight recovery units (Service 2002). 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, delineated core areas, designed to protect metapopulations, represent contiguous areas of moderate to high frog densities. The management strategy identified within this Recovery Plan will allow for the recolonization of habitats within and adjacent to core areas naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of frogs.

California Tiger Salamander

For the most recent comprehensive assessment of the species' range-wide status, please refer to the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander* (*Ambystoma californiense)* (Service 2017) and *California Tiger Salamander Central California Distinct Population Segment 5-Year Review* (Service 2014). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the October 2014 5-year review was finalized, with loss and fragmentation of habitat being the most

significant effect, along with predation from, and competition with, invasive species; hybridization with non-native barred tiger salamanders; mortality from road crossings; contaminants; and small mammal burrow control efforts (Service 2014). While there have been continued losses of aquatic habitat throughout the various recovery units, including the East Bay Region's 3 and 5 Units where the proposed project is located, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service is in the process of finalizing its most current 5-year review for the species.

Alameda Whipsnake

Please refer to the *Alameda Whipsnake 5-Year Review* (Service 2020) for the latest published status of the species. No change in the species' listing status was recommended in the July 2020 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 5-year review was finalized, with loss of habitat and pesticide impacts being the most significant effects. To date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

Environmental Baseline

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

Existing Conditions

The action area is composed primarily of undeveloped pastureland and oak woodlands with interspersed access roads. Existing vegetative communities at the proposed project site include non-native grassland, northern coastal scrub, valley oak woodland, blue oak woodland, central coast arroyo willow riparian forest, and patches of urban and cultivated areas. Elevations range from approximately 770 feet above mean sea level (msl) at the Calaveras Reservoir, to about 3,300 feet above msl on Poverty Ridge. Slopes in the upland areas are steep with average gradients ranging from approximately 3:1 (horizontal to vertical ratio) to 1:1. The major valleys have nearly level floors and most of the tributary stream valleys are narrow with V-shaped cross-sections. Two creeks present onsite are the Arroyo Hondo (perennial) and Calaveras Creek (intermittent), both of which flow into the Calaveras Reservoir. The proposed project site's hilly topography contributes to myriad ephemeral drainages and associated seeps, which pass through the proposed project area and drain towards the two creeks or into the Reservoir (USGS 2022). Ambient noise levels are low due to low urban densities and the absence of noise stressors.

Onsite non-native grassland and brush were impacted from the Lightning Complex wildfires in 2020, and vegetation regrowth reportedly began in 2021. The fires caused damage to fencing critical for protecting drinking water quality and water facilities located at the proposed project site. The damaged fencing resulted in the need for urgent repair.

To address the imminent threat to human health and safety resulting from the failed fencing, the subapplicants initiated the fence repair work in March 2021, prior to formal consultation between FEMA and the Service. Work was done using species avoidance and minimization measures that the subapplicants determined would avoid impacts to federally listed species. The sections of fence already completed by the subapplicants will not be part of this consultation and the work will not affect the baseline conditions of the proposed work areas.

California Red-legged Frog

The proposed project is located within the frog's range and contains upland dispersal grassland habitat, non-breeding aquatic habitat, and nearby aquatic breeding habitat. The subapplicant did not conduct protocol or roadkill surveys for the frog within the action area. However, according to the California Natural Diversity Database (Database), approximately 20 observations of the frog have been reported in Alameda Creek and Arroyo Hondo Creek within one mile of the proposed project footprint (Database 2022). One frog occurrence location at Arroyo Hondo Creek overlaps the fence line along the Creek near Hondo Road Crossing (#1,491) and was documented multiple years from 2005 to 2014 (Database 2022). Additionally, onsite small mammal burrow complexes and seeps along the fence alignment were documented in the monitoring reports provided by biological monitors dated December 2021 through March 2022 (see ESA Review Form Appendix E). The monitoring reports, which documented a portion of the entire proposed project, include a total of 11 small mammal burrow complex areas observed along the action area that is directly adjacent to Calaveras Reservoir.

The habitat present within the action area provides suitable aquatic and upland dispersal habitat, as well as upland foraging and sheltering habitat. There are no barriers that would exclude nearby populations of frogs from accessing and using the action area. However, the steep grade and ephemeral attributes of much of the upland and drainage areas reduce the quality of the habitat for the frog that is present along the proposed project footprint. Due to the presence of suitable aquatic sheltering and dispersal habitat, and the nearby occurrences within the frog's 2-mile dispersal distance, it is likely that the frog occurs in the action area and likely uses it as dispersal, foraging, and sheltering habitat.

California Tiger Salamander

The proposed project is located within the salamander's range and contains upland dispersal grassland habitat, non-breeding aquatic habitat, and nearby aquatic breeding habitat. There have been two recorded occurrences of the salamander overlapping the action area. A breeding pond with salamander egg masses was observed in 2010 (#951) near the fence line on the south side of Oakridge Road west of Arroyo Hondo Road Junction (Database 2022). The second occurrence was a breeding pond with emergent vegetation located on the eastside of the reservoir about a half mile south of Calaveras Dam (#944) and was observed to be used by the salamander from 2010–2012. During this time, salamanders were trapped and relocated as dam construction activities destroyed the breeding pond and burrows (Database 2022). Additionally, there are approximately 18 observations of the salamander within one mile of the proposed project area (ESA Review Form Appendix A Figure 4).

As previously discussed, small mammal burrow complexes along the fence alignment were documented within and near the proposed project footprint. Salamanders may use burrows in the action area as underground refugia and may use the action area as dispersal and migration habitat during wet conditions. Due to the presence of suitable aquatic sheltering and dispersal habitat

and known onsite occurrences and nearby breeding habitat, it is likely that the salamander occurs in the action area and likely uses it as dispersal, foraging, and sheltering habitat.

Alameda Whipsnake

The proposed project is located within the snake's range and contains upland dispersal grassland habitat, non-breeding habitat, and breeding habitat for the snake. Biological monitors have observed areas within the action area that contain Coyote brush patches and small rock outcroppings. Two recorded occurrences of the snake overlap the action area. One occurrence was an adult snake observed in 2017 (#181) on the east side of Calaveras Reservoir, and the second was an adult snake captured in scrub habitat during a past project in 2014 (#161) and relocated to this location near the proposed project fence line (Database 2022). Additionally, there are approximately 16 observations of the snake within one mile of the proposed project site (See ESA Review Form Appendix A Figure 4).

As with the two amphibians, the small mammal burrows present along the proposed project action area can be used by the snake as underground refugia or hibernacula. Based on the multiple known occurrences of the snake within the action area and within dispersal distance of the action area and the presence of suitable habitat onsite, it is likely that the snake occurs in the action area and likely uses it as dispersal, foraging, and sheltering habitat.

Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

The effects of the proposed project actions are primarily associated with the ground disturbance of fencepost hole creation within approximately 1.2 acres of upland dispersal, upland sheltering, and upland foraging habitat for the frog, salamander, and snake. Effects of the action will also extend to the immediate vicinity of the fence installation where site access will occur via use of all-terrain vehicles and materials staging areas over an area of 309.1 acres. Any of the three species may be encountered throughout the proposed project footprint where they risk injury or mortality from heavy equipment.

Due to urgent nature of the proposed project, the subapplicant is not able to incorporate seasonal avoidance as a conservation measure, and construction will continue year-round until project completion. This means that work that occurs during the snake's wintering hibernation period (November to March) poses an increased risk to crushing or entombing snakes in their hibernacula if any burrows are overlooked and impacted. In addition, any frogs or salamanders that use upland areas during dispersal or small mammal burrows as shelter, and are not detected in pre-construction surveys, are at risk of entombment or crushing during construction. Further, should work be conducted close to rain or ground saturation events, frog or salamander individuals are at risk of being crushed from equipment during dispersal events. However, as noted previously in the Description of the Proposed Action section, FEMA will require implementation of general avoidance and minimization measures, and species-specific conservation measures, to reduce construction-related effects. Implementation of these measures will further reduce adverse effects to the frog, salamander, and snake.

The proposed project's limited area of ground disturbance, implementation of conservation measures, inclusion of site restrictions such as 15-miles-per-hour speed limit along roadways where snakes may be basking, habitat avoidance, and adherence to the previously disturbed fence line will aid in limiting adverse effects to the three listed species. Limiting proposed project activities to uplands, with no instream work, will avoid impacts to animals who may be sheltering in nearby water features. Additionally, limiting work that will occur within live coyote brush or any other live vegetation onsite to handheld tools will help to reduce stress and disturbance for potential onsite snakes. Educating construction personnel and effective site monitoring will encourage compliance with the conservation measures, but benefits are limited by the effectiveness of the presentation and willingness of the construction personnel to participate in compliance.

Because the timing of the proposed project's ground disturbing activities is fast paced along a linear and relatively narrow path, the inclusion of temporary wildlife exclusionary fencing is not feasible because the impacts of installing temporary exclusionary fencing would outweigh the benefits. Consequently, there is potential for above-ground individuals to be within proposed work areas making them susceptible to direct impacts from machinery or vehicles. Additionally, any onsite frogs, salamanders, and snakes could be temporarily exposed to potential fuel or lubricant leaks or spills and to localized increases in noise, vibration, and dust. A full-time Service-approved biological monitor will conduct pre-construction surveys to ensure avoidance of sensitive burrow complexes and to clear the proposed project footprint of any potential frogs, salamanders, or snakes, which will minimize the potential for adverse effects.

Discovery, capture, and relocation of individual frogs, salamanders, or snakes may avoid injury or mortality from construction activities but capturing and handling animals could result in stress and/or inadvertent injury during handling, containment, and transport.

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. 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 Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of the frog, salamander, and snake, the environmental baseline for the action area, the effects of the proposed Lightning Complex Fires Fence Replacement Project, and the cumulative effects, it is the Service's biological opinion that the Lightning Complex Fires Fence Replacement Project, as proposed, is not likely to jeopardize the continued existence of the frog, salamander, and snake. The Service reached this conclusion because the proposed project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following:

1) Successful implementation of the conservation measures described in this biological opinion will minimize the adverse effects on individuals of the listed species;

2) The acreage of habitat that will be affected by the proposed project represents a small portion of suitable habitat available in the East Bay Region;

3) All habitat temporarily disturbed within the action area will be restored; and

4) In-stream habitat will be avoided.

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 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. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior 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 intended as part 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.

The measures described below are non-discretionary and must be undertaken by FEMA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. FEMA has a continuing duty to regulate the activity covered by this incidental take statement. If FEMA (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant 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. In order to monitor the impact of incidental take, FEMA and the subapplicant 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)].

Amount or Extent of Take

California Red-legged Frog

The Service anticipates that incidental take of the frog will be difficult to detect due to its life history and ecology. Specifically, frogs can be difficult to locate due to their cryptic appearance and finding a dead or injured individual is unlikely due to their relatively small size. Losses of frogs may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Furthermore, finding an injured or dead frog is unlikely due to their relatively small body size, cryptic coloration, rapid carcass deterioration, and likelihood the remains will be removed by a scavenger or indistinguishable among the disturbed soil and debris. Therefore, we are providing a mechanism to quantify when take of this listed species would be considered to be exceeded as a result of implementation: we will use detection of one dead or injured frog as the level of injurious and lethal take permitted. Additionally, if frogs are

observed healthy and require relocation, we will use the capture and relocation of ten frogs as the level of take permitted. We believe that if this level of take is exceeded then likely other frogs have also been adversely affected by the proposed project but not detected. If more than one (1) frog is injured or killed as a result of the proposed Lightning Complex Fires Fence Replacement Project, or more than ten (10) frogs are captured and relocated, then take is exceeded and, as provided in 50 CFR §402.16, reinitiation of formal consultation would be required to determine appropriate measures to further minimize the effect of take of listed species.

California Tiger Salamander

The Service anticipates that incidental take of the salamander will be difficult to detect because when this amphibian is not in its breeding ponds, or is foraging, migrating, or conducting other surface activity, it inhabits mammal burrows and other underground refugia. Upland refugia may be located a distance from the breeding ponds and migrations occur for a limited period during rainy nights in the fall, winter, or spring. Finding an injured or dead salamander is unlikely due to their relatively small body size, cryptic coloration, rapid carcass deterioration, and likelihood the remains will be removed by a scavenger or indistinguishable among the disturbed soil and debris. Losses of this species may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in the water regime at their breeding ponds, or additional environmental disturbances. Therefore, we are providing a mechanism to quantify when take of this listed species would be considered to be exceeded as a result of implementation: we will use detection of one dead or injured salamander as the level of injurious and lethal take permitted. Additionally, if salamanders are observed healthy and require relocation, we will use the capture and relocation of ten salamanders as the level of take permitted. We believe that if this level of take is exceeded then likely other salamanders have also been adversely affected by the proposed project but not detected. If more than one (1) salamander is injured or killed as a result of the proposed Lightning Complex Fires Fence Replacement Project, or more than ten (10) salamanders are captured and relocated, then take is exceeded and, as provided in 50 CFR §402.16, reinitiation of formal consultation would be required to determine appropriate measures to further minimize the effect of take of listed species.

Alameda Whipsnake

The Service anticipates that incidental take of the snake will be difficult to detect due to their small size, wariness, and cryptic nature. The proposed project footprint includes or is adjacent to vegetative cover, rocks, and debris that provide cover for the snake. Finding an injured or dead snake is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. Losses of the snake may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. Therefore, we are providing a mechanism to quantify when take of this listed species would be considered to be exceeded as a result of implementation: we will use detection of one dead or injured snake as the level of injurious and lethal take permitted. Additionally, if snakes are observed healthy and require relocation, we will use the capture and relocation of three snakes as the level of take permitted. We believe that if this level of take is exceeded then likely other snakes have also been adversely affected by the proposed project but not detected. If more than one (1) snake is injured or killed as a result of the proposed Lightning Complex Fires Fence Replacement Project, or more than three (3) snakes are captured and relocated, then take is exceeded and, as provided in 50 CFR §402.16, reinitiation of formal

consultation would be required to determine appropriate measures to further minimize the effect of take of listed species.

Upon implementation of the following *Reasonable and Prudent Measures*, the incidental take of the frog, salamander, and snake associated with the proposed project in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the frog, salamander, and snake resulting from implementation of this proposed project have been incorporated into the proposed project's conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the frog, salamander, and snake:

1) All conservation measures, as described in the biological assessment and restated here in the Description of the Proposed Action section of this biological opinion, will be fully implemented and adhered to. Further, this reasonable and prudent measure will be supplemented by the terms and conditions below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, FEMA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1) FEMA will include full implementation and adherence to the conservation measures as a condition of any permit or contract issued for the proposed project.

2) In order to monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached or exceeded, FEMA will ensure the subapplicant adheres to the following reporting requirements. Should the anticipated amount or extent of take be exceeded, FEMA must immediately reinitiate formal consultation, as per 50 CFR §402.16.

    a. The subapplicant and FEMA will immediately contact the Service's Sacramento Fish and Wildlife Office (SFWO) Sacramento Valley Division Supervisor at (916) 414-6600, to report direct encounters between listed species and project workers and their equipment whereby incidental take in the form of, harm, injury, or death occurs. If the encounter occurs after normal working hours, FEMA will contact the SFWO at the earliest possible opportunity the next working day. When injured or killed individuals of the listed species are found, FEMA will follow the steps outlined in the Salvage and Disposition of Individuals section below.

b. For those components of the action that will require the capture and relocation of any listed species, FEMA will immediately contact the SFWO at (916) 414-6600 to report the action. If capture and relocation need to occur after normal working hours, FEMA will contact the SFWO at the earliest possible opportunity the next working day.

Salvage and Disposition of Individuals:

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Sacramento Valley Division Supervisor at the SFWO at (916) 414-6600.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize 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. The Service recommends the following actions:

1) Observations of listed species should be submitted to the California Natural Diversity Database within 60 days of observation.

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

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Lightning Complex Fires Fence Replacement Project. As provided in 50 CFR §402.16(a), reinitiation of consultation is required and shall be requested by the federal agency or by the Service where discretionary federal involvement or control over the action has been retained or is authorized by law, and:

1) If the amount or extent of taking specified in the incidental take statement is exceeded;

2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or written concurrence, or

4) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Emma Bickerstaff, Fish and Wildlife Biologist (Emma_Bickerstaff@fws.gov) at (916) 414-6577, or Megan Cook, Sacramento Valley Division Supervisor (Megan_Cook@fws.gov) at (916) 414-6492 or at the letterhead address.

Sincerely,

MICHAEL FRIS Digitally signed by MICHAEL FRIS
Date: 2022.12.05 16:22:03 -08'00'

Michael Fris
Field Supervisor

ec:
Adam Klatzker, Environmental and Historic Preservation, FEMA Region IX, Sacramento, CA

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Appendix A – Applicable Conservation Measures from 2019 Programmatic Biological Opinion

Proposed General Avoidance and Minimization Measures and Species-Specific Conservation Measures

General Avoidance and Minimization Measures

The general avoidance and minimization measures described in this section will be implemented, as appropriate, to reduce the identified potential adverse effects from a Subapplicant's proposed project. The Subapplicant will be responsible for implementation of the avoidance and minimization measures that FEMA identifies as necessary for the proposed project.

GEN AMM-1 Erosion and Sedimentation Prevention Measures: The Subapplicant will prepare an Erosion Control Plan, as needed. The Erosion Control Plan will detail the erosion and sedimentation prevention measures required. As part of this plan, the Subapplicant will ensure that sediment- control devices are installed and maintained correctly. For example, sediment will be removed from engineering controls once the sediment has reached one-third of the exposed height of the control. The devices will be inspected frequently (i.e., daily or weekly, as necessary) to ensure that they are functioning properly; controls will be immediately repaired or replaced, or additional controls will be installed as necessary. Sediment that is captured in these controls may be disposed of onsite in an appropriate, safe, approved area or offsite at an approved disposal site.

Areas of soil disturbance, including temporarily disturbed areas, will be seeded with a regionally appropriate erosion control seed mixture. On soil slopes with an angle greater than 30 percent, erosion control blankets will be installed, or a suitable and approved binding agent will be applied. Runoff will be diverted away from steep or denuded slopes.

Where habitat for covered species is identified within, or adjacent to, the project footprint, all disturbed soils at the site will undergo erosion control treatment before the rainy season starts and after construction is terminated. Treatment may include temporary seeding and sterile straw mulch.

GEN AMM-3 Dust Control Measures: To reduce dust, all traffic associated with the Subapplicant's construction activities will be restricted to a speed limit of 15 miles per hour when traveling off of highways or county roads.

Stockpiles of material that are susceptible to wind-blown dispersal will be covered with plastic sheeting or other suitable material to prevent movement of the material.

During construction, water or other binding materials will be applied to disturbed ground that may become windborne. If binding agents are used, all manufacturers' recommendations for use will be followed.

GEN AMM-4 Spill Control Planning: The Subapplicant will prepare a Spill Prevention and Pollution Control Plan to address the storage of hazardous materials and emergency cleanup of any hazardous material and will be available onsite, if applicable. The plan will incorporate hazardous waste, storm water, and other emergency planning requirements.

GEN AMM-5 Spill Prevention and Pollution Control Measures: The Subapplicant will exercise every reasonable precaution to protect covered species and their habitats from pollution due to fuels, oils, lubricants, construction by-products, and pollutants such as construction chemicals, fresh cement, saw-water, or other harmful materials. Water containing mud, silt, concrete, or other by products or pollutants from construction activities will be treated by filtration, retention in a settling pond, or similar measures. Fresh cement or concrete will not be allowed to enter the flowing water of streams and curing concrete will not come into direct contact with waters supporting covered species. Construction pollutants will be collected and transported to an authorized disposal area, as appropriate, per all Federal, State, and local laws and regulations.

To reduce bottom substrate disturbance and excessive turbidity, removal of existing piles by cutting at the substrate surface or reverse pile driving with a sand collar at the base to minimize resuspension of any toxic substances is preferable; hydraulic jetting will not be used.

No petroleum product chemicals, silt, fine soils, or any substance or material deleterious to covered species will be allowed to pass into or be placed where it can pass into a stream channel. There will be no side-casting of material into any waterway.

All concrete or other similar rubble will be free of trash and reinforcement steel. No petroleum-based products (e.g., asphalt) will be used as a stabilizing material.

The Subapplicant will store all hazardous materials in properly designated containers in a storage area with an impermeable membrane between the ground and the hazardous materials. The storage area will be encircled by a berm to prevent the discharge of pollutants to ground water or runoff into the habitats of covered species. A plan for the emergency cleanup of any hazardous material will be available onsite, and adequate materials for spill cleanup will be maintained onsite.

GEN AMM-6 Equipment Inspection and Maintenance: Well-maintained equipment will be used to perform the work and, except in the case of a failure or breakdown, equipment maintenance will be performed offsite. Equipment will be inspected daily by the operator for leaks or spills. If leaks or spills are encountered, the source of the leak will be identified, leaked material will be cleaned up, and the cleaning materials will be collected and properly disposed. Fueling of land- and marine-based equipment will be conducted in accordance with procedures to be developed in the Spill Prevention and Pollution Control Plan.

Vehicles and equipment that are used during the course of a project will be fueled and serviced in a "safe" area (i.e., outside of sensitive habitats) in a manner that will not affect covered species or their habitats. Spills, leaks, and other problems of a similar nature will be resolved immediately to prevent unnecessary effects on covered species and their habitats. A plan for the emergency cleanup of any spills of fuel or other material will be available onsite, and adequate materials for spill cleanup will be maintained onsite.

GEN AMM-7 Fueling Activities: Avoidance and minimization measures will be applied to protect covered species and their habitats from pollution due to fuels, oils, lubricants, and other harmful materials. Vehicles and equipment that are used during project implementation will be fueled and serviced in a manner that will not affect covered species or their habitats. Machinery and equipment used during work will be serviced, fueled, and maintained on uplands to prevent contamination to surface waters. Fueling equipment and vehicles will be kept more than 200 feet

away from waters of the United States. Exceptions to this distance requirement may be allowed for large cranes, pile drivers, and drill rigs if they cannot be easily moved.

GEN AMM-8 Equipment Staging: No staging of construction materials, equipment, tools, buildings, trailers, or restroom facilities will occur in a floodplain during flood season at the proposed project location, even if staging is only temporary.

GEN AMM-9 Materials Storage and Disposal: Stockpiled soils will be adequately covered to prevent sedimentation from runoff and wind. All hazardous materials will be stored in upland areas in storage trailers and/or shipping containers designed to provide adequate containment. Short-term laydown of hazardous materials for immediate use will be permitted provided the same containment precautions are taken as described for hazardous materials storage. All construction materials, wastes, debris, sediment, rubbish, trash, and fencing will be removed from the site once project construction is complete and transported to an authorized disposal area, as appropriate, in compliance with applicable Federal, State, and local laws and regulations. No disposal of construction materials or debris will occur in a floodplain. No storage of construction materials or debris will occur in a floodplain during flood season.

GEN AMM-10 Fire Prevention: With the exception of vegetation-clearing equipment, no vehicles or construction equipment will be operated in areas of tall, dry vegetation.

The Subapplicant will develop and implement a fire prevention and suppression plan for all maintenance and repair activities that require welding or otherwise have a risk of starting a wildfire.

GEN AMM-11 Waste Management: The work area will be kept free of loose trash, including small pieces of residual construction material, such as metal cuttings, broken glass, and hardware. All food waste will be removed from the site on a daily basis. All construction material, wastes, debris, sediment, rubbish, vegetation, trash, and fencing will be removed from the site once the project is completed and will be transported to an authorized disposal area, as appropriate, per all Federal, State, and local laws and regulations.

GEN AMM-13 Work Area Designation to Minimize Disturbance: The Subapplicant will reduce, to the maximum extent practicable, the amount of disturbance at a site to the absolute minimum necessary to accomplish the project. Wherever possible, existing vegetation will be salvaged from the project area and stored for replanting after earthmoving activities are completed. Topsoil will be removed, stockpiled, covered, and encircled with silt fencing to prevent loss or movement of the soil into covered species habitats. All topsoil will be replaced in a manner to recreate pre-disturbance conditions as closely as possible.

Project planning must consider not only the effects of the action itself, but also all ancillary activities associated with the actions, such as equipment staging and refueling areas, topsoil or spoils stockpiling areas, material storage areas, disposal sites, routes of ingress and egress to the project site, and all other related activities necessary to complete the project.

GEN AMM-14 Access Routes and Staging Areas: When working on stream banks or floodplains, disturbance to existing grades and vegetation will be limited to the actual site of the project and necessary access routes. Placement of all roads, staging areas, and other facilities will avoid and limit disturbance to sensitive habitats (e.g., stream banks, stream channel, and riparian

habitat) as much as possible. When possible, existing ingress or egress points will be used and/or work will be performed from the top of the stream banks. After completion of the work, the contours of the streambed, vegetation, and stream flows will be returned to their pre-construction condition or better.

All staging and material storage areas, including the locations where equipment and vehicles are parked overnight, will be placed outside of the flood zone of a watercourse, above areas of tidal inundation, away from riparian habitat or wetland habitat, and away from any other sensitive habitats. When possible, staging and access areas will be situated in areas that are previously disturbed, such as developed areas, paved areas, parking lots, areas with bare ground or gravel, and areas clear of vegetation.

GEN AMM-15 Environmental Awareness Training for Construction Personnel: All construction personnel will be given environmental awareness training by the project's environmental inspector or biological monitor before the start of construction. The training will familiarize all construction personnel with the covered species that may occur onsite, their habitats, general provisions and protections afforded by the Act, measures to be implemented to protect these species, and the project boundaries. This training will be provided within three days of the arrival of any new worker.

As part of the environmental awareness training, construction personnel will be notified that no dogs or any other pets under control of construction personnel will be allowed in the construction area, and that no firearms will be permitted in the construction area, unless carried by authorized security personnel or law enforcement.

GEN AMM-16 Biological Monitor: If a project involves activities that may result in take of a covered species, as defined by the Act, a Service-approved biologist will be present onsite for all construction activities that occur within 100 feet of habitat for those species. If a Service-approved biologist is needed, the Subapplicant will submit the biologist's qualifications to the Service for approval 30 days prior to project construction. The Service-approved biologist will ensure that all applicable avoidance and minimization measures in the programmatic biological opinion are implemented during project construction. The Service-approved biologist will also ensure that all vehicles entering the site are free of debris that may harbor organisms that could be introduced to the site, such as vegetation or mud from other aquatic areas. The Service-approved biologist will also ensure that turbidity, sedimentation, and the release of materials such as dust or construction runoff are controlled, and that spill control measures are enacted properly.

The Service-approved biologist will oversee construction activities to ensure that no covered species and/or their habitats are adversely affected. The Service-approved biologist will have the authority to stop any work activities that may result in potential adverse effects to covered species and/or their habitats.

Approval requests from the Subapplicants for Service-approved biologists shall include, at a minimum:

a. Relevant education;
b. Relevant training concerning the listed species for which approval is requested, including species identification, survey techniques, handling individuals of different age classes, and handling of different life stages by a permitted biologist or recognized species expert authorized by the Service for such activities;

c. A summary of field experience conducting requested activities (to include project/research information);
d. A summary of biological opinions under which they were authorized to work with the requested species and at what level (such as construction monitoring versus handling), this will also include the names and qualification of persons under which the work was supervised as well as the amount of work experience on the actual project;
e. A list of Federal Recovery Permits [10(a)1(A)] held or under which they are authorized to work with the species requested (to include the permit number, authorized activities and name of permit holder); and
f. Any relevant professional references with contact information.

GEN AMM-17 Daily Work Hours: Construction activities that may affect suitable habitat for covered species will be limited to daylight hours during weekdays, leaving a nighttime and weekend period for the species. Work will be allowed on weekends if the proposed construction is 14 days or less in length.

GEN AMM-18 Entrapment Prevention: To prevent entrapment of covered species, all vertically sided holes or trenches will be covered at the end of the workday or have escape ramps built into the walls of the excavation. If pipes are stored onsite or in associated staging areas, they will be capped when not in use.

Construction materials that have the potential to entangle or entrap wildlife will be properly contained so that wildlife cannot interact with the materials.

If a covered species is identified onsite, crews will immediately stop work within 50 feet of the individual and inform the construction supervisor and the Service-approved biologist. Work will not continue within 50 feet of the individual until it has traveled off the project site of its own volition. For covered species, please refer to the species-specific Conservation Measures section of the programmatic biological opinion.

GEN AMM-19 Water Quality Protection: Contractors will exercise every reasonable precaution to protect covered species and their critical habitats from construction byproducts and pollutants, such as construction chemicals, fresh cement, saw-water, or other deleterious materials. Fresh cement or uncured concrete will not be allowed to come into contact with any waterway. Construction waste will be collected and transported to an authorized upland disposal area, as appropriate, and per Federal, State, and local laws and regulations.

The Subapplicant will follow the best management practices described in *The Use if Treated Wood Products in Aquatic Environments* guidelines (NOAA Fisheries 2009). Although this guidance focuses on the effects of the contaminants on Pacific salmonids protected under the Act, this guidance may still apply for general water quality protection and other federally protected species. This guidance will be used in conjunction with site-specific evaluations of other potential impacts. Riprap will be clean and durable, free from dirt, sand, clay, and rock fines and will be installed to withstand the 100-year flood event. If applicable, appropriate measures will be taken to minimize disturbance to potentially contaminated sediments.

GEN AMM-21 Restoration of Upland Areas to Pre-Project Conditions: For projects that require restoration of upland areas to pre-project conditions as a result of ground disturbance during construction activities, the Subapplicant will use native plants to the maximum extent practicable. Similarly, when hydroseeding, only native seed mix will be used.

California Red-Legged Frog, California Tiger Salamander Central California DPS, and California Tiger Salamander Sonoma DPS Conservation Measures

To reduce potential effects to the California red-legged frog and Sonoma and Central California tiger salamander Distinct Population Segments (DPSs) (California tiger salamander), the following measures to avoid and minimize adverse effects to the California red-legged frog and California tiger salamander and their critical habitat will be incorporated into the proposed project. These measures will be communicated to the contractor through the use of special provisions included in the contract bid solicitation package.

CRLF-CTS-1 Biological Monitor: A Serviceapproved biologist(s) will be onsite during all activities that may result in take of California red-legged frogs or California tiger salamanders.

CRLF-CTS-3 Rain Event Limitations: To the maximum extent practicable, no construction activities will occur during rain events or within 24 hours following a rain event. Prior to construction activities resuming, a Service-approved biologist will inspect the Action Area and all equipment/materials for the presence of California red-legged frogs and California tiger salamanders. Construction may continue 24 hours after the rain ceases if no precipitation is forecasted within 24-hours. If rain exceeds 0.5 inches during a 24-hour period; work will cease until no further rain is forecasted. The Service may approve modifications to this timing on a case-by-case basis.

CRLF-CTS-4 Pre-construction Survey: No more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, a Service-approved biologist with experience in the identification of all life stages of the California red-legged frog and California tiger salamander and designated critical habitat will conduct a pre-construction survey at the project site. The survey will consist of walking the project limits and within the project site to determine possible presence of the species. The Service-approved biologist will investigate all areas that could be used by California red-legged frogs and California tiger salamanders for feeding, breeding, sheltering, movement, and other essential behaviors, such as small woody debris, refuse, burrows entries, etc.

CRLF-CTS-5 Daily Clearance Surveys: The Service-approved biologist will conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may result in take of California red-legged frogs and California tiger salamanders.

CRLF-CTS-6 Environmentally Sensitive Areas: Prior to the start of construction, Environmentally Sensitive Areas - defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed - will be clearly delineated using high visibility orange fencing. The environmentally sensitive areas fencing will remain in place throughout the duration of the proposed action, while construction activities are ongoing, and will be regularly inspected and fully maintained at all times. The final project plans will depict all locations where environmentally sensitive areas fencing will be installed and will provide installation specifications.

The bid solicitation package special provisions will clearly describe acceptable fencing material and prohibited construction related activities including vehicle operation, material and equipment storage, access roads and other surface-disturbing activities, within environmentally sensitive areas. With prior approval from the Service, a hybrid environmentally sensitive areas/wildlife exclusionary fencing material that is both hi-visibility and impermeable to wildlife movement

may be used in place of paired environmentally sensitive areas fencing and wildlife exclusionary fencing. Also with prior approval from the Service, an exception to the foregoing fencing measures may apply on a case-by-case basis during the following situations: (1) at work sites where the duration of work activities is very short (e.g., 3 days or less), the work activities occur during the dry season, and the installation of environmentally sensitive areas fencing will result in more ground disturbance than from project activities; or (2) at work sites where the substrate (i.e., rock, shale, etc.) or topography (i.e., slopes> 30 degrees) inhibit the safe and proper installation of fencing materials. In these cases, biological monitoring will occur during all project activities at that site.

CRLF-CTS-8 Entrapment Prevention: To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 6 inches deep will be covered with plywood or similar materials at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. The Service-approved biologist will inspect all holes and trenches at the beginning of each workday and before such holes or trenches are filled. All replacement pipes, culverts, or similar structures stored in the Action Area overnight will be inspected before they are subsequently moved, capped, and/or buried. If at any time a California red-legged frog or California tiger salamander is discovered, the onsite Project Manager and Service-approved biologist will be notified immediately and the Service-approved biologist will implement the species observation and handling protocol. If handling is necessary, work will be suspended until the appropriate level of coordination is complete.

CRLF-CTS-9 Encounters with Species: Each encounter with a California red-legged frog or California tiger salamander will be treated on a case-by-case basis. If any life stage of the California red-legged frog or California tiger salamander is found and these individuals may be killed or injured by work activities, the following will apply:

a. If California red-legged frogs or California tiger salamanders are detected in the Action Area, work activities within 50 feet of the individual that may result in the harm, injury, or death to the animal will cease immediately and the onsite Project Manager and Service -approved biologist will be notified. Based on the professional judgment of the Service-approved biologist, if project activities can be conducted without harming or injuring the California red-legged frog and California tiger salamander, it may be left at the location of discovery and monitored by the Service-approved biologist. All project personnel will be notified of the finding and at no time will work occur within 50 feet of a California red-legged frog and California tiger salamander without a Service-approved biologist present.
b. To the maximum extent possible, contact with the individual frog or salamander will be avoided and it will be allowed to move out of the hazardous situation of its own volition. This procedure applies to situations where a California red-legged frog and California tiger salamander is encountered while it is moving to another location. It does not apply to animals that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the species if the individual moves away from the hazardous location.

CRLF-CTS-10 Species Observations and Handling Protocol: If a California red-legged frog or California tiger salamander does not leave the work area, the Service-approved biologist will implement the species observation and handling protocol outlined below. Only Service-approved biologists will participate in activities associated with the capture, handling, relocation, and monitoring of California red-legged frogs and California tiger salamanders.

a. Prior to handling and relocation, the Service-approved biologist will take precautions to prevent introduction of amphibian diseases in accordance with the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (Service 2003c). Disinfecting equipment and clothing is especially important when biologists are coming to the Action Area to handle amphibians after working in other aquatic habitats. California red-legged frogs and the Sonoma and Central California tiger salamanders will also be handled and assessed according to the Restraint and Handling of Live Amphibians (USGS National Wildlife Health Center 2001).
b. California red-legged frogs and California tiger salamanders will be captured by hand, dip net, or other Service-approved methodology, transported and relocated to nearby suitable habitat outside of the work area and released as soon as practicable the same day of capture. Individuals will be relocated no greater than 300 feet outside of the project site to areas with an active rodent burrow or burrow system (unless otherwise approved by the Service and with written landowner permission). Holding/transporting containers and dip nets will be thoroughly cleaned, disinfected, and rinsed with freshwater prior to use within the Action Area. The Service will be notified within 24 hours of all capture, handling, and relocate on efforts.
c. If an injured California red-legged frog or California tiger salamander is encountered and the Service-approved biologist determines the injury is minor or healing and the salamander is likely to survive, the salamander will be released immediately, consistent with measure 12.b above. The California red-legged frogs and the Sonoma and Central California tiger salamander will be monitored until it is determined that it is not imperiled by predators or other dangers.
d. If the Service-approved biologist determines that a California red-legged frog or California tiger salamander has major or serious injuries as a result of project-related activities the Service-approved biologist, or designee, will immediately take it to a Service-approved facility. If taken into captivity the individual will remain in captivity and not be released into the wild unless it has been kept in quarantine and the release is authorized by the Service. The Subapplicant will bear any costs associated with the care or treatment of such injured California red-legged frogs or California tiger salamanders. The circumstances of the injury, the procedure followed and the final disposition of the injured animal will be documented in a written incident report to the Service as described below.
e. Notification to the Service of an injured or dead California red-legged frog or California tiger salamander in the Action Area will be made and reported whether or not its condition resulted from project-related activities. In addition, the Service-approved biologist will follow up with the Service in writing within 2 calendar days of the finding. Written notification to the Service will include the following information: the species, number of animals taken or injured, sex (if known), date, time, location of the incident or of the finding of a dead or injured animal, how the individual was taken, photographs of the specific animal, the names of the persons who observe the take and/ or found the animal, and any other pertinent information. Dead specimens will be preserved, as appropriate, and will be bagged and labeled (i.e., species type; who found or reported the incident; when the report was made; when and where the incident occurred; and if possible, the cause of death). Specimens will be held in a secure location until instructions are received from the Service regarding the disposition of the specimen.

CRLF-CTS-11 Environmental Awareness Training: Prior to the start of construction, a Service- approved biologist with experience in the ecology of the California red-legged frog and

California tiger salamander as well as the identification of all its life stages will conduct a training program for all construction personnel including contractors and subcontractors. Interpretation for non-English speaking workers will be provided. All construction personnel will be provided a fact sheet conveying this information. The same instruction will be provided to any new workers before they are authorized to perform project work. The training will include, at a minimum:

a. Habitat within the Action Area;
b. An explanation of the species status and protection under state and federal laws;
c. The avoidance and minimization measures to be implemented to reduce take of this species;
d. Communication and work stoppage procedures in case a listed species is observed within the Action Area; and
e. An explanation of the importance of the Environmentally Sensitive Areas and Wildlife Exclusion Fencing.

CRLF-CTS-12 Disease Prevention and Decontamination Procedures: 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 will be followed at all times. A copy of the code of practice is enclosed.

CRLF-CTS-14 Hand Clear Vegetation: Hand clear vegetation in areas where California red-legged frogs and California tiger salamanders are suspected to occur. All cleared vegetation will be removed from the project footprint to prevent attracting animals to the project site. A Service-approved biologist will be present during all vegetation clearing and grubbing activities. Prior to vegetation removal, the Service-approved biologist will thoroughly survey the area for California red-legged frogs and California tiger salamanders. Once the Service-approved biologist has thoroughly surveyed the area, clearing and grubbing may continue without further restrictions on equipment; however, the Service-approved biologist will remain onsite to monitor for California red-legged frogs and California tiger salamanders until all clearing and grubbing activities are complete.

CRLF-CTS-16 Accidental Spills, SWPPP, Erosion Control, and BMPs: Prior to the onset of work, a plan will be 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 to implement if a spill occurs. Storm-water pollution prevention plans and erosion control BMPs will be developed and implemented to minimize any wind- or water-related erosion. These provisions will be included in construction contracts for measures to protect sensitive areas and prevent and minimize stormwater and non-storm-water discharges. Protective measures will include, at a minimum:

a. No discharge of pollutants from vehicle and equipment cleaning is allowed into any storm drains or watercourses.
b. Vehicle and equipment fueling and maintenance operations must be at least 50 feet away from aquatic or riparian habitat and not in a location where a spill may drain directly toward aquatic habitat, except at established commercial gas stations or at an established vehicle maintenance facility. The monitor will implement the spill response plan to ensure contamination of aquatic or riparian habitat does not occur during such operations.
c. Concrete wastes will be collected in washouts and water from curing operations is to be collected and disposed of properly. Neither will be allowed into watercourses.

d. Spill containment kits will be maintained onsite at all times during construction operations and/ or staging or fueling of equipment.
e. Dust control will be implemented, and may include the use of water trucks and non-toxic tackifiers (binding agents) to control dust in excavation and fill areas, rocking temporary access road entrances and exits, and covering of temporary stockpiles when weather conditions require.
f. Graded areas will be protected from erosion using a combination of silt fences, fiber rolls, etc. along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) as appropriate on sloped areas. No erosion control materials that use plastic or synthetic monofilament netting will be used.
g. Permanent erosion control measures such as bio-filtration strips and swales to receive storm water discharges from paved roads or other impervious surfaces will be incorporated to the maximum extent practicable.
h. All grindings and asphaltic-concrete waste will be stored within previously disturbed areas absent of habitat and at a minimum of 50 feet from any aquatic habitat, culvert, or drainage feature.

CRLF-CTS-17 Site Restrictions: The following site restrictions will be implemented to avoid or minimize effects on the listed species and its habitat:

a. A speed limit of 15 miles per hour (mph) in the project footprint in unpaved areas will be enforced to reduce dust and excessive soil disturbance.
b. Construction and ground disturbance will occur only during daytime hours, and will cease no less than 30 minutes before sunset and may not begin again earlier than 30 minutes after sunrise.
c. Except when necessary for driver or pedestrian safety, to the maximum extent practicable, artificial lighting at a project site will be prohibited during the hours of darkness.
d. Routes and boundaries of roadwork will be clearly marked prior to initiating construction or grading.
e. To the maximum extent practicable, any borrow material will be certified to be non-toxic and weed free.
f. All food and food-related trash items will be enclosed in sealed trash containers and properly disposed of offsite.
g. No pets will be allowed anywhere in the Action Area during construction.

CRLF-CTS-18 Suitable Erosion Control Materials: To prevent California red-legged frogs and California tiger salamanders from becoming entangled, trapped, or injured, erosion control materials that use plastic or synthetic monofilament netting will not be used within the Action Area. This includes products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials include natural fibers such as jute, coconut, twine or other similar fibers. Following site restoration, erosion control materials, such as straw wattles, will not block movement of the California red-legged frog and California tiger salamander.

CRLF-CTS-21 Invasive Non-Native Plant Species Prevention: The Service-approved biologist will ensure that the spread or introduction of invasive non-native plant species, via introduction by arriving vehicles, equipment, imported gravel, and other materials, will be avoided to the maximum extent possible. When practicable, invasive non-native plants in the Action Area will be removed and properly disposed of in a manner that will not promote their spread. Areas subject to invasive non-native weed removal or disturbance will be replanted with

appropriate mix of fast-growing native species. Invasive non-native plant species include those identified in the California Invasive Plant Council's (Cal-IPC) Inventory Database, accessible at: www.cal-ipc.org/ip/inventory/index.php.

CRLF-CTS-23 Removal of Non-Native Species: A Service-approved individual will permanently remove, from within the Action Area, any individuals of non-native species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. The Subapplicant is responsible for ensuring that these activities are in compliance with the California Fish and Game Code. No conversion of seasonal breeding aquatic habitat to perennial aquatic breeding habitat is allowed under this programmatic biological opinion. Creating new perennial water bodies in the vicinity of California red-legged frog or California tiger salamander populations where the ponds could be colonized by predators will also be avoided. Larval mosquito abatement efforts will be avoided in occupied breeding habitat for the species.

CRLF-CTS-24 Restore Contours of Temporarily Disturbed Areas: Habitat contours will be returned 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 Subapplicant and the Service determine that it is not feasible, or modification of original contours will benefit the California red-legged frog and California tiger salamander.

Alameda Whipsnake Conservation Measures

The Subapplicant will implement the following measures in Alameda whipsnake supporting habitat:

AWS-1 Environmental Awareness Training: Prior to construction, a Service-approved biologist with experience in the ecology and identification of the Alameda whipsnake will conduct an education program for all construction personnel, including contractors and subcontractors. Interpretation will be provided for non-English speaking workers. The same instruction will be provided to any new workers at the site before they are authorized to perform project work. Fact sheets conveying this information and color photographs of the species will be prepared for distribution to the above-mentioned people and anyone else who may enter the Action Area. The program will include, at a minimum:

a. A brief description of the species and their habitat needs;
b. Any reports of occurrences in the Action Area;
c. An explanation of the species' status and protection under the Act;
d. Communication and work stoppage procedures in case an individual is observed within the Action Area; and

e. A list of avoidance and minimization measures being taken to reduce effects to the species during construction and implementation.

AWS-2 Site Restrictions: The following site restrictions will be implemented to avoid or minimize effects on the Alameda whipsnake and its habitat:

a. A speed limit of 15 miles per hour (mph) in the project footprint in unpaved areas will be enforced to reduce dust and excessive soil disturbance.
b. Construction and ground disturbance will occur only during daytime hours and will cease no less than 30 minutes before sunset and may not begin again earlier than 30 minutes after sunrise.

c. Routes and boundaries of roadwork will be clearly marked prior to initiating construction or grading.
d. To the maximum extent practicable, any borrow material will be certified to be non-toxic and weed free.
e. All food and food-related trash items will be enclosed in sealed trash containers and properly disposed of offsite.
f. No pets will be allowed anywhere in the Action Area during construction.

AWS-3 Biological Monitor: The Service-approved biologist will be onsite during initial ground- disturbing activities, and thereafter as needed to fulfill the role of the approved biologist as specified in project permits. The Service-approved biologist will keep copies of applicable permits in their possession when onsite. Through the Resident Engineer, Project Manager or their designee, the Service-approved biologist will have the authority to communicate either verbally, by telephone, e- mail or hardcopy with all project personnel to ensure that take of listed species is minimized and permit requirements are fully implemented. Through the Resident Engineer, Project Manager or their designee, the Service-approved biologist will have the authority to temporarily stop project activities to minimize take of listed species or if they determine that any permit requirements are not fully implemented. If the Service-approved biologist exercises this authority, the Service will be notified by telephone and e-mail within 24 hours.

AWS-4 Habitat Avoidance: During project implementation, avoid the following habitats for this species:

a. To the extent possible, all rock outcroppings will be avoided.
b. Ground disturbance and vegetation clearing in scrub/chaparral habitat will be avoided to the maximum extent possible. Where disturbance cannot be avoided in this habitat type, work will be limited to the fall season of September to November in order to allow the young of the year time to become sufficiently capable of escaping such activities.

AWS-7 Pre-construction Surveys: Pre-construction surveys for the Alameda whipsnake will be conducted by the Service-approved biologist no more than 20 calendar days prior to any initial ground disturbance within Alameda whipsnake habitat. These surveys will consist of walking the project limits and, if possible, any accessible adjacent areas within at least 50 feet of the project limits. The Service-approved biologist will investigate potential cover sites when it is feasible and safe to do so. This includes thorough investigation of mammal burrows, rocky outcrops, appropriately sized soil cracks, tree cavities, and debris.

AWS-8 Clearance Surveys: No more than 24 hours prior to the date of initial ground disturbance and vegetation clearing, a Service-approved biologist with experience in the identification of the Alameda whipsnake will conduct clearance surveys and monitoring within 50 feet of the project site. The Service-approved biologist will investigate all areas that could be used by Alameda whipsnakes for sheltering, movement, and other essential behaviors. This includes an adequate examination of rock outcroppings and mammal burrows. Safety permitting, the Service-approved biologist will investigate areas of disturbed soil for signs of the listed species within 30 minutes following the initial disturbance of that given area. The Service-approved biologist will conduct clearance surveys at the beginning of each day and regularly throughout the workday when construction activities are occurring that may result in take of Alameda whipsnake.

AWS-9 Entrapment Prevention: To prevent inadvertent entrapment of Alameda whipsnakes during construction excavated holes or trenches more than one foot deep with walls steeper than 30 degrees will be covered at the close of each working day by plywood or similar materials.

Alternatively, an additional 4-foot-high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent entrapment of listed species. If it is not feasible to cover an excavation or provide an additional 4-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 filled, they will be thoroughly inspected for trapped animals. If at any time a trapped Alameda whipsnake is discovered, the onsite biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape or the Service will be contacted by telephone for guidance. The Service will be notified of the incident by telephone and e-mail within 24 hours.

AWS-12 Using Cover Boards: The Service-approved biologist will place cover boards in strategic locations throughout the project footprint during the pre-construction surveys. During construction, these cover boards will be checked on a daily basis for the Alameda whipsnake when the Service-approved biologist is onsite.

AWS-13 Reporting: The Service will be notified within one (1) working day if an Alameda whipsnake is discovered within the Action Area. The Resident Engineer or Project Manager will immediately contact the Service-approved biologist in the event that an Alameda whipsnake is observed within a construction zone. The Resident Engineer will suspend construction activities within a 50-foot radius of the animal until the animal leaves the site voluntarily or as a last option, the animal is captured and relocated according to Service-approved protocol.

AWS-14 Suitable Erosion Control Materials: Plastic monofilament netting (erosion control matting) or similar material will be prohibited from use on the project because the Alameda whipsnake may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

AWS-16 Encounters with Species: Each Alameda whipsnake encounter will be treated on a case-by-case basis in coordination, with the Service but general guidance is as follows: (1) leave the uninjured animal if it is not in danger; or, (2) move the animal to a nearby location if it is in danger.

These options are further described as follows:

a. When an Alameda whipsnake is encountered in the Action Area the first priority is to stop all activities in the surrounding area that have the potential to result in the harm, injury, or death of the individual. The monitor then needs to assess the situation in order to select the course of action that will minimize adverse effects to the individual. Contact the Service once the site is secure. Contact the Service again prior to the start of construction to confirm the animal's status.
b. The first priority is to avoid contact with the animal and allow it to move out of the project footprint and hazardous situation on its own to a safe location. The animal will not be picked up and moved because it is not moving fast enough or it is inconvenient for the construction schedule. This guidance only applies to situations where an animal is encountered while moving under conditions that make their upland travel feasible. This does not apply to animals that are uncovered or otherwise exposed or in areas where there

is not sufficient adjacent habitat to support the life history of the Alameda whipsnake if they move outside the construction footprint.

c. Avoidance is the preferred option if the animal is not moving or is within some sort of burrow or other refugia. In this case, the area will be well marked for avoidance by construction and a Service-approved biological monitor will be assigned to the area when work is taking place nearby.
d. The animal will be captured and moved when it is the only option to prevent its death or injury.
e. If appropriate habitat is located immediately adjacent to the capture location then the preferred option is short distance relocation to that habitat. This must be coordinated with the Service, but the general guidance is the snake will not be moved outside of the area where it could have traveled on its own. Captured snakes will be released in appropriate cover as close to their capture location as possible for their continued safety. Under no circumstances will an animal be relocated to another property without the owner's written permission. It is the Subapplicant's responsibility to arrange for that permission.
f. The release must be coordinated with the Service and will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow or other suitable refugia.
g. Only Service-approved biologists for the project can capture Alameda whipsnakes.