

**California Environmental Protection Agency (Cal EPA)
and
California Natural Resources Agency (CNRA)**

2021 Statewide Fires – Environmental Protection Plan

1.0 Purpose

This document comprises the Environmental Protection Plan (EPP) to support Private Property Debris Removal (PPDR) program (inclusive of related non-utility hazard tree removal) for the 2021 Statewide Fires identified in the Governor’s Executive Order N-13-21 (EO). The EO authorizes the suspension of state statutes with “Emergency Suspensions (Suspensions)” authorized by the California Environmental Protection Agency (Cal EPA) and California Natural Resources Agency (CNRA) Secretaries to expedite the recovery of the counties impacted by the fires. This EPP is the basis for each Agency Secretary to authorize Environmental Suspensions for the performance of the PPDR and non-utility hazard tree removal activities (hereafter, ‘Debris Removal activities’).

The purpose of the EPP is to document how the Debris Removal activities will be managed to comply with applicable environmental laws and regulations by implementing Post Fire Statewide Best Management Practices (BMPs) developed by Cal EPA (State Water Resources Control Board and Regional Water Quality Control Boards (Water Boards)) and CNRA (i.e., California Department of Fish and Wildlife (CDFW), California Department of Forestry and Fire Prevention (CALFIRE)). In accordance with the EO and each agency’s statutory responsibilities, separate documents (Attachments 1 and 2) were prepared that summarize each agency’s BMPs to ensure Debris Removal activities can be expedited and conform to applicable resource laws and regulations.

In addition, this EPP recognizes other state and federal agencies who have regulatory responsibilities for natural and cultural resources within the 2021 Wildfire burn scars, including the Tahoe Regional Planning Agency (TRPA) and Federal Emergency Management Agency (FEMA) for which Attachments 3 and 4 have been developed to enable compliance with their jurisdictional authorities. This EPP is considered a live document that may be modified to include additional 2021 Wildfires and BMPs in Addenda as may be defined by the Cal EPA, CNRA, TRPA, and FEMA. Any Local, State, or Federal Regulatory Authority has the right to inspect the project area (any portion of the burn area to which the EPP applies), following the rules of a landowner’s Fourth Amendment Rights. The Incident Management Team (IMT) the Rights of Entry (ROE) that are required prior to accessing private properties for the Debris Removal activities will be kept by the IMT in an electronic database. This database will also serve as a means for the regulatory agencies to see what work is being conducted in their jurisdictional areas and decide if this is an activity that would require their inspection or closer oversight.

The TRPA is a bi-state agency (California and Nevada) that through the bi-state Tahoe Regional Planning Compact (Compact), TRPA reviews all activities undertaken within the Tahoe Basin that affect its environmental quality. The Caldor Fire, one of the 2021 Wildfires addressed in the EO is also subject to the FEMA Major Disaster, DR 4619. TRPA works in concert with other agencies in the Basin to ensure the protection, among other subjects of water and air quality. The TRPA has Memorandum of Understanding with federal, state, and local agencies and entities to streamline project permitting, including exempting many activities provided those activities are undertaken consistent with TRPA's Handbook of Best Management Practices; those relevant to the EPP are contained in Attachment 3.

The Federal Emergency Management Agency (FEMA) is the lead agency for federally declared major disasters, such as DR 4619 for the Caldor Fire. Consultations for DR 4619 with the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) are the responsibility of FEMA for Debris Removal activities to address the federal Endangered Species Act Section 7. Through this consultation, Avoidance and Minimization Measures (AMMs) will be determined for federally declared disasters associated with EO N-13-21. The AMMs are expected to be based on FEMA's Programmatic Agreements with these agencies for disasters in California and are contained in Attachment 4 for reference. FEMA is also leading the National Historic Preservation Act (NHPA) Section 106 consultations for DR 4619 to address the protection of cultural resources and tribal consultations for which there is a Programmatic Agreement between FEMA, Cal OES and SHPO which is also contained in Attachment 4.

This EPP does not apply to Debris Removal activities for which local agency permits may be required for project support facilities, including, but not limited to: contractor basecamps; temporary storage, pre-processing, and processing facilities; material laydown areas; temporary heliports and operation yards; and equipment maintenance yards. The local agencies for each of the counties will administer the California Environmental Quality Act (CEQA) and California Planning and Zoning Laws when reviewing applications for construction or conditional use permits for these facilities.

Coordination with the local agencies is required to determine their permit requirements and CEQA review process. Often, but not always, disaster recovery activities may be considered exempt from CEQA. Cases where CEQA may not be exempt include temporary storage, pre-processing, and processing facility sites, as these land uses may require review for local zoning designation compatibility.

Failure to comply with the AMMs and BMPs set forth in the EPP, and with any applicable federal and non-suspended state and local environmental laws and regulations, may result in an enforcement action by Cal EPA departments and/or CNRA departments. Please note that applicable environmental laws and regulations may be suspended. (See the Emergency Suspensions issued by Cal EPA and CNRA for a list of suspended environmental laws and regulations). Federal and state environmental laws and regulations that have been considered applicable and are included by reference in this EPP are summarized below:

Federal

- Clean Water Act (CWA), e.g., Section 401, United States Environmental

Protection Agency (USEPA)/State Water Resources Control Board (SWRCB) water quality certification; Sections 301 and 402, National Pollutant Discharge Elimination System (NPDES)/Storm Water Pollution Prevention Plan

(SWPPP); Section 404, fill and wetlands, U.S. Army Corps of Engineers (USACE),

- Endangered Species Act (ESA, e.g., Section 7, USFWS, and the NMFS),
- Magnuson-Stevens Act (MSA), Migratory Bird Treaty Act (USFWS),
- Bald and Golden Eagle Protection Act (USFWS and CDFW),
- National Historic Preservation Act (e.g., Section 106), FEMA, California State Historic Preservation Officer (SHPO), and federally recognized tribes,
- Resource Conservation and Recovery Act (RCRA, e.g., Subtitle D - Non-Hazardous Waste for Timber and BioMass disposal; Subtitle C – Episodic Generator Provision, USEPA),
- National Emission Standards for Hazardous Air Pollutants (NESHAP), and
- National Environmental Policy Act (NEPA, FEMA).

State

- Porter-Cologne Water Quality Act (California Water Code sections 13000 et seq.)
- Endangered Species Act (California Fish and Game Code §2050-2115.5),
- California Fish and Game Code (CFGF) Section 1600 (e.g., Lake and Streambed Alteration Agreement), CDFW),
- California Migratory Bird Protection Act (CFGF Section 3513, CDFW),
- California Clean Air Act (CCAA),
- California Native American, Historical, Cultural and Sacred Sites Act ('Sacred Sites Act', SHPO, and FEMA/Cal OES tribal Liaison),
- E.O. B 10-11 (California Native Tribal Consultation),
- AB-52, Gatto. Native Americans CEQA Consultation,
- Z'Berg-Nejedly Forest Practice Act (2021 California Forest Practice Rules (FPR), CAL FIRE)
- Native Plant Protection Act (CFGF Section 1900 et seq.), and
- Airborne Toxic Control Measure (ATCM) of 2007.

Regional

- Tahoe Regional Planning Compact Pub.L. 96-551 (1980); Cal. Gov. Code Section 66801.

Prior to the commencement of Debris Removal activities, a training program will be delivered to contractors and consultants undertaking the work. Only those that have evidence of completing the training will be allowed to work on active sites.

Attachment 1

**California Environmental Protection Agency (Cal EPA)
State Water Resources and Regional Water Quality Control Boards (Water Board)
California Air Resources Board (CARB)**

2021 Statewide Fires –Environmental Protection Plan

2021 Statewide Fires –Environmental Protection Plan

California Environmental Protection Agency (Cal EPA)
State Water Resources and Regional Water Quality Control Boards (Water Board)
California Air Resources Board (CARB)

Post Fire Statewide Best Management Practices

Contents

1.0	Introduction	7
2.0	Operational Requirements for All Work Areas	7
2.1	Porter-Cologne Water Quality Control Act (Water Code).....	7
3.0	Hazard Tree Removal Activities	9
3.1	Hazard Tree Removal Sites in Forested Areas (Compliance with Forest Practice Act).....	9
3.2	Access Road Construction, Maintenance, Deconstruction in Forested Environment (Compliance with Forest Practice Act)	10
3.3	Stream crossings (Temporary and Permanent)	10
3.4	Hazard Tree Removal Sites in Non-Forested Areas (not covered under Forest Practice Act) .	13
3.5	Staging Area Requirements (areas used to stockpile logs, slash or related debris for transport to processing facility)	14
3.6	Processing Facility Requirements (temporary facilities constructed for the purpose of processing woody debris and logs for shipment to log mills or cogeneration facilities)	16
4.0	Debris Removal	18
4.1	Debris Removal Site Requirements	18
4.2	Staging Area Requirements (Pre-Processing Sites).....	20
4.3	Processing Facility Requirements	21
5.0	Drinking Water Operations and Coordination	23
5.1	Coordination	23
5.2	Coordination with area involved water systems.....	23
5.3	Use of Water.	23
5.4	Water Meters	23
5.5	Damage to Water Facilities	23
5.6	Temporary Debris Storage	23
5.7	Water System Infrastructure	23

1.0 Introduction

This document summarizes statewide Best Management Practices (BMPs) for the California Environmental Protection Agency, State Water Resources Control Board and Regional Water Quality Control Boards (California Water Boards or Water Boards). The BMPs are topic-specific codes have been established for each of the BMP subjects for ease of reference in the Private Property Debris Removal Program (PPDR) for the Debris Removal Operation Center (DROC) for the 2021 Wildfires. This document is organized to summarize the Water Boards' BMPs in Sections 2.0 through 5.0.

2.0 Operational Requirements for All Work Areas

2.1 Porter-Cologne Water Quality Control Act (Water Code)

- 2.1.1 Discharge of Waste. Per Water Code section 13050(d) "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for the purposes of, disposal.
- 2.1.2 Waters of the State. Per Water Code section 13050(e), "waters of the state" means any surface or groundwater, including saline waters, within the boundaries of the state.
- 2.1.3 Pollution. Per Water Code section 13050(i), "Pollution" means an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects beneficial uses.
- 2.1.4 Non-Degradation. Neither this Environmental Protection Plan (EPP) or the Secretarial Suspension authorizes activities that will cause or threaten to cause discharges of waste to waters of the state in a manner that creates pollution.
- 2.1.2 Reasonable Access for Inspection. Reasonable access to the property shall be provided whenever requested by California Water Boards staff for the purpose of performing inspections and conducting monitoring, including sample collection, measuring, and photographing/taping to determine proper implementation of management practices. Management practices and water quality protective measures required by regional board staff as a result of such inspections shall be incorporated into the project.
- 2.1.3 Permitting. Work requiring coverage under waste discharge requirements or a water quality certification issued by the State Water Resources Control Board or regional water quality control boards (collectively, Water Boards) that is not otherwise within the scope of an approved Agency Secretary Environmental Suspension may not begin until such coverage is obtained. National Pollution Discharge Elimination System (NPDES) permitting requirements, such as the following, cannot be suspended and may apply to debris or hazard tree removal activities:
 - 2.1.3.1 Construction Stormwater Permit Coverage. Coverage under the State Water Resources Control Board's General Permit for Discharges of Stormwater Associated

with Construction Activity, Order 2009-0009-DWQ (Construction General Permit, CGP) is required when a project creates a soil disturbance of one acre or more. Coverage is also required for projects with less than one acre of soil disturbance that are part of a larger plan of development that collectively disturbs one acre or more. Construction activity subject to this permit includes clearing, grading, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of a facility. Compliance with the CGP requires electronic submittal of permit registration documents including a Stormwater Pollution Prevention Plan (SWPPP) prepared by a Qualified SWPPP Developer (QSD) and implemented by a Qualified SWPPP Practitioner (QSP). The CGP requires implementation, monitoring, and maintenance of adequate sediment and erosion control Best Management Practices (BMPs), and certain monitoring and reporting activities. Many California Professional Engineers have a self-certification that qualifies them as a QSD/QSP. In addition, the California Stormwater Quality Association (CASQA) has a lookup tool to find licensed QSD/QSPs. More information is available online at:

https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html. More information on US EPA standards here: [National Management Measures to Control Nonpoint Source Pollution from Urban Areas, November 2005, EPA-841-B-05-004](#) and here: [Urban Runoff: National Management Measures | US EPA](#)

2.1.3.2 Industrial Stormwater Permit Coverage. Coverage under the State Water Resources Control Board's General Permit for Stormwater Discharges Associated with Industrial Activities, Order 2014-0057-DWQ (Industrial General Permit, IGP) is required when a project includes certain industrial activities. In the case of post-fire debris removal and hazard tree removal, these include scrap and waste materials storage, sorting, and handling of soil, concrete, metals, vehicles, wood, and vegetation; log storage and handling associated with chipping, grinding, or sawmilling; and maintenance of vehicles and equipment. Further determination of IGP applicability should be discussed with a Regional Water Board representative identified below. Compliance with the IGP requires electronic submittal of permit registration documents including a Stormwater Pollution Prevention Plan (SWPPP), implementation, monitoring, and maintenance of adequate Best Management Practices (BMPs), and certain monitoring and reporting activities. In some cases, a Qualified Industrial Stormwater Practitioner (QISP) is required to design and implement the SWPPP, perform facility evaluations, prepare response plans, and produce reports. Many California Professional Engineers have a self-certification that qualifies them as a QISP. In addition, the California Stormwater Quality Association (CASQA) has a lookup tool to find licensed QISPs. More information is available online at:

https://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.html. More information on US EPA standards here: [National Management Measures to Control Nonpoint Source Pollution from Urban Areas, November 2005, EPA-841-B-05-004](#) and here: [Urban Runoff: National Management Measures | US EPA](#)

3.0 Hazard Tree Removal Activities

- 3.1 Hazard Tree Removal Sites in Forested Areas (Compliance with Forest Practice Act)
- 3.1.1 Saturated Soil Conditions. Operations will be limited or halted in saturated conditions as determined by the Operations Chief or RPF. Per CCR section 895.1 definitions, "Saturated Soil Conditions," means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. Indicators of Saturated Soil Conditions may include but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during Timber Operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.
- 3.1.2 Tree Felling. To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions, and safety factors, per Forest Practice Rules (FPR) sections 914.1, 934.1, and/or 954.1 trees shall be felled in a manner that avoids bridging watercourses. In the event trees cannot be jacked and /or pulled away from a watercourse, the felled tree(s) shall be removed as soon as possible, and watercourses restored thereafter.
- 3.1.3 Shade-Producing Canopy. Trees within the riparian zone that are not deemed a hazard shall be retained to maintain shade-producing canopy to the maximum extent practicable. Please consult with the appropriate regional water board if there are questions about maintaining shade-producing canopy. Operators will comply with FPR sections 916.9, 936.9, and/or 956.9.
- 3.1.4 Water drafting locations. All water drafting locations shall include appropriate BMPs to prevent sediment discharge from disturbed areas, vehicle tracking, or overtopping to receiving waters. Such locations shall also install appropriate BMP's to prevent petroleum products from entering the waterbody. Pump intakes shall be screened to prevent entrapment of aquatic species. Consultation with relevant federal, state, and local agencies shall occur before initiating drafting activities.
- 3.1.5 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities. Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization. At staging areas and processing sites, Construction and/or Industrial Stormwater permits administered by the California Water Boards may be required. Generally, a stormwater permit is required for soil disturbances of one acre or more (where the CWA section 404 silviculture exemption does not apply), or when part of a larger plan of development.

- 3.1.6 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.
- 3.1.7 Mapping. The contractor shall map out the placement of BMPs, to be kept in the Environmental Tree Removal Data Management System, to account for where they have been placed, what type, and how much material was used.
- 3.2 Access Road Construction, Maintenance, Deconstruction in Forested Environment (Compliance with Forest Practice Act)
- 3.2.1 Winter Period Operations. Winter period is defined as November 15 through April 1 each year. If road and landing construction/reconstruction operations are planned during the winter period where such activities could negatively impact water quality, consult with the appropriate regional board office before commencing work. Note that erosion control BMPs must be installed consistent with FPR section 916.9, 936.9, and/or 956.9(n)(1-7) in watersheds containing listed anadromous salmonid habitat (October 15 through May 1).
- 3.2.2 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities. Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization.
- 3.2.3 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.
- 3.2.4 Sediment and Erosion Control Measures. Biodegradable sediment and erosion control measures will be utilized throughout all phases of operation where sediment runoff from work areas threatens to enter receiving waters. If there is a 30 percent chance of a rain event within 24 hours, sediment, and erosion control BMPs shall be inspected (before and after the event), and repaired, or upgraded and maintained to prevent sediment-laden runoff. Maintenance includes, but is not limited to, removal of accumulated sediment and/or replacement of damaged silt fencing, compost socks, coir logs, coir rolls, and/or straw bale dikes. Modifications, repairs, and improvements shall be made to the sediment and erosion control measures whenever warranted.

Materials used in the sediment barriers shall not pose an entanglement risk to fish or wildlife (e.g., plastic monofilament netting).

- 3.2.5 Revegetation Requirements. If required, because of agency consultation, or by an applicable Construction Stormwater permit, disturbed areas shall be revegetated with native species suitable to the restoration activity such as the decommissioning of an access road leading to a temporary crossing. (See NMFS-9b)
 - 3.2.6 Access Prevention Barricades. Barricades shall be constructed at all points of access to the decommissioned, deactivated, or abandoned road to effectively prevent use by any passenger vehicle, off road vehicle or other equipment.
 - 3.2.7 Water drafting locations. All water drafting locations shall include appropriate BMPs to prevent sediment discharge from disturbed areas, vehicle tracking, or overtopping to receiving waters. Such locations shall also install appropriate BMPs to prevent petroleum products from entering the waterbody. Pump intakes shall be screened to prevent entrapment of aquatic species. Consultation with relevant federal, state, and local agencies shall occur before initiating drafting activities.
 - 3.2.8 Coordination with area involved water systems. All activities necessitating the use of area water, such as, and not limited to dust suppression, cleaning, washing, sweeping, and irrigation, shall be coordinated with the area involved water system to avoid any potential conflicts. All activities that may affect, impede, or impact the ability of the area involved water system from executing their duties shall be coordinated with the area involved water system to avoid any potential conflicts.
- 3.3 Stream crossings (Temporary and Permanent)
- 3.3.1 WB-2c - Consultation. Contractors shall consult with the US Army Corps of Engineers, CDFW, and appropriate regional board before any new permanent watercourse crossing, staging area, or processing area is constructed (or when an existing watercourse crossing requires repair) in or adjacent to a Water of the United States.
 - 3.3.2 WB-2a - New Permanent Watercourse Crossings. Should construction of permanent watercourse crossings be necessary, the contractor shall consult with the appropriate regional board in advance to determine conformance with permitting requirements outlined in the Agency Secretary Environmental Suspension. At a minimum, permanent watercourse crossings shall be designed and constructed to accommodate the estimated 100-year flood flow, including debris and sediment loads (considerations are outlined in Title 14 CCR sections 923.9, 943.9, and 963.9).
 - 3.3.3 WB-2b –Temporary Watercourse Crossings. Temporary watercourse crossings shall be installed and removed outside of the winter period (defined as November 15 through April 1) as feasible, installed and used when water is not flowing, and removed and stabilized immediately after debris and hazard tree removal work has been completed. No temporary crossings shall be constructed where flow and aquatic species passage is obstructed during the period of use.

- 3.3.4 Installation of Temporary Crossings and Water Flow. The installation of temporary bridges, culverts or other structures shall be installed such that water flow is not impaired and upstream or downstream passage of fish and all aquatic life-forms is always assured. Temporary crossings shall be removed prior to the winter period. If structures and associated materials are not designed to withstand high seasonal flows, they shall be removed before such flows occur.
- 3.3.5 Damaged Watercourse Crossing Structures. Culverts or other watercourse crossing structures damaged by the contractor during work to such an extent as to impair functionality shall be repaired or replaced expeditiously. The contractor shall notify the appropriate regional board before initiating repairs as certain design standards or permitting requirements may apply.
- 3.3.6 Equipment in Watercourse. If equipment must cross an established watercourse or wet crossing, non-rubberized and/or heavy equipment will not enter waters of the United States without express permission from US Army Corps of Engineers, NOAA National Marine Fisheries Service (NMFS), the California Water Boards, and the relevant Federal or State Department of Fish and Wildlife. The contractor shall notify the appropriate regional board before initiating in-water work.
- 3.3.7 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities. Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization.
- 3.3.8 Sediment and Erosion Control Measures. Biodegradable sediment and erosion control measures will be utilized throughout all phases of operation where sediment runoff from work areas threatens to enter receiving waters. If there is a 30 percent chance of a rain event within 24 hours, sediment, and erosion control BMPs shall be inspected (before and after the event), and repaired, or upgraded and maintained to prevent sediment-laden runoff. Maintenance includes, but is not limited to, removal of accumulated sediment and/or replacement of damaged silt fencing, compost socks, coir logs, coir rolls, and/or straw bale dikes. Modifications, repairs, and improvements shall be made to the sediment and erosion control measures whenever warranted. Materials used in the sediment barriers shall not pose an entanglement risk to fish or wildlife (e.g., plastic monofilament netting).
- 3.3.9 Silt Barriers. If work on crossings within a wetted stream, lake, or wetland must occur, precautions to minimize turbidity and siltation shall be employed and may require the placement of geotextile fabrics, silt fencing, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to pass to downstream reaches of the receiving water. Equipment shall be placed on swamp mats, where the ground is soft. Materials used in the silt barrier shall not pose an entanglement risk to fish or wildlife (no plastic monofilament netting). The

Contractor shall consult with the appropriate regional board before placing in-stream materials.

- 3.3.10 Removal of Silt from Barriers. Silt collected from silt barriers shall be removed on an as needed basis to prevent silty/turbid water from flowing around the silt barriers during storm events. Silt barriers which trap sediment shall be removed when temporary crossings are removed. Silt barriers used through the winter period should be inspected and maintained regularly or removed altogether if storm flooding would dislodge and discharge barrier materials downstream. The stream shall then be restored to its natural condition. This work may require a permit from the US Army Corps of Engineers, CDFW, or the appropriate regional water board. Consultation is required before removing in-stream materials.
- 3.3.11 Watercourse Bank Stabilization. Bank stabilization features will be constructed with suitable non-erodible materials that will be installed in order to withstand wash out during high flows. Bank stabilization materials will extend above the ordinary high-water mark. Only wildlife-friendly, 100 percent biodegradable erosion and sediment control products that will not entrap or harm wildlife shall be used. Erosion and sediment control products shall not contain synthetic (e.g., plastic or nylon) netting. Photodegradable synthetic products are not considered biodegradable. Rock riprap and bank armoring shall only be done in consultation and with prior approval from the US Army Corps of Engineers, CDFW, or the appropriate regional water board. Only clean material such as rock riprap that is free of trash, debris and deleterious material shall be used in bank stabilization. Use of materials containing asphalt and/or concrete is prohibited.
- 3.3.12 Crossing Fill Materials. To minimize turbidity or siltation in receiving temporary crossings shall be constructed with washed 2–6-inch pit run rock, screened river gravels, washed 2-inch plus rock or gravel, and/or logs in fill materials whenever feasible. Bridge abutments below the high-water mark shall be rock. Where a temporary crossing using fill material is removed, the channel shape and gradient shall be returned to pre-project condition and stabilized to the extent feasible; any adjacent bare soil shall be stabilized by mulching or other effective method.
- 3.3.13 Recreate Channel Grade During Crossing Removal. During crossing removal, all fill material shall be excavated in a manner that recreates the natural channel grade and orientation, leaving a channel bed that is as wide as or slightly wider than the original watercourse.
- 3.3.14 Stabilize and Inspect Decommissioned/Deactivated and Abandoned Roads and Crossings. Decommissioning/deactivation/abandonment of roads and crossings shall be conducted in a manner that ensures stabilization before the winter period (November 15). If work occurs during the winter period or if there is a 30 percent chance of a rain event within 24 hours, sediment and erosion control shall be installed before and inspected after the rain event. Areas exhibiting erosion with the potential to transport sediment to receiving waters shall be repaired with applicable BMPs, and then inspected following a runoff event after soils reach saturation.
- 3.3.15 Stabilize Crossing Sites. All bare mineral soil exposed in conjunction with crossing construction, deconstruction, maintenance, or repair, shall be treated for erosion

immediately upon completion of crossing work, and prior to the onset of precipitation capable of generating runoff. Erosion control BMPs shall be used as specified to stabilize the approaches and bank of the watercourse. If the site is seeded, native species, or a sterile seed mix and mulch should be used to the extent feasible.

- 3.3.16 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.
- 3.4 Hazard Tree Removal Sites in Non-Forested Areas (not covered under Forest Practice Act)
- 3.4.1 WB-1b – Permits. Work requiring coverage under a permit issued by the California Water Boards that is not otherwise within the scope of an approved Agency Secretary Environmental Suspension, including any necessary permits under section 402 of the Clean Water Act regulating discharges to waters of the United States, may not begin until such coverage is obtained.
- 3.4.2 Winter Period Operations. Winter period is defined as November 15 through April 1 each year. If road and landing construction/reconstruction operations are planned during the winter period where such activities could negatively impact water quality, consult with the appropriate regional board office before commencing work.
- 3.4.3 Saturated Soil Conditions. Operations will be limited or halted in saturated conditions as determined by the Operations Chief or RPF. Per CCR 895.1 definitions, "Saturated Soil Conditions," means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. Indicators of Saturated Soil Conditions may include but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during Timber Operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.
- 3.4.4 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities. Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization. At staging areas and processing sites, Construction and/or Industrial Stormwater permits administered by the California Water Boards may be required. Generally, a stormwater permit is required for soil disturbances of one acre or more (where the CWA section

404 silviculture exemption does not apply), or when part of a larger plan of development.

- 3.4.5 Tree Felling. To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions, and safety factors, trees shall be felled in a manner that avoids bridging watercourses. In the event trees cannot be jacked and / or pulled away from a watercourse, the felled tree(s) shall be removed as soon as possible, and watercourses restored thereafter.
- 3.4.6 Shade-Producing Canopy. Trees within the riparian zone that are not deemed a hazard shall be retained to maintain shade-producing canopy to the maximum extent practicable. Please consult with the appropriate regional water board if there are questions about maintaining shade-producing canopy. Operators may be required to adhere to FPR 916.9, 936.9, and/or 956.9.
- 3.4.7 Water drafting locations. All water drafting locations shall include appropriate BMPs to prevent sediment discharge from disturbed areas, vehicle tracking, or overtopping to receiving waters. Such locations shall also install appropriate BMP's to prevent petroleum products from entering the waterbody. Pump intakes shall be screened to prevent entrapment of aquatic species. Consultation with relevant federal, state, and local agencies shall occur before initiating drafting activities.
- 3.4.8 Coordination with area involved water systems. All activities necessitating the use of area water, such as, and not limited to dust suppression, cleaning, washing, sweeping, and irrigation, shall be coordinated with the area involved water system to avoid any potential conflicts. All activities that may affect, impede, or impact the ability of the area involved water system from executing their duties shall be coordinated with the area involved water system to avoid any potential conflicts.
- 3.4.9 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.
- 3.4.10 Mapping. The contractor shall map out the placement of BMPs, to be kept in the Environmental Tree Removal Data Management System, to account for where they have been placed, what type, and how much material was used.
- 3.5 Staging Area Requirements (areas used to stockpile logs, slash, or related debris for transport to processing facility)
- 3.5.1 Permit coverage. Construction and operation of staging areas and processing sites may require Construction and/or Industrial Stormwater Permits issued by the appropriate regional water board. Permit type and permitting requirements are determined based on site-specific characteristics and proposed use. Consultation with the appropriate regional water board is required prior to construction.

- 3.5.2 Sediment and Erosion Control Measures. Biodegradable sediment and erosion control measures will be utilized throughout all phases of operation where sediment runoff from work areas threatens to enter receiving waters. If there is a 30 percent chance of a rain event within 24 hours, sediment, and erosion control BMPs shall be inspected (before and after the event), and repaired, or upgraded and maintained to prevent sediment-laden runoff. Maintenance includes, but is not limited to, removal of accumulated sediment and/or replacement of damaged silt fencing, compost socks, coir logs, coir rolls, and/or straw bale dikes. Modifications, repairs, and improvements shall be made to the sediment and erosion control measures whenever warranted. Materials used in the sediment barriers shall not pose an entanglement risk to fish or wildlife (e.g., plastic monofilament netting).
- 3.5.3 Ground disturbance and creation of areas bare of vegetation. Work shall be planned to minimize ground disturbance activities and to prevent discharge of sediment to receiving waters. Generally, where ground disturbance is larger than one acre, a Construction Stormwater permit may be required. Consult with the applicable regional water board before conducting work in instances where large ground disturbance activity is likely to occur.
- 3.5.4 Staging Areas and Processing Sites. Construction and/or industrial stormwater permits may be required for staging areas and/or processing sites. Should stormwater permits be required, the designated contractors' Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) shall develop a SWPPP and implement it as appropriate. Other construction activities not requiring a stormwater permit but having the potential to discharge sediment to receiving waters, shall contain sufficient sediment and erosion control Best Management Practices (BMPs) to mitigate discharge of sediment to receiving waters. Contractors shall, at a minimum, include the following protective measures:
- 3.5.4.1 Operating Equipment and Vehicle Leaks. Equipment shall not be stored within 50 feet of a stream, lake, or wetland. Any equipment or vehicles driven, operated, or adjacent to a WLPZ shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic life or riparian habitat.
- 3.5.4.2 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located in or adjacent to the stream/lake shall be positioned over drip pans. Stationary heavy equipment will have suitable containment to handle a catastrophic spill/leak. Crews will always maintain spill containment kits on-site during project operations and/or staging or fueling of equipment.
- 3.5.4.3 Equipment Maintenance and Fueling. No equipment maintenance, fueling or storage will occur within or adjacent to, any stream channel, wetland, or lake margin where petroleum products or other pollutants from the equipment may enter these areas.
- 3.5.4.4 No Dumping. No litter or construction debris shall be deposited within a stream or lake, or where it may pass into a stream or lake. All debris and waste shall be removed daily. All trash cans and dumpsters shall remain covered except when in use and covered at the end of each workday.

- 3.5.4.5 Sawdust and other non-hazardous wastes. Sawdust, soil, silt, clay, rock, felled trees, slash, sawdust, bark, and ash shall be controlled in such a manner that it does not enter a watercourse and where feasible, not stored within 25 ft of a watercourse.
- 3.5.4.6 Hazardous Materials. Materials such as debris, ash, rubbish, creosote-treated wood products, cement/concrete, or washings thereof, asphalt, pesticides, paint or other coating material, petroleum products, and batteries can be hazardous to aquatic life, wildlife, or riparian habitat. Hazardous materials associated with project related activities shall be handled, transported, and stored in a manner that prevents materials from contaminating underlying soils and/or entering any watercourse.
- 3.5.5 Water drafting locations. All water drafting locations shall include appropriate BMPs to prevent sediment discharge from disturbed areas, vehicle tracking, or overtopping to receiving waters. Such locations shall also install appropriate BMPs to prevent petroleum products from entering the waterbody. Pump intakes shall be screened to prevent entrapment of aquatic species. Consultation with relevant federal, state, and local agencies shall occur before initiating drafting activities.
- 3.5.6 Coordination with area involved water systems. All activities necessitating the use of area water, such as, and not limited to dust suppression, cleaning, washing, sweeping, and irrigation, shall be coordinated with the area involved water system to avoid any potential conflicts. All activities that may affect, impede, or impact the ability of the area involved water system from executing their duties shall be coordinated with the area involved water system to avoid any potential conflicts.
- 3.5.7 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.
- 3.6 Processing Facility Requirements (temporary facilities constructed for the purpose of processing woody debris and logs for shipment to log mills or cogeneration facilities)
- 3.6.1 Permit coverage. Construction and operation of Staging Areas and Processing Sites may require Construction and/or Industrial Stormwater Permits issued by the appropriate regional water board. Permit type and permitting requirements are determined based on site-specific characteristics and proposed use. Consultation with the appropriate regional water board is required prior to construction.
- 3.6.2 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. *All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities.* Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization. At staging

areas and processing sites, Construction and/or Industrial Stormwater permits administered by the California Water Boards may be required. Generally, a stormwater permit is required for soil disturbances of one acre or more (where the CWA section 404 silviculture exemption does not apply), or when part of a larger plan of development.

- 3.6.3 Sediment and Erosion Control Measures. Biodegradable sediment and erosion control measures will be utilized throughout all phases of operation where sediment runoff from work areas threatens to enter receiving waters. If there is a 30 percent chance of a rain event within 24 hours, sediment, and erosion control BMPs shall be inspected (before and after the event), and repaired, or upgraded and maintained to prevent sediment-laden runoff. Maintenance includes, but is not limited to, removal of accumulated sediment and/or replacement of damaged silt fencing, compost socks, coir logs, coir rolls, and/or straw bale dikes. Modifications, repairs, and improvements shall be made to the sediment and erosion control measures whenever warranted. Materials used in the sediment barriers shall not pose an entanglement risk to fish or wildlife (e.g., plastic monofilament netting).
- 3.6.4 Trenching / Excavation /Grading Spoils. As required by an applicable permit, castings or spoils from the trenching / excavation operations shall be placed on the stream side of the trenching / excavation /Grading site.
- 3.6.5 Ground disturbance and creation of areas bare of vegetation. Work shall be planned to minimize ground disturbance activities and to prevent discharge of sediment to receiving waters. Generally, where ground disturbance is larger than one acre, a Construction Stormwater permit may be required. Consult with the applicable regional water board before conducting work in instances where large ground disturbance activity is likely to occur.
- 3.6.5 Staging Areas and Processing Sites. Construction and/or industrial stormwater permits may be required for Staging Areas and Processing Sites. Should stormwater permits be required, the designated contractors' Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (OSD) shall develop a SWPPP and implement it as appropriate. Other construction activities not requiring a stormwater permit but having the potential to discharge sediment to receiving waters, shall contain sufficient sediment and erosion control Best Management Practices (BMPs) to mitigate discharge of sediment to receiving waters. Contractors shall, at a minimum, include the following protective measures:
- 3.6.5.1 Operating Equipment and Vehicle Leaks. Equipment shall not be stored within 50 feet of a stream, lake, or wetland. Any equipment or vehicles driven, operated, or adjacent to a WLPZ shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic life or riparian habitat.
- 3.6.5.2 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located in or adjacent to a stream, lake, or wetland shall be positioned over drip pans. Stationary heavy equipment will have suitable containment to handle a catastrophic spill/leak. Crews will always maintain spill containment kits on-site during project operations and/or staging or fueling of equipment.

3.6.5.3 Equipment Maintenance and Fueling. No equipment maintenance, fueling or storage will occur within 50 feet of any stream channel, wetland, or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

3.6.5.4 No Dumping. No litter or construction debris shall be deposited within a stream or lake, or where it may pass into a stream or lake. All debris and waste shall be removed daily. All trash cans and dumpsters shall remain covered except when in use and covered at the end of each workday.

3.6.5.5 Sawdust and other non-hazardous wastes. Sawdust, soil, silt, clay, rock, felled trees, slash, sawdust, bark, and ash shall be controlled in such a manner that it does not enter a watercourse and where feasible, not stored within 25 ft of a watercourse.

3.6.5.6 Hazardous Materials. Materials such as debris, ash, rubbish, creosote-treated wood products, cement/concrete, or washings thereof, asphalt, pesticides, paint or other coating material, petroleum products, and batteries can be hazardous to aquatic life, wildlife, or riparian habitat. Hazardous materials associated with project related activities shall be handled, transported, and stored in a manner that prevents materials from contaminating underlying soils and/or entering any watercourse.

3.6.6 Water drafting locations. All water drafting locations shall include appropriate BMPs to prevent sediment discharge from disturbed areas, vehicle tracking, or overtopping to receiving waters. Such locations shall also install appropriate BMPs to prevent petroleum products from entering the waterbody. Pump intakes shall be screened to prevent entrapment of aquatic species. Consultation with relevant federal, state, and local agencies shall occur before initiating drafting activities.

3.6.7 Coordination with area involved water systems. All activities necessitating the use of area water, such as, and not limited to dust suppression, cleaning, washing, sweeping, and irrigation, shall be coordinated with the area involved water system to avoid any potential conflicts. All activities that may affect, impede, or impact the ability of the area involved water system from executing their duties shall be coordinated with the area involved water system to avoid any potential conflicts.

3.6.8 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.

4.0 Debris Removal

4.1 Debris Removal Site Requirements

4.1.1 Trenching / Excavation /Grading Spoils. As required by an applicable permit, castings or spoils from the trenching / excavation operations shall be placed on the stream side of the trenching / excavation /Grading site.

- 4.1.2 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. *All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities.* Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization. At staging areas and processing sites, Construction and/or Industrial Stormwater permits administered by the California Water Boards may be required. Generally, a stormwater permit is required for soil disturbances of one acre or more (where the CWA section 404 silviculture exemption does not apply), or when part of a larger plan of development.
- 4.1.3 Water drafting locations. All water drafting locations shall include appropriate BMPs to prevent sediment discharge from disturbed areas, vehicle tracking, or overtopping to receiving waters. Such locations shall also install appropriate BMP's to prevent petroleum products from entering the waterbody. Pump intakes shall be screened to prevent entrapment of aquatic species. Consultation with relevant federal, state, and local agencies shall occur before initiating drafting activities.
- 4.1.4 Coordination with area involved water systems. All activities necessitating the use of area water, such as, and not limited to dust suppression, cleaning, washing, sweeping, and irrigation, shall be coordinated with the area involved water system to avoid any potential conflicts. All activities that may affect, impede, or impact the ability of the area involved water system from executing their duties shall be coordinated with the area involved water system to avoid any potential conflicts.
- 4.1.5 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.
- 4.2 Staging Area Requirements (Pre-Processing Sites)
- 4.2.1 Permit coverage. Construction and operation of staging areas and processing sites may require Construction and/or Industrial Stormwater Permits issued by the appropriate regional water board. Permit type and permitting requirements are determined based on site-specific characteristics and proposed use. Consultation with the appropriate regional water board is required prior to construction.
- 4.2.2 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post

disturbance activities. Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization. At staging areas and processing sites, Construction and/or Industrial Stormwater permits administered by the California Water Boards may be required. Generally, a stormwater permit is required for soil disturbances of one acre or more (where the CWA section 404 silviculture exemption does not apply), or when part of a larger plan of development

4.2.3 Ground disturbance and creation of areas bare of vegetation. Work shall be planned to minimize ground disturbance activities and to prevent discharge of sediment to receiving waters. Generally, where ground disturbance is larger than one acre, a Construction Stormwater permit may be required. Consult with the applicable regional water board before conducting work in instances where large ground disturbance activity is likely to occur.

4.2.4 Staging Areas and Processing Sites. Construction and/or industrial stormwater permits may be required for staging areas and/or processing sites. Should stormwater permits be required, the designated contractors' Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) shall develop a SWPPP and implement it as appropriate. Other construction activities not requiring a stormwater permit but having the potential to discharge sediment to receiving waters, shall contain sufficient sediment and erosion control Best Management Practices (BMPs) to mitigate discharge of sediment to receiving waters. Contractors shall, at a minimum, include the following protective measures:

4.2.4.1 Operating Equipment and Vehicle Leaks. Equipment shall not be stored within 50 feet of a stream, lake, or wetland. Any equipment or vehicles driven, operated, or adjacent to a WLPZ shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic life or riparian habitat.

4.2.4.2 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located in or adjacent to a stream, lake, or wetland shall be positioned over drip pans. Stationary heavy equipment will have suitable containment to handle a catastrophic spill/leak. Crews will always maintain spill containment kits on-site during project operations and/or staging or fueling of equipment.

4.2.4.3 Equipment Maintenance and Fueling. No equipment maintenance, fueling or storage will occur within 50 feet of any stream channel, wetland, or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

4.2.4.4 No Dumping. No litter or construction debris shall be deposited within a stream or lake, or where it may pass into a stream or lake. All debris and waste shall be removed daily. All trash cans and dumpsters shall remain covered except when in use and covered at the end of each workday.

4.2.4.5 Sawdust and other non-hazardous wastes. Sawdust, soil, silt, clay, rock, felled trees, slash, sawdust, bark, and ash shall be controlled in such a manner that it does not enter a watercourse and where feasible, not stored within 25 ft of a watercourse.

4.2.4.6 Hazardous Materials. Materials such as debris, ash, rubbish, creosote-treated wood products, cement/concrete, or washings thereof, asphalt, pesticides, paint or other coating material, petroleum products, and batteries can be hazardous to aquatic life, wildlife, or riparian habitat. Hazardous materials associated with project related activities shall be handled, transported, and stored in a manner that prevents materials from contaminating underlying soils and/or entering any watercourse.

4.2.5 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.

4.3 Processing Facility Requirements

4.3.1 Permit coverage. Construction and operation of staging areas and processing sites may require Construction and/or Industrial Stormwater Permits issued by the appropriate regional water board. Permit type and permitting requirements are determined based on site-specific characteristics and proposed use. Consultation with the appropriate regional water board is required prior to construction

4.3.2 Adequate Erosion Control Materials Onsite. Prior to any ground disturbing work at a project site, erosion control materials (such as, fiber rolls, bonded fiber matrix, erosion control mats, soil tackifiers) shall be stockpiled on site. All disturbed soils associated with the Project site will be stabilized to reduce erosion potential, both during and post disturbance activities. Planting and seeding with native species, or a sterile seed mix and mulching are acceptable erosion control BMPs. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such erosion control stabilization. At staging areas and processing sites, Construction and/or Industrial Stormwater permits administered by the California Water Boards may be required. Generally, a stormwater permit is required for soil disturbances of one acre or more (where the CWA section 404 silviculture exemption does not apply), or when part of a larger plan of development

4.3.3 Ground disturbance and creation of areas bare of vegetation. Work shall be planned to minimize ground disturbance activities and to prevent discharge of sediment to receiving waters. Generally, where ground disturbance is larger than one acre, a Construction Stormwater permit may be required. Consult with the applicable regional water board before conducting work in instances where large ground disturbance activity is likely to occur.

4.3.4 Staging Areas and Processing Sites. Construction and/or industrial stormwater permits may be required for staging areas and/or processing sites. Should stormwater permits be required, the designated contractors' Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) shall develop a SWPPP and implement it as appropriate. Other construction activities not requiring a stormwater permit but having the potential to discharge sediment to receiving waters, shall contain sufficient sediment and erosion control Best Management Practices (BMPs) to mitigate

discharge of sediment to receiving waters. Contractors shall, at a minimum, include the following protective measures:

4.3.4.1 Operating Equipment and Vehicle Leaks. Equipment shall not be stored within 50 feet of a stream, lake, or wetland. Any equipment or vehicles driven, operated, or adjacent to a WLPZ shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic life or riparian habitat.

4.3.4.2 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located in or adjacent to a stream, lake, or wetland shall be positioned over drip pans. Stationary heavy equipment will have suitable containment to handle a catastrophic spill/leak. Crews will always maintain spill containment kits on-site during project operations and/or staging or fueling of equipment.

4.3.4.3 Equipment Maintenance and Fueling. No equipment maintenance, fueling or storage will occur within 50 feet of any stream channel, wetland, or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

4.3.4.4 No Dumping. No litter or construction debris shall be deposited within a stream or lake, or where it may pass into a stream or lake. All debris and waste shall be removed daily. All trash cans and dumpsters shall remain covered except when in use and covered at the end of each workday.

4.3.4.5 Sawdust and other non-hazardous wastes. Sawdust, soil, silt, clay, rock, felled trees, slash, sawdust, bark, and ash shall be controlled in such a manner that it does not enter a watercourse and where feasible, not stored within 25 ft of a watercourse.

4.3.4.6 Hazardous Materials. Materials such as debris, ash, rubbish, creosote-treated wood products, cement/concrete, or washings thereof, asphalt, pesticides, paint or other coating material, petroleum products, and batteries can be hazardous to aquatic life, wildlife, or riparian habitat. Hazardous materials associated with project related activities shall be handled, transported, and stored in a manner that prevents materials from contaminating underlying soils and/or entering any watercourse.

4.3.4.7 Dust Control. Dust control practices, such as rocking temporary access road entrances and exits, wetting frequently used unpaved roadways, and covering temporary stockpiles should be implemented.

4.3.4.8 Permanent Erosion Control. Incorporate permanent erosion control measures such as water breaks, rolling dips, bio-filtration strips and swales to the maximum extent feasible in an effort to hydrologically disconnect drainage features from receiving waters. This includes but is not limited to any work sites, staging areas, processing areas, logging/hazard tree removal operations areas, and/or roads and trails used during operations.

4.3.4.9 Pesticides. Use of pesticides (including herbicides) is prohibited.

4.3.4.10 Drop Inlets. Protect drop inlet structures near work areas.

4.3.5 BMP Implementation Monitoring. Prior to completing operations at a project site, implementation monitoring shall occur in project areas with erosion potential and sediment discharge potential. Implementation monitoring consists of detailed visual monitoring to verify management measures are properly implemented in accordance

with EPP measures and any water quality protective measures identified by California Water Boards staff during site inspections.

5.0 Drinking Water Operations and Coordination

- 5.1 Coordination. Coordinate with State Water Board's Division of Drinking Water staff and area involved water systems for work performed in areas where drinking water infrastructure exists.
- 5.2 Coordination with area involved water systems. All activities necessitating the use of area water, such as, and not limited to dust suppression, cleaning, washing, sweeping, and irrigation, shall be coordinated with the area involved water system to avoid any potential conflicts. All activities that may affect, impede, or impact the ability of the area involved water system from executing their duties shall be coordinated with the area involved water system to avoid any potential conflicts.
- 5.3 Use of Water. Water from the project area involved water system shall be conducted such that low operational pressures shall be avoided. Low operational water system pressures can risk public health and result in the issuance of unsafe water alerts – boil water notice, or other. Coordinate with the area involved water system as to where to connect for water service as well as the rate of use and the equipment to use.
- 5.4 Water Meters. If and as required, local permits shall be obtained and use of water meters shall be implemented. Contact the local jurisdiction to verify this requirement – City, County, area-involved water system.
- 5.5 Damage to Water Facilities. Any digging, debris removal, earth or soil work, or excavation can result in damage to water facilities including waterlines. Coordinate with the area involved water system so to understand where the water facilities, such as waterlines, are located to avoid these conflicts. The water service to the defunct locations may need to be shut off at the meter to prevent uncontrolled loss of water and water pressure. The area involved water system may need to shut-of the utility service valve and pull the meter, severing the connection to the customer line. Service connections shall be staked painted blue to maintain visibility for any crews working in the area.
- 5.6 Temporary Debris Storage. Placement of debris piles may impede area involved water system access to their waterlines and facilities. Coordinate with area involved water system over the proper location of placement of debris materials and waste to avoid placing debris atop water system facilities and appurtenances.
- 5.7 Water System Infrastructure. Area involved water systems may be conducting restorative activities, such as, but not limited to, flushing waterlines, repairing water facilities, and replacing water facilities. Staging of materials, equipment and machinery may impede area involved water system access to their waterlines and facilities. Coordinate with area involved water system over the proper location of staging of materials, equipment, and machinery.

Attachment 2

2021 Statewide Fires –Environmental Protection Plan

**California Natural Resources Agency (CNRA)
California Department of Fish and Wildlife (CDFW)
California Department of Forestry and Fire Protection (CAL FIRE)**

Post Fire Statewide Best Management Practices

2021 Statewide Fires –Environmental Protection Plan

California Natural Resources Agency (CNRA)
California Department of Fish and Wildlife (CDFW)
California Department of Forestry and Fire Protection (CAL FIRE)

Post Fire Statewide Best Management Practices

Contents

1.0	Introduction	26
2.0	CAL FIRE	26
3.0	CDFW	26
4.0	Statewide CDFW BMPs	28
4.1	Project Planning	28
4.2	Pollution Prevention and Equipment Storage.....	29
4.3	Sediment and Erosion Control	30
4.4	Watercourse Crossings and In-Water Activities	31
4.5	Vegetation and Tree Clearing	33
4.6	Wildlife Protection	34
4.7	Plant and Habitat Protection.....	35
5.0	Fire-Specific BMPs based on CDFW Region	36
5.1	CDFW Regions (https://wildlife.ca.gov/Regions):	36
5.2	CDFW Contacts.....	37
5.3	Species-Specific Measures.....	37
6.0	EXHIBITS	37

1.0 Introduction

This document summarizes Best Management Practices (BMPs) for California Department of Forestry and Fire Protection (CAL FIRE) and California Department of Fish and Wildlife (CDFW) Regions in Sections 2.0 and 3.0. The BMPs have been developed for use and reference in the Private Property Debris Removal (PPDR) and non-utility hazard tree removal programs ('Debris Removal activities') for the Debris Removal Operation Center (DROC) for the 2021 Wildfires.

2.0 CAL FIRE

The Z' Berg-Nejedly Forest Practice Act (2021 California Forest Practice Rules (FPR) are implemented by CAL FIRE for non-federal timberlands in the State. The removal of hazardous trees is an integral part of the Debris Removal Activities for which the following FPR BMPs will apply. In addition, an Exemption to the Timber Harvest Plan permit requirements under FPR 1052.1.b. was waived for the 2020 Wildfires to remove duplicate requirements for addressing archeological and cultural resource studies (contained in Exhibit 6.1) and is incorporated by reference.

FPR-1 – The Licensed Timber Operator (LTO) will comply with the Forest Practice Rules.

FPR-2 - Where applicable, if construction of new road is necessary, a Notice of Emergency Operations (CCR 1052) will be submitted to CAL FIRE and any required permitting obtained from the appropriate RWQCB (as applicable to the specific property) will be obtained.

FPR-3 - Location and Classification of All Watercourses. The Registered Professional Forester (RPF) or a supervised designee will identify the classification of all water courses, and mark flag the watercourse and lake protection zone (WLPZ).

FPR-4 - Where applicable, if in-lieu practices, exceptions to rules or alternative practices not specifically waived, they are determined to be necessary for which a Notice of Emergency Operations (CCR 1052) will be submitted to CAL FIRE.

3.0 CDFW

Sections 4.0 and 5.0 of this document contain the statewide and fire-specific Best Management Practices (BMPs) developed to by the California Department of Fish and Wildlife (CDFW) for use and reference during the 2021 Wildfire Debris Removal activities. These BMPs are provided in response to the Governor's Executive Order (EO) to assist lead agencies and contractors conducting emergency cleanup activities while minimizing the environmental impacts of those activities. These BMPs do not overlap with or include federal regulations or requirements. As such, lead agencies and contractors are responsible for meeting federal permitting needs and ensuring compliance with federal environmental regulations prior to initiating project activities.

These BMPs are intended to assist with expeditious removal of waste materials resulting from the 2021 Wildfires, stabilization of impacted land to prevent further erosion and sediment transportation, and restoration and rehabilitation of impacted land. These BMPs are not intended to replace the notification and permitting requirements for permanent replacement of structures lost to wildfire unless otherwise noted. Construction of permanent structures must be carried out according to existing state and local regulations. In the case of structures crossing watercourses, temporary crossings are allowed under the Suspension for the purpose of access to areas where cleanup efforts will be conducted and are finite in duration. Construction and replacement of permanent structures crossing watercourses are considered activities not covered by the Suspension and must be compliant with applicable planning, CEQA, and permitting requirements.

These BMPs are based on the wildfire information currently available as of August 23, 2021. Of the eleven active wildfires named in the EO, ten have not been contained as of that date. These BMPs may be amended to account for new or changed circumstances as additional information becomes available related to the scope, extent, and impacts of currently active wildfires.

CDFW anticipates the Governor's Office of Emergency Services (CalOES) may retain consulting services to assist in the development of supplemental BMPs to address circumstances not expressly covered by these BMPs. BMPs recommended by CalOES and any consultant it retains must be approved by CDFW before implementation. The EPP may be amended to include BMPs approved by CDFW as circumstances change. Any omission in this EPP of BMPs or failure to account for a particular set of circumstances should not be construed as a determination by CDFW that no BMPs are warranted.

Potential impacts from PPDR activities include:

- Deposit of hazardous waste into watercourses and terrestrial habitat, including, but not limited to, sediment, ash, concrete, burned materials, burned vegetation, and construction materials
- Alteration of watercourse bed, bank, and channel resulting in restricted fish passage and degradation of riparian wildlife habitats
- Removal of habitat and habitat elements, including historical nest and roosting trees, active nests/roosts/dens, foraging habitat, and riparian habitat
- Take of species listed under the California Endangered Species Act
- Degradation of habitat or harm to special status species listed under the Native Plant Protection Act and other provisions of the California Fish and Game Code
- Introduction of non-native invasive species into vulnerable habitats

4.0 Statewide CDFW BMPs

4.1 Project Planning

- 4.1.1 CDFW Consultation. These BMPs have been finalized before the 2021 wildfires have been fully contained. Because of the changing nature of the wildfires, it is imperative to consult with CDFW early in the project planning phase to ensure habitat and species-specific BMPs are adequate for the project. CDFW should also be consulted to ensure water drafting sites, temporary watercourse crossing sites, staging areas, and access routes do not impact sensitive habitat. If project activities will occur near sensitive habitat, project proponent should consult with the CDFW CalOES contact and the qualified biologist or Task Force Leader (TFL) to ensure the habitat is clearly marked and avoided during project activities. To identify the appropriate area specific CDFW CalOES contact for consultation, please refer to Section 5.2.
- 4.1.2 Qualified Biologist. If it is determined the project will need a qualified biologist, the biologist should hold a wildlife biology, botany, ecology, forestry, or other relevant degree from an accredited university and: 1) be knowledgeable in relevant species life histories and ecology, 2) be able to correctly identify relevant species and habitats, 3) have experience conducting field surveys of relevant species or resources, 4) be knowledgeable about survey protocols, 5) be knowledgeable about state and federal laws regarding the protection of special-status species, and 6) have experience with CDFW's California Natural Diversity Database (CNDDDB) and Biogeographic Information and Observation System (BIOS). The project proponent will review the resume and approve the qualifications of the biologist. If species-specific protocol surveys are performed, surveys would be conducted by qualified biologist with the minimum qualifications requires by the appropriated protocols, including having CDFW or USFWS approval to conduct such surveys, if required by certain protocols. If the size of the project warrants more than one qualified biologist, one of the qualified biologists should be designated the lead qualified biologist and be the primary point of contact for the project.
- 4.1.3 Spill Response Plan. Prior to the start of project activities, a spill response plan should be prepared that identifies how hazardous materials will be stored and removed from the site, and the actions to be taken in the event of spill of concrete, petroleum products, sediment, or other hazardous material. The plan should identify the emergency response materials which will be kept at the project site to allow the rapid containment and clean-up of any spilled material.
- 4.1.4 On-Site Education Training. The qualified biologist or TFL should conduct a pre-project training program for all employees, contractors, or personnel working within the project site prior to performing any work. The program should consist of a presentation from the qualified biologist or TFL that includes a discussion of the biology of the habitats and special-status species identified during the consultation with CDFW and

those with potential to be present at the project site. The qualified biologist or TFL should also include as part of the education program information about the distribution and habitat needs of any special-status species that may be present and project-specific protective measures included in the EPP. Interpretation shall be provided for non-English speaking employees, contractors, or personnel prior to their performing any work at the project site. A handout that summarizes the education program including images of special-status species shall also be distributed to all personnel working on the project.

4.1.5 In-Water Work. When project activities will require working within watercourses, installing temporary access through watercourses, and/or removal or placement of materials within the bed, bank, or channel of watercourses, work must be performed in compliance with federal notification and permitting requirements. Non-compliance with applicable environmental laws and regulations, or requirements set forth in the EPP, may result in an enforcement action by federal or state resource agencies.

4.1.6 Permanent Replacement of Watercourse Crossings. These BMPs are intended to assist with the timely removal, storage, transportation, and disposal of hazardous and non-hazardous solid waste and debris resulting from the 2021 wildfires named in EO N-13-21 and EO N-14-21. These BMPs are not intended to be utilized for permanent replacement of watercourse crossings and other in-water infrastructure, such as culverts, that have been destroyed in those wildfires. In the event permanent replacement of a watercourse crossing and/or other in-water infrastructure is needed for access to a primary dwelling or for emergency services, CDFW should be consulted early in the planning phase to discuss permitting requirements for non-EPP activities occurring simultaneously with EPP activities to minimize impacts to the watercourse.

4.2 Pollution Prevention and Equipment Storage

4.2.1 Hazardous Materials. Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances resulting from project related activities which could be hazardous should be prevented from contaminating the soil and/or entering any watercourse bed, bank, or channel or lake margin by either being removed daily or stored in watertight containers onsite until removed.

4.2.2 Equipment Maintenance and Fueling. No equipment maintenance, fueling, or storage should occur within or next to a watercourse bed, bank, or channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

4.2.3 Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or next to a watercourse bed, bank, or channel or lake margin should be

checked and maintained daily to prevent leaks of materials that could be harmful to aquatic and terrestrial life or riparian habitat.

- 4.2.4 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located within or next to a watercourse bed, bank, or channel or lake margin should be positioned over drip pans.
- 4.2.5 Removal of Trash and Debris. All raw construction materials and waste from the project site following the completion of work should be removed. No litter or construction debris should be deposited within or next to a watercourse bed, bank, or channel or lake margin, or where it may pass into a watercourse bed, bank, or channel or lake margin.
- 4.3 Sediment and Erosion Control
- 4.3.1 Sediment and Erosion Control Measures. Prior to any ground disturbing work, sediment and erosion control measure materials should be stockpiled on site. Sediment and erosion control measures should be used during all phases of operation where soil, trenching spoils and casting, and sediment runoff threatens to enter a watercourse bed, bank, or channel or lake margin. Examples of sediment and erosion control measures include bioengineering, silt fencing, compost socks, coir logs, coir rolls, straw bale dikes, planting, mulching, seeding and high-tack hydroseeding with native species or a noxious weed-free seed mix recommended for the county in which the project takes place. Where vegetation cannot reasonably be expected to become established and erosion control measures are intended for more than one season, the materials used should consist of biodegradable materials. For example, tacked-down jute erosion control blankets, coconut fiber matting, jute netting, and other soil stabilization methods or similar should be used. Broadcast straw is acceptable on soil with little to no slope and in areas that are not exposed to wind. **Materials used in the sediment barriers should not pose an entanglement risk to fish or wildlife.**
- 4.3.2 Sediment Traps for Runoff from Steep Areas. Preparations should be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential or contained behind erosion control structures or sediment traps. Erosion control structures such as straw bales and/or siltation control fencing/silt barriers should be placed and maintained until the threat of erosion ceases. Frequent water-bars or other appropriate features should be installed on dirt roads, equipment tracks, or other work trails to control erosion.
- 4.3.3 Maintenance of Sediment and Erosion Control Measures. Sediment and erosion control measures should be maintained in good operating condition until final sign off of the property by the Incident Management Team (IMT). Maintenance includes, but is not limited to, checking sediment and erosion control measures for trapped or entangled fish and wildlife, removing accumulated sediment, and replacement of

damaged sediment and erosion control measures. Modifications, repairs, and improvements should be made to the sediment and erosion control measures whenever needed to maintain them in good operating condition. If a sediment barrier fails to retain sediment, corrective measures should be employed, and a biological monitor should be notified, immediately.

4.4 Watercourse Crossings and In-Water Activities

4.4.1 Equipment Limitation Zone. A minimum 25-foot buffer on either side of watercourses should be implemented when possible as an Equipment Limitation Zone (ELZ). The intent of the ELZ is to reduce or eliminate the likelihood of ground disturbance from heavy equipment that may result in ruts, erosion, and direct sediment delivery to the watercourse. Heavy equipment and vehicles will limit operations within the ELZ unless removal of structures or debris are necessary.

If water drafting and/or temporary watercourse crossings will occur, drafting locations within the ELZ will be clearly indicated with signage or flagging, and sediment and erosion control methods will be used to minimize impacts within the ELZ. When drafting operations at that location end, these erosion control methods should be removed, and the drafting location should be returned to baseline.

4.4.2 Water Drafting. When needed, water drafting operations should be conducted so as not to dewater a watercourse. Water truck operators should be aware of current flow conditions, and water drafting should not occur if there is not adequate flow or if downstream reaches have the potential to be dewatered from drafting activities. Hose intakes should be fitted with a properly sized fish screen, or at a minimum be placed into a perforated bucket, at all times to prevent impingement of aquatic organisms.

4.4.3 Temporary Watercourse Crossings. If an existing or new watercourse crossing must be used, the crossing site should be inspected for fish, wildlife, and special-status plant species prior to entering the watercourse. When a California Endangered Species Act (CESA) listed species is found within the crossing location, all project activities at and immediately adjacent to the detection site should cease until consultation with the qualified biologist or TFL and the CDFW CalOES contact occurs.

4.4.4 Culvert Removal and Replacement. When debris removal activities require removal of a damaged culvert, and the culvert site is within a wetted portion of the watercourse, sediment and erosion control measures should be deployed up and downstream of the removal site to contain sediment-laden water to the immediate area of the culvert removal. If culvert replacement is needed to reestablish or maintain access to a primary dwelling or for emergency services, CDFW should be consulted early in the planning phase to discuss permitting requirements for activities not covered by the suspension occurring simultaneously with activities covered by the suspension to minimize impacts to the watercourse. At a minimum, the replacement culvert must be

sized correctly to accommodate the 100 Year FEMA Floodplain sizing requirements, and not be an impediment to fish passage.

- 4.4.5 Do Not Impair Water Flow. The installation of temporary watercourse crossings should be installed such that water flow is not impaired and passage of fish and aquatic life-forms is not obstructed. If temporary watercourse crossings are to be used during high seasonal flows, such crossings should accommodate those flows or should be removed before such flows occur.
- 4.4.6 Temporary Crossing Materials. Materials and methods used for temporary watercourse crossings should cause minimal turbidity or siltation. 2-6-inch pit run rock (as appropriately sized), screened river gravels, clean washed 2-inch or more rock or gravel, and/or logs in fill materials should be included. Temporary watercourse crossing abutments below the high-water mark should be rock or logs.
- 4.4.7 Stabilize Crossing Sites. All bare soil exposed in conjunction with temporary watercourse crossing construction, deconstruction, maintenance, or repair, should be treated with sediment and erosion control measures immediately upon completion of work on the crossing, and prior to the onset of precipitation capable of generating runoff.
- 4.4.8 In-Water Silt Barriers. If work or temporary watercourse crossings must occur within a wetted watercourse or lake margin, precautions to minimize turbidity and siltation should be used and may require the placement of silt fencing, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to pass to downstream reaches. **Materials used in the silt barrier should not pose an entanglement risk to fish or wildlife.**
- 4.4.9 Maintenance of Silt Barriers. Silt collected around the silt barriers should be removed on an as-needed basis to prevent silty/turbid water from flowing around the silt barriers during storm events and to allow the silt barriers to function properly. Silt barriers that trap sediment should be removed when temporary crossings have been taken out and after all flowing water is cleared of turbidity in a manner that will not introduce silt to the stream. The stream should then be remediated to baseline condition.
- 4.4.10 Bank Stabilization. When needed, temporary bank stabilization should be installed with suitable non-erodible materials that will withstand wash out. The bank stabilization material should extend above the ordinary high-water mark. Only clean material such as rock riprap that is free of trash, debris and harmful material should be used as bank stabilization materials. Asphalt and concrete should not be considered an acceptable material. At no time should bank stabilization methods incorporate grouting.
- 4.4.11 Removal of Watercourse Crossings. All materials used in constructing temporary watercourse crossing should be removed once the project is complete. During temporary watercourse crossing removal, all fill material should be excavated in a

manner that recreates the natural channel grade and orientation, with a channel bed that is as wide as or slightly wider than the original watercourse.

4.4.12 Stabilize and Inspect Decommissioned and Abandoned Watercourse Crossings.

When cleanup efforts include decommissioning or abandoning destroyed watercourse crossings the site should be stabilized and then inspected following the first storm event producing bank full stage flows and again prior to filing the completion report. The inspection should verify the effectiveness of the stabilization measures in preventing sediment discharges to the watercourse and to ensure the measures are functioning to restore natural drainage and hillslope stability. If stabilization measures are found to be ineffective, further stabilization measures should be applied, unless reentering the site would cause greater damage than leaving the ineffective stabilization measures. Barricades should be constructed at all points of access to the decommissioned or abandoned road to effectively prevent use by any passenger vehicle or equipment.

4.5 Vegetation and Tree Clearing

4.5.1 Pre-project Site Survey. Before the start of project activities, the qualified biologist or TFL should survey the project area to ensure no CESA-listed or special-status fish, wildlife, plant species are present, and no active nests, nest cavities, roosts, roost trees, or dens are present. When project activities are proposed within the wetted portion of a watercourse or lake margin, the qualified biologist or TFL should survey the area prior to the start of project activities. When habitat elements with active nests, nest cavities, roosts, roost trees, or dens are detected, the qualified biologist or TFL should refer to Section 2.6 on how to proceed.

4.5.2 Vegetation Removal. Disturbance or removal of vegetation should be kept to the minimum necessary to complete project related activities.

4.5.3 Remove Cleared Material from Watercourses. All trimmed or cleared material and/or vegetation should be removed from the area and deposited where it cannot re-enter the watercourse or lake margin

4.5.4 Commercial Tree Removal. Trees being removed for commercial purposes must adhere to the Forest Practice Rules and project proponents should consult with a Registered Professional Forester (RPF). If avoidable, no trees will be felled in a manner in which they might fall into a watercourse.

4.5.5 Non-Commercial Tree Removal. Trees being removed for non-commercial purposes should be evaluated by a certified arborist. The evaluation should determine the viability of trees marked for removal before tree removal activities begin. If possible, retain large snags, trees with basal hollows or cavities, trees with limbs greater than 6-inches in diameter, old-growth trees, stand-alone granary trees, or other trees with features providing valuable habitat where no immediate risk to infrastructure exists.

The CDFW CalOES contact should be consulted when questions arise regarding the above wildlife habitat features. If avoidable, no trees should be felled in a manner in which they might fall into a watercourse. When a tree with an active bat roost is selected for removal, refer to Measure 4.6.4 on how to proceed.

4.6 Wildlife Protection

- 4.6.1 Construction Monitoring. If assigned to the project, the qualified biologist should be available to arrive on site within a reasonable amount of time (one to two hours) during all project activities. When the qualified biologist is not present, the TFL should be present on site. If the qualified biologist or TFL appoints a construction monitor in addition oversee project activities, the construction monitor should have training in avoidance and minimization measures specific to CESA-listed species potentially present at the project site. At a minimum, the construction monitor should have attended the on-site education training.
- 4.6.2 Daily Clearance Survey. Before the start of daily project activities, the qualified biologist, TFL, or construction monitor should survey the project area to ensure no new active nests, nest cavities, roosts, or dens have become established, including surveying any excavated areas within the project area to ensure trapped wildlife are allowed an opportunity to escape. This includes inspecting around and inside any open-ended pipes or infrastructure elements stored on the project site that will be moved or utilized during project activities.
- 4.6.3 Detection of Wildlife. When the qualified biologist, TFL, and/or construction monitor identifies active nests, dens, roosts, roost trees, and/or nest cavities, a buffer should be established between ongoing project activities and the detection site so the wildlife are not disturbed, and it can be identified to species. The buffer should be delineated by temporary fencing or markers and remain in effect throughout project activities or until active nests, dens, roosts, roost trees, and/or nest cavity is/are no longer active, as determined by the qualified biologist. The buffer(s) should be determined by the qualified biologist and based on the life history of the species detected, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.), and the various project-related activities necessary to implement the project. If feasible, consider leaving some larger diameter snags and/or downed logs nearby that may provide food source and shelter for wildlife.

When detected wildlife is determined to be a CESA-listed species or evidence of their active presence is identified, the detection site should be buffered and all project activities at and immediately adjacent to the detection site should cease until consultation with the qualified biologist, TFL, and the CDFW CalOES contact occurs.

When detected wildlife is determined to not be a CESA-listed species and a buffer is not feasible while allowing work to continue, and the species is not protected by federal regulations, the qualified biologist, in consultation with the CDFW CalOES contact, may attempt to safely capture and relocate the wildlife to outside the project area if capture is feasible and will not endanger the wildlife.

- 4.6.4 Tree Removal with Active Bat Roost. When a tree with an active bat roost is selected for removal, the tree should be removed using a two-step removal process. The limbs of the tree should be removed and left on the ground while the trunk is left in place during the first day, and during the following day the trunk should be removed. This process will allow the bats the opportunity to vacate the roost during the night prior to the trunk removal.
- 4.6.5 Rock Outcrops and Downed Logs. When rock outcroppings and downed logs that may provide shelter for wildlife are present within the project area, a buffer should be installed to exclude the feature from the area where active work is being performed. If downed logs and/or boulders must be removed, the qualified biologist or TFL should survey the area prior to start of removal activities to prevent wildlife mortality to the extent possible.
- 4.6.6 Wildlife Encounters. When wildlife is encountered during project activities, the wildlife should be allowed to leave the project area unharmed. If any CESA-listed wildlife is encountered, the qualified biologist or TFL should be notified. If the wildlife is discovered or is caught in any pits, ditches, or other types of excavations, the qualified biologist or TFL should consult with the CDFW CalOES contact and, if unable to escape on its own, the qualified biologist or TFL should release it outside the project area into the most suitable habitat near the project area. Project activities should not be ceased if the observed wildlife is aerial birds flying over or through the project area.
- 4.6.7 Escape Ramp in Trench. At the end of each workday, an escape ramp should be placed at each end of any open excavation to allow wildlife that may become trapped to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees and has enough traction to allow wildlife to escape.
- 4.7 Plant and Habitat Protection
- 4.7.1 Sensitive Habitats and Land Types. During initial project planning and consultation with CDFW CalOES contacts, sensitive habitats and land types should be identified, marked with exclusion fencing or similar methods, and avoided. Before the start of project deployment, the project site should be visually inspected for wet meadows, vernal pools, areas with biological crusts, pebble plains, quartz deposits (in arid habitats), desert pavement, etc. These areas are extremely sensitive to any disturbance including foot traffic and should be avoided. If project logistics necessitate entry into these habitat types, consultation with the CDFW CalOES contact and the qualified

biologist or TFL for additional site-specific measures should occur prior to any entry into those habitats. Additional measures could include, but are not limited to, full avoidance, special low-impact rubber mat installation, seasonal avoidance, transplanting, and reseeding.

- 4.7.2 Special-Status Botanical Species. Avoid impacts to rare plant species by identifying areas with rare plants during the appropriate blooming season and establishing work season buffers. If rare, threatened, or endangered plant species are found during operations a 10-foot Equipment Limitation Zone (ELZ) should be placed around the population. If trees are to be harvested within the ELZ, trees should be felled away from the core plant populations if feasible. If avoidance is not possible, the qualified biologist or TFL should consult with the CDFW CalOES contact for additional site-specific measures.
- 4.7.3 Invasive Species Prevention. All contractors should follow guidelines in the California Invasive Plant Council's *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (Cal-IPC 2012)* (<https://www.cal-ipc.org/docs/bmps/dd9jwo1ml8vttq9527zjhek99qr/BMPLandManager.pdf>) to prevent the spread of invasive plant species. Equipment should be cleaned of material that may harbor invasive plant seeds or invasive pests before starting a new project in a different watershed or fire boundary. This material includes dirt or plant seeds on construction equipment, tools, boots, and clothing.

5.0 Fire-Specific BMPs based on CDFW Region

5.1 CDFW Regions (<https://wildlife.ca.gov/Regions>):

- Northern Region: Del Norte, Humboldt, Lassen, Mendocino, Modoc, Shasta, Siskiyou, Tehama, and Trinity counties.
- North Central Region: Alpine, Amador, Butte, Calaveras, Colusa, El Dorado, Glenn, Lake, Nevada, Placer, Plumas, Sacramento*, San Joaquin*, Sierra, Sutter, Yolo*, and Yuba counties. *Note: These counties are split between regions. See detailed map at <https://wildlife.ca.gov/Portals/0/Images/reg-2-3-detail.jpg>.
- Bay Delta Region: Alameda, Contra Costa, Marin, Napa, Sacramento*, San Mateo, Santa Clara, Santa Cruz, San Francisco, San Joaquin*, Solano, Sonoma, and Yolo* counties. *Note: These counties are split between regions. See detailed map at <https://wildlife.ca.gov/Portals/0/Images/reg-2-3-detail.jpg>.
- Central Region: Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, San Benito, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties.
- South Coast Region: Los Angeles, Orange, San Diego, Santa Barbara, and Ventura counties.
- Inland Deserts Region: Imperial, Inyo, Mono, Riverside and San Bernardino counties.

5.2 CDFW Contacts

CDFW Contacts are contained in Section 6.0, Exhibit 6.2.

5.3 Species-Specific Measures

In addition to the measures below, please reference CDFW *2021 Statewide Fires Habitats and Special Status Species Impacted, by Fire Name, CDFW Region, and County_09082021*, included as Section 6.0, Exhibit 6.3, for additional species and habitat that may require consideration during project activities.

The following species-specific measures do not represent an exhaustive list of species that require BMPs. Additional BMPs may be developed between the CDFW CalOES contact and the CalOES contractor.

5.3.1 Anadromous Salmonids (statewide distribution)

When project activities need to be conducted within or adjacent to current and historical watercourses that support anadromous salmonids (<https://www.calfish.org/ProgramsData/Species/AnadromousFishDistribution.aspx>), consultation with the qualified biologist and the CDFW CalOES contact should occur during the project planning phase to ensure appropriate work windows are observed and habitat features essential to anadromous salmonids are retained. These features include properly placed and sized in-stream large woody debris, gravel beds consisting of gravel between 5.4 and 78 mm in diameter used for spawning, erosion controls on banks that have experienced high vegetation loss, in-stream pools with high structural complexity, and riparian vegetation. Project activities should avoid dewatering or sedimentation within these essential habitat elements.

5.3.2 Raptors (statewide distribution)

Raptor breeding season varies with geographic location and elevation, but generally occurs between February and August. When project activities during that timeframe include removal of trees, the trees marked for removal should be evaluated according to CDFW BMP measure 4.5.4 and measure 4.5.5. During the evaluation, if trees with evidence of raptor roosting, perching, feeding, or nesting are discovered, those trees should be retained, if possible. If an active raptor nest is discovered, a 200-meter disturbance-free buffer around the nest should be established until the qualified biologist or CDFW CalOES contact determine the nest has failed or the young have fledged.

5.3.3 Spotted Owl, Northern and California subspecies (All current fires)

Prior to any tree removal, the project area, and adjacent parcels (within 0.7 miles) should be evaluated for any known Spotted Owl Activity Centers (AC) utilizing CDFW's Spotted Owl Database (<https://wildlife.ca.gov/Data/CNDDB/Spotted-Owl-Info>). If the project area sustained a high to severe burn intensity and an AC is known within or adjacent to the project area, retain the AC and nest tree(s) in addition to adjacent screen trees if feasible. CDFW should be contacted for consultation for any ACs that appear to no longer function as habitat.

If the project area sustained low to moderate burn intensity and an AC is known within or adjacent to the project area, avoid work during the breeding season, February 1 to July 31, and retain the AC and nest tree(s) in addition to adjacent screen trees if feasible. If work cannot be completed outside of the breeding season, CDFW should be contacted for consultation and additional measures may be developed.

For known ACs that were **not** compromised during the fire, seasonal disturbance buffers (1/4 mile) should be observed for occupied sites during the breeding season (Feb 1-July 31) or at least until protocol surveys support probable absence, non-nesting, nest failure, or fledgling flight can be determined. No operations, other than the use and maintenance of existing roads, should occur with 1,000 feet of any occupied NSO AC. If NSO are heard or observed during timber operations, all operations should cease and CDFW should be contacted for consultation.

5.3.4 Swainson's Hawk (Beckworth Fire in Lassen and Plumas counties).

If suitable habitat exists within the project area or along access routes, nest surveys should be conducted between April 1 and July 15 according to the Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California (survey protocol is available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83991&inline>).

5.3.5 Foothill Yellow Legged Frog (Caldor, Dixie, McFarland, and Monument Fires in Butte, El Dorado, Lassen, Plumas, Shasta, Tehama, and Trinity counties).

If work needs to be conducted within or adjacent to suitable foothill yellow-legged frog habitat, the work should occur between October 1 - December 31 to avoid impacts to frogs. If work must be conducted outside this window, a qualified biologist should inspect the work site for frogs in any life stage. If found during inspections, a buffer should be established, and exclusion fencing should be erected between the work area and the frog habitat. If work must occur within the habitat, CDFW should be contacted for coordinating avoidance measures prior to work starting.

5.3.6 Willow Flycatcher (Dixie Fire in Butte, Lassen, Plumas, and Tehama counties).

If work needs to be conducted within or adjacent to riparian habitat with potential suitability for the Southwestern willow flycatcher, work should be conducted between September 15 and March 15. If work must occur outside this window, a qualified biologist should evaluate the project area and adjacent areas for habitat suitability for the southwestern willow flycatcher. If the qualified biologist determines that suitable habitat for either species exists CDFW should be contacted for coordinating avoidance measures prior to work starting.

Applicable Regulations

5.3.7 Bank Swallow (Antelope, Beckwourth, and Dixie Fires in Butte, Lassen, Plumas, Siskiyou, Tehama counties)

If work needs to be conducted within or adjacent to suitable bank swallow habitat, the work should occur between August 31 – March 15 to avoid impacts to nesting colonies. If work must be conducted outside this window, a qualified biologist should inspect the work site for established colonies and to ensure a 200-foot ELZ is established around an active colony. Where bank stabilization measures must be applied to suitable habitat, methods that preserve the dynamic river process should be used. To locate known colony locations the project proponent should consult with CDFW prior to work starting, and reference <http://www.sacramentoriver.org/bans>.

Associated and Applicable California Fish and Game Code (CFG) sections:

CFG § 1600 (et seq.); Lake or Streambed Alteration Agreement, notification of significant alteration to stream channel, bank, or bed.

CFG § 5650 and § 5652; Deposit of deleterious material into waters of the state.

CFG § 5901; Fish passage.

CFG § 5937; Sufficient water for fish.

CFG § 5948; Obstruction of stream.

CFG § 2050-2115.5; California Endangered Species Act (CESA); prohibition of the take of any species designated as Endangered, Threatened, or candidates for listing.

CFG § 3503 and § 3503.5; Protection for bird nests and eggs and birds of prey.

CFG § 86 where "Take" shall be avoided. Take is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

6.0 EXHIBITS

6.0 EXHIBITS

2021 Statewide Fires

Exhibit 6.1 - CAL FIRE Forest Practice Rule 1052.1.b. Exemption

Exhibit 6.2 - CDFW CalOES and Cal Recycle Statewide Contacts

Exhibit 6.3 - CDFW 2021 Statewide Fires Habitats and Special Status Species Impacted, by Fire Name, CDFW Region, and County (dated 09.08.2021)

Attachment 3

2021 Statewide Fires –Environmental Protection Plan

TAHOE REGIONAL PLANNING AGENCY Best Management Practices

1.0 Introduction

This document summarizes Best Management Practices (BMPs) for the Tahoe Regional Planning Agency (TRPA). Through the bi-state Tahoe Regional Planning Compact (Compact), TRPA reviews all activities undertaken within the Tahoe Basin that affect its environmental quality.

2.0 TRPA

TRPA works in concert with other agencies in the Basin to ensure the protection, among other subjects of water and air quality. The TRPA has a Memorandum of Understanding with federal, state, and local agencies and entities to streamline project permitting, including exempting many activities provided those activities are undertaken consistent with TRPA's Handbook of Best Management Practices (<https://tahoebmp.org/BMPHandbook.aspx>).

The majority of private property parcels in the Lake Tahoe Basin are relatively small (less than one acre in size) and therefore not required to obtain some of the permits identified within this EPP. In these cases, compliance with federal, state, regional, and local regulations will be enforced by TRPA and local partners.

3.0 Tahoe Basin BMPs

3.1 TRPA Consultation

If the property is in the Tahoe Basin, contact TRPA for review and approval of hazard tree removal and debris clean-up on private property post-fire. Depending on the size and scale of the project, activities may be exempt from TRPA review or may require permits and approvals from other regulatory agencies listed in the other attachments to this document. TRPA will help agency personnel and/or private property owners navigate which permits are required for their project, if any.

3.2 BMPs

All projects undertaken in the Tahoe Basin shall be consistent with TRPA's Handbook of Best Management Practices referenced above.

Attachment 4


2021 Statewide Fires –Environmental Protection Plan

**United States Fish and Wildlife Service and National Marine Fisheries Service
Avoidance and Minimization Measures**



To: Wade Crowfoot
Secretary
California Natural Resources Agency

Date: 23 April 2021

From: Jared Blumenfeld 
Secretary
California Environmental Protection Agency

Rachel Machi Wagoner
Executive Director
CalRecycle

Subject: EMERGENCY WAIVER OF CERTAIN FOREST PRACTICE RULES IN SUPPORT OF HAZARD TREE REMOVAL RECOVERY OPERATIONS FOR THE 2018 CAMP FIRE & 2020 WILDFIRE RECOVERY OPERATIONS

The Governor's Office of Emergency Services (CalOES) mission tasked the Department of Resources Recycling and Recovery (CalRecycle) to conduct structural debris and hazard tree removal following to the devastating wildfires that occurred across the State in 2018 and 2020. As part of that effort, CalRecycle requests the California Natural Resources Agency (CNRA), with the support of the California Department of Forestry and Fire Protection (CALFIRE), to waive certain Forest Practice Rules requirements (In-Lieu Practices, Emergency Notices, and Archaeological Requirements) to support multiple ongoing recovery operations.

CalRecycle makes this request pursuant to Governor's Executive Orders B-57-18, B-58-18, N-81-20 (Executive Orders), and any concurrent or subsequent proclamations or executive orders related to the 2020 fires. CalRecycle believes protocols developed to meet Federal Emergency Management Agency (FEMA) requirements, including but not limited to Stipulation II.B.2.v. of the FEMA/California Programmatic Agreement (FEMA Protocols) meet or exceed the intent of the subject Forest Practice Rules. By design and necessity, the FEMA Protocols rely on a system of continuous field monitoring, communication, consultations, reconnaissance, and documentation, supported by final reporting product(s). Whereas the Forest Practice Rules generally require upfront notifications to CALFIRE of the same or similar information. The requested waivers are intended to resolve this process incongruity and expedite recovery operations.

2018 CAMP FIRE & EXECUTIVE ORDER – HAZARD TREE REMOVAL

During November of 2018, the Camp Fire affected large areas of Butte County, destroyed over 12,000 structures, burned more than 300,000 trees, and resulted in 85 casualties. On November 14, 2018, the Governor issued Executive Order B-57-18, following with Executive Order B-58-18 suspending a variety of environmental

protection statutes as they relate to the wildfire recovery effort. Recovery Operations for this event is referred to as the State Hazard Tree Removal Program (DR-4407).

2020 FIRES (DR-4558 & DR-4569) & EXECUTIVE ORDER – HAZARD TREE REMOVAL
During July, August, and September of 2020, hundreds of wildfires raged across the state, many a direct result of over 14,000 dry lightning strikes during an August storm event. The fires destroyed over 10,000 structures across the state, and resulted in 31 casualties.

On September 25, 2020, the Governor issued Executive Order N-81-20, suspending a variety of environmental protection statutes to the extent they would prevent, hinder, or delay certain wildfire recovery efforts. The Executive Order authorizes the Secretaries of the CalEPA and the CNRA to use their discretion to ensure the suspension serves the purpose of accelerating the removal and cleanup of debris from the fires and for implementing any restoration plan while at the same time protecting public health and the environment. They may do so by granting waivers or permits necessary for timber harvesting and for other actions necessary for the protection of public health and the environment. Recovery Operations for these events are ongoing in multiple counties throughout California and are referred to as Private Property Debris Removal for the 2020 Fires (DR-4558 and DR-4569). These Operations include a hazard tree removal function similar to the State Hazard Tree Removal Program for the 2018 Camp Fire (DR-4407).

This Order shall apply to but is not necessarily limited to: solid waste facility permits, waste discharge requirements for storage and disposal; emergency timber harvesting; stream environment zones; emergency construction activities; and waste discharge requirements and/or Water Quality Certification for discharges of fill material or pollutants. Boards, departments and offices within the California Environmental Protection Agency and the California Natural Resources Agency shall exercise their administrative discretion and expedite the granting of other authorizations, waivers or permits necessary for the removal, storage, transportation and disposal of hazardous and non-hazardous debris resulting from the fires, and for other actions necessary for the protection of public health and the environment. [Executive Order N-81-20]

Separately, the Governor issued proclamations that either incorporated the Executive Order's suspension provisions by reference or that included identical provisions. This waiver is intended to apply to the State's 2020 fire disaster recovery efforts, authorized by Executive Order N-81-20, plus concurrent and subsequent proclamations and executive orders related to the 2020 fires.

FEMA PROTOCOLS SUMMARY

Current operations employ the following general tasks pursuant to the FEMA Protocols:

- Initial research on surveys and sites conducted and found in the past by contacting the local Archaeological Information Center for that data

1001 I Street, Sacramento, CA 95814 | P.O. Box 4025, Sacramento, CA 95812
www.CalRecycle.ca.gov | (916) 322-4027

- Networking with Native American Tribal Monitors for assistance in surveying and monitoring existing and newly discovered sites
- Collecting potential new site discoveries from biologist, arborist and forester conducting field work
- Conducting surveys within the project area.
 - Inputting that data into a data collection program.
 - All new and existing sites are considered significant on most projects.
 - Includes feature and site description, drawings, photos, measurements.
 - Collecting feature points lines and regions in Arc Collector.
- Forwarding that information to the Lead Archaeologists for the Operation
 - Lead Archaeologists develop protection measures and mitigations to preserve the integrity of the sites. Protection measures are discussed with tree removal contractors, to determine if hazard trees can be feasibly removed while maintaining the protection and integrity of features and sites.
- Field Archaeologist flag site boundaries immediately before commencement of operations within an assigned runway (project work area)
- Tribal Representatives are engaged and involved by being on site when tree removal operations are conducted near prehistoric archaeology sites.
- Tree removal contractors can ask monitors questions about removing trees adjacent to features and sites.
- After all field surveys are complete, contract archaeologist begin to compile California Department of Parks and Recreation (DPR) Primary Records, Site Records, Sketch Maps Linear Feature Records, District Records, and Location Maps.
- Final site records are sent to FEMA for Final Review and approval. FEMA refers to this process as an “After Action Plan”
- Final approved DPR records are submitted to the CA Office of Historic Preservation for distribution to the appropriate Information Center throughout the state.

CONFIDENTIAL ARCHAEOLOGICAL LETTER (CAL) WAIVER REQUEST

The Hazard Tree Removal Program (DR-4407) FEMA Protocols rely on adherence to an Archaeological Treatment Plan (ATP) developed with the support of the Federal Emergency Management Agency (FEMA) and in accordance with Stipulation II.B.2.v. of the FEMA/California Programmatic Agreement. Execution of the ATP meets or exceeds the minimum requirements administered by CALFIRE Archaeological Program as it relates to surveying, documenting, and protection of prehistoric and historic sites through avoidance, minimization, mitigation, and consultation with Federally Recognized Tribes. Further, ongoing Operations integrate consultation with California Tribes. Together, the ATPs and ongoing regular programmatic Operational coordination with California Tribes meets consultation requirements set forth by California Assembly Bill 52 (AB-52), and Executive Order B-10-11 (E.O. B-10-11). Tribal Partners are active, vital, and integral members supporting recovery efforts in the field. CalRecycle shall comply with the CalEPA Tribal Consultation Protocol.

Due to the rapid response timeframe, the 2020 Fire (DR-4558 & DR-4569) Operations are not supported by a formal ATP. Rather, standard operating procedures established by the Incident Management Teams and informed by conversations with CalRecycle contracted Registered Professional Forester(s) substantially follow similar requirements set forth in the FEMA Protocols for the State Hazard Tree Removal Program (DR-4407). The following document, administered via the terms and conditions in respective CalRecycle contracts, in aggregate represent the “FEMA Protocol” requirements for the 2020 Fire (DR-4558 & DR4569) Operations:

1. *Private Property Debris Removal for wildfires within multiple counties FEMA-4558-DR-CA and FEMA-4569-CA – Private Property Debris Removal Expedited Review for Emergency Undertakings Final Decision Regarding Treatment Measures to Resolve Potential Adverse Effects, in Accordance with Stipulation II.B.2.v. of the FEMA/California Programmatic Agreement*

PROCESS FOR DEMONSTRATION OF EQUIVALENT COMPLIANCE

To demonstrate compliance with the intent of the subject regulations, CalRecycle’s contracted Registered Professional Forester(s) of record will prepare “Compliance Letters” describing measures employed to address the intent of the relevant Forest Practice Rules requirements. At a minimum, Compliance Letters address the following elements:

1. Acknowledge and affirm continued implementation of current Operational practices pursuant to the FEMA Protocols and Standard Operating Procedures for each recovery operation; and
2. Describe the consultation with the local CALFIRE Unit inspector as set forth in the 25 January 2021 CALFIRE memorandum, *Guidelines for the Removal of Federal Emergency Management Agency (FEMA) Hazard Trees under the Forest Practice Rules*.

REQUEST FOR WAIVER OF REGULATIONS

In accordance with the Executive Orders, CalRecycle requests waiver of the following “In Lieu Practices,” “Emergency Notice,” and “Confidential Archaeological Letter” regulations for the State Hazard Tree Removal Program (DR-4407) and Private Property Debris Removal for the 2020 Fires (DR-4558 and DR-4569):

1. Title 14 California Code of Regulation (14 CCR) sections 916.1, 936.1, 956.1 (et seq) In Lieu Practices [All Districts]. In rule sections where provision is made for site specific practices to be proposed by the RPF, approved by the Director and included in the THP in lieu of a stated rule, the RPF shall reference the standard rule, shall explain and describe each proposed practice, how it differs from the standard practice, and the specific locations where it shall be applied; and shall explain and justify how the protection provided by the proposed practice is at least equal to the protection provided by standard rule.;

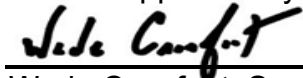
2. Title 14 CCR section 1104.1(h) where in-lieu practices for Watercourse and lake protection zones as specified under Article 6 of the Forest Practice Rules (FPRs), exceptions to FPRs and alternative practices are not allowed, including the following:
 - a. Bridging watercourses with trees that cannot be jacked and/or pulled away from the watercourse
 - b. Operating equipment within the WLPZ in order to lift a bridged tree off the bed, bank or channel;
 - c. Operating equipment within the WPLZ to conduct shovel logging (swing) and forwarder yarding operations;
 - d. Permitting use of equipment within existing WLPZ landings; and
 - e. Designated temporary crossings on all watercourse classes (temporary bridges, Spitler Crossings, Humboldt Crossing, Corrugated Log Crossings, Vented Rock Ford Crossings).
3. Title 14 CCR section 1052(a)(10) where a Confidential Archaeological Letter must be prepared for emergency notices 3 acres and larger. The FEMA Protocols are substantively equivalent to the CALFIRE Archaeological Program in terms of surveying, documenting, and protecting prehistoric and historic sites. The two strategies have different pathways to accomplish the same goals;
4. Title 14 CCR section 929.1 (949.1, 969.1)(f)(1)(B) (Emergency Notices of Less than 3 Acres) where a copy of the emergency notice must be sent to Native Americans;
5. Title 14 CCR section 929.1 (949.1, 969.1)(f)(3) (Emergency Notices of Less than 3 Acres) where Timber Operations are not allowed within the boundaries of any significant archaeological or historical sites as determined by the Registered Professional Forester (RPF) or the RPF's supervised designee;
6. Title 14 CCR section 929.2 (949.2, 969.2)(et seq.) – Protection measures for Plans and Emergency Notices 3 acres and Larger; and
7. Title 14 CCR section 929.3 (949.3, 969.3)(et seq.) – Post Review Site Discovery. The FEMA Protocols are substantively equivalent to the Cal Fire requirements as it relates to surveying, documenting, and protecting prehistoric and historic sites. Waiver of these regulations allows contract archaeologist to survey, record, implement immediate protection measures for sites and resources and finally report on new discoveries (i.e., Post Review Site Discovery).

//
//
//
//
//
//
//

These waivers are necessary to suspend applicable procedural and substantive requirements, including notice and fee provisions that would otherwise delay hazard tree removal operations.

Waiver Approved by:

4/23/2021



Wade Crowfoot, Secretary

Date

California Natural Resources Agency

Cc: Ken DaRosa, CalRecycle, Deputy Directory
Tina Walker, CalRecycle, Deputy Director Debris Recovery Operations

Memorandum

To: Regional Resource Managers

Date: January 25, 2021

Telephone: (916) 653-9422

Website: www.fire.ca.gov

Dennis Hall

From: Dennis Hall
Assistant Deputy Director
California Department of Forestry and Fire Protection (CAL FIRE)

Subject: Guidelines for the Removal of Federal Emergency Management Agency (FEMA) Hazard Trees under the Forest Practice Rules

As a result of the significant damage associated with wildfires last year, Cal Recycle and CalOES will be utilizing the services of Registered Professional Foresters and Licensed Timber Operators for the removal of FEMA hazard trees that threaten public assets or that are an imminent threat to Debris Removal Crews. The following guidelines on timber operations and appropriate noticing under the Forest Practice Rules are intended to help facilitate efficient hazard tree removal associated with this work. All timber operations associated with these projects are subject to the Rules and must be conducted in conformance with the Rules.

A list of Hazard Tree Removal Options for Cal Recycle has been attached for information. When a Post-Fire Recovery Exemption is submitted, it requires a signature by the Timberland Owner. A Right-of-Entry Permit (ROE) with the landowner's signature must be attached to satisfy this requirement. An example of a ROE is attached. Property Owners must complete an ROE Permit and provide the proper paperwork to enroll in the Government Program.

As necessary, the Units shall ensure all operational provisions of the Rules are being adhered to during operations. Please ensure all Unit Forest Practice Inspectors and Region Review Team staff receive a copy of this memo. If you have any questions regarding CAL FIRE's expectations for these projects, please contact Staff Chief Eric Huff at (916) 653-0719 or Eric.Huff@fire.ca.gov.

GUIDELINES FOR THE REMOVAL OF FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) HAZARD TREES UNDER THE FOREST PRACTICE RULES

SCOPE OF WORK:

1. The removal of FEMA hazard trees that threaten public assets.
2. The removal of hazard trees that are an imminent threat to the Debris Removal Crew.

PRE-OPERATIONAL MEETING:

Prior to initiating operations in a CAL FIRE Administrative Unit, it is essential that a meeting occurs between the Unit Forester, Licensed Timber Operator, assigned private RPF, Cal Recycle, and CalOES representatives to discuss site specific details pertaining to operations and permitting.

TIMBER HARVEST DOCUMENTS RECOMMENDED:

1. For the removal of FEMA hazard trees that threaten public assets; the Public Agency, Public and Private Utility Right-of-Way Exemption (14 CCR § 1104.1(b) & (c)) is the appropriate document to meet most of the requirements.
2. For the removal of hazard trees that are an imminent threat to the Debris Removal Crew; most circumstances may be covered utilizing the Public Agency, Public and Private Utility Right-of-Way Exemption (14 CCR § 1104.1(b) & (c)).
3. For specific situations that are not covered by the Right-of-Way Exemption, where hazard trees are an imminent threat to the Debris Removal Crew and are located within 300 feet of an approved and legally permitted structure that was damaged or destroyed by wildfire; the Post-Fire Recovery Exemption (14 CCR § 1038(g)) may be utilized.
4. For specific situations where in-lieu or alternative practices are needed, a Notice of Emergency Timber Operations (14 CCR § 1052) is recommended.

REQUIREMENTS:

1. The Public Agency, Public and Private Utility Right-of-Way Exemption (14 CCR § 1104.1(b) & (c)) allows additional clearance for the removal of Danger Trees that are in areas adjacent to the right-of-way. It is the Department's expectation that professional discretion by Registered Professional Foresters or Arborists is utilized when identifying danger trees in adjacent areas.
2. When in-lieu, exceptions or alternative practices are needed, these operations must be necessary to protect public health and safety. A consultation with the local Unit CAL FIRE Forest Practice Inspector is recommended prior to submitting an Emergency Notice with in-lieu, exception or alternative practices.
3. The Post-Fire Recovery Exemption requires a signature by the Timberland owner. When submitting a Post-Fire Recovery Exemption, attach the Right-of-Entry Permit (ROE) with the landowner's signature to satisfy this requirement. **Only Page 1 of the ROE Permit should be attached, as it contains the certification that the signatory is the landowner.**
4. For operations under the Public Agency, Public and Private Utility Right-of-Way Exemption (14 CCR § 1104.1(b) & (c)) the use of an ArcGIS Collector application is an acceptable means for displaying information such as watercourse locations, sensitive areas, and parcel data, provided CAL FIRE Forest Practice Inspectors have access to the information for compliance inspection purposes.
5. When filling out the Right-of-Way Exemptions, For the "Contact" and Public Utility, the following contact information should be used when filling out Right-of-Way Exemptions:

Department of Resources, Recovery, & Recycling (CalRecycle)
1001 I Street
Sacramento, California 95814

cc: Deputy Director, Resource Management
Staff Chief, Forest Practice

Attachments: Hazard Tree Removal Options for Cal Recycle
Right-of Entry (ROE) Permit Example

HAZARD TREE REMOVAL OPTIONS FOR CALRECYCLE

	EXEMPTIONS		EMERGENCY
PERMIT OPTIONS	POST-FIRE RECOVERY EXEMPTION (14 CCR § 1038(g))	PUBLIC AGENCY, PUBLIC AND PRIVATE UTILITY RIGHT OF WAY EXEMPTION (14 CCR § 1104.1(b) & (c))	NOTICE OF EMERGENCY TIMBER OPERATIONS (14 CCR § 1052)
RPF REQUIRED?	NO, if within the scope of a Gubernatorial state of emergency or executive order (14 CCR § 1038(g)(2))	NO	YES
AREA/ACREAGE LIMITATIONS	Trees within 300 feet of an Approved and Legally Permitted Structure, damaged, or destroyed. (14 CCR § 1038(g)(1))	NONE	NONE
SILVICULTURE/ STOCKING	NONE	NONE	NONE
DIAMETER LIMIT	Maximum 60" SH for Redwood 48" SH for Other Species (14 CCR § 1038.1(c)(15))	The harvesting of large old trees are limited by 14 CCR § 1104.1(i)(1) & (2)	NONE
SURFACE/LADDER FUELS TREATMENT	All slash within 150 feet of a structure shall be treated or removed and a maximum depth of 18" in the rest of the harvest area; completed within 45 days, except burning (14 CCR § 1038(g)(4)&(5))	None specific to the exemption. Must comply with existing hazard reduction requirements of 14 CCR 917 [937, 957] et seq.	None specific to the emergency notice. Must comply with existing hazard reduction requirements of 14 CCR § 917 [937, 957] et seq.
ARCHAEOLOGY REQUIREMENTS	No timber operations in a significant archaeological or historical site; exceptions apply (14 CCR § 1038.1(c)(3))	No timber operations in a significant archaeological or historical site.	For notices greater than 3 acres, RPF shall submit a confidential archaeological letter (14 CCR § 1052(a) (10)) For notices less than 3 acres see 14 CCR § 929.1 [949.1, 969.1] (f)
APPROVAL TIME	5 working days from the Director's receipt of the notice. (14 CCR § 1038.1(c)(13))	5 working days from the Director's receipt of the notice.	5 working days from the Director's receipt of the notice. (14 CCR § 1052(d))
EFFECTIVE PERIOD	1 year (14 CCR § 1038)	1 year	1 year (14 CCR § 1052 (e))
OTHER INFORMATION	Shall include a seven-and-one-half minute USGS quadrangle map, or equivalent depicting the Harvest Area boundaries.	NONE	Shall include a USGS or equivalent map showing the harvest area, legal description, roads, watercourse location and classification, and yarding systems if more than one will be used. 14 CCR § 1052(a)(4)

ABBREVIATIONS

PRC PUBLIC RESOURCES CODE
 CCR CALIFORNIA CODE OF REGULATIONS
 FPR FOREST PRACTICE RULES
 RPF REGISTERED PROFESSIONAL FORESTER
 LTO LICENSED TIMBER OPERATOR
 DBH DIAMETER AT BREAST HEIGHT
 WLPZ WATERCOURSE LAKE PROTECTION ZONE
 ARCH ARCHAEOLOGICAL

**SEE 14 CCR §§ 913.4[933.4, 953.4], 916.9[936.9, 956.9], 1038, 1038.1, 1038.2, AND 1052 FOR ADDITIONAL CONDITIONS AND REQUIREMENTS.

***ALL ACTIVITIES MAY BE SUBJECT TO ADDITIONAL PERMITTING REQUIREMENTS



North Complex Recovery Right-of-Entry (ROE) Permit Checklist for Property Owners

Property Owners must complete an ROE Permit and provide the proper paperwork to enroll in the Government Program. Please follow the checklist below to make sure you have all the necessary documents to submit the ROE Permit. **Applications will not be approved until all required information is received. Please only submit ONE ROE per property.**

Documents needed for submittal of the ROE Permit:

- ROE Permit for Debris Removal and/or Hazard Tree Removal on Private Property
- Government Issued ID (Driver's License/Passport)
- Insurance Policy:
 - Declaration page
 - Debris and/or Hazard Tree Removal coverage section/page
 - Assessor's Parcel Number (APN)
- Signature of all Property Owners, Trustees or Power of Attorney
- Trust or LLC Documents (ONLY if applicable)
 - 1st Page of Trust & Pages naming Trustees
 - Signature Authorization page
 - Power of Attorney signature page
 - Any other relevant pages
- Signed and notarized document for authorized agent (ONLY if Property Owner is not signing)

All trustees or signatories must sign the ROE Permit for Debris and/or Hazard Tree Removal on Private Property

ROE Permits may be submitted:

IN PERSON:

78 Table Mountain Blvd.
Oroville CA 95965

MAIL:

PO Box 1708
Oroville, CA 95965-1708

E-MAIL:

ROE@ButteCounty.net

FOR MORE INFORMATION CALL:

530.552.3210

Property Owned by 1 or more Individuals

All Owners listed on the title of the home must:

- Sign the ROE Permit for Debris and/or Hazard Tree Removal on Private Property
- Show Government Issued ID (Driver's License/Passport)
- Sign and notarize document for authorized agent (ONLY if Property Owner is not signing)

Property Owned by a Trust, LLC, or other Legal Entity:

If a home is owned by a trust, LLC or other legal entity, please bring:

- First page of the trust, LLC or other agreement
- Signature Authorization page/Pages naming Trustees
- Power of Attorney signature page
- Any other relevant pages

County of Butte
ROE Center
P.O. Box 1708
Oroville, CA 95965-1708
Phone: 530-552-3210
Email: ROE@ButteCounty.net



Name of Owner(s)/Agent: _____

Phone Number of Owner(s)/Agent: _____

Email of Owner(s)/Agent: _____

Property Address: _____

Assessor's Parcel No. (APN): _____

Right-of-Entry Permit for Debris and/or Hazard Tree Removal on Private Property

I / we, _____,
certify that I am / we are the owner(s), or authorized agent of the owner(s), of the real property located at the above address (hereinafter "Owner"). I hereby certify that I have full power and authority to execute this Right of Entry Permit (ROE) without the need for any further action, including, but not limited to, notice to or approval from any other party.

I / we hereby grant Butte County ("County"), as well as the State of California ("State"), and the Federal Government, and their officers, employees, agencies, and independent contractors (collectively, the "Government"), a ROE upon the real property specified above by address and APN (hereafter the "Property") and will guarantee access to the property for the activities described herein.

1. Time Period: This ROE shall expire 36 months after the date of the Owner's signature(s), below, or when the Debris and Hazard Tree Removal activities described below are complete, as determined in the sole discretion of the Government, whichever date is sooner.

2. Purpose: The Government is granted this ROE to inspect, cut, test, remove, and clear wildfire-generated debris of whatever nature including but not limited to burned or

Property Address: _____
APN: _____

partially burned structures, ash, concrete foundations, contaminated soil, vehicles, trailers, waste, hazard trees or other debris from the Property ("Debris and Hazard Tree Removal").

3. Hazard Trees: Hazard Trees are wildfire-damaged trees that have been so damaged by the fires that their structural integrity is compromised and that pose an immediate threat of falling onto work crews or obstructing their access to the debris clearance site, or falling onto a public right of way or public improved property. The Government has sole discretion on whether to take or leave the hazard trees, to determine whether a tree is hazardous, and to approve tree removal from private roads. Debris and Hazard Tree Removal does not include the removal of tree stumps.

4. Authorized Activities: Owner hereby grants to the Government, the right to determine, in the Government's sole discretion, which hazard trees, materials and items on the Property are eligible and will be removed for Debris and Hazard Tree Removal. Owner is responsible for removing, at Owner's expense, any items not eligible for Debris and Hazard Tree Removal. Owner's failure to remove items not eligible for Debris and Hazard Tree Removal may later be deemed a public nuisance by local officials.

5. Reimbursement: All Debris and Hazard Tree Removal activities are provided by the Government at no direct cost to Owner. However, the Owner agrees hereby to file an insurance claim if Owner possesses homeowner's, automobile, or property insurance. Most homeowner's insurance policies include coverage for Debris and Hazard Tree Removal. State and federal law require Owner to assign any Debris and Hazard Tree Removal insurance proceeds to the Government to avoid a duplication of benefits (42 USC § 5155; 44 CFR § 204.62). In consideration of the Government's agreement to perform Debris and Hazard Tree Removal, Owner agrees to inform the insurance company listed below of this assignment and agrees to release their insurance information to the Government. This ROE shall constitute Owner's compliance with California Insurance Code section 791.13 authorizing the insurance company to communicate directly with the Government regarding any and all insurance issues related to the Debris and Hazard Tree Removal.

Specified Debris and/or Hazard Tree Removal Insurance Coverage: If Owner's insurance in effect at the time of the wildfire provides specific coverage for Debris and Hazard Tree Removal, then Owner hereby assigns any and all rights, benefits, and proceeds with respect to these particular specific coverages to the County and hereby authorizes that any benefits or proceeds be paid directly and solely to County, in an amount not to exceed the actual cost of the Debris and/or Hazard Tree Removal. Owner shall not be liable for any further Debris and Hazard Tree Removal costs to County.

No Specified Debris and/or Hazard Tree Removal Insurance Coverage:

If Owner's insurance in effect at the time of the wildfire does not provide specific and separate coverage for Debris and/or Hazard Tree Removal, but such coverage is included within another larger coverage category, then payment to County shall be limited to the unused benefit amount, after the residence is rebuilt. Owner hereby assigns any and all rights, benefits, and proceeds of any unused benefit amount that is eligible for Debris and/or Hazard Tree Removal remaining in a larger coverage category to County, in an amount not to exceed the actual cost of the Debris and/or Hazard Tree Removal.

Specified Automobile Insurance Coverage:

If Owner's automobile insurance in effect at the time of the wildfire provides specific coverage for vehicle removal, then Owner hereby assigns any and all rights, benefits, and proceeds with respect to these particular specific coverages to the County and hereby authorizes that any benefits or proceeds to be paid directly to County, in an amount not to exceed the actual cost of the vehicle removal. Owner shall not be liable for any further vehicle removal costs to County.

No Specified Automobile Insurance Coverage:

If Owner's automobile insurance in effect at the time of the wildfire does not provide specific and separate coverage for vehicle removal, but vehicle removal coverage is included within another larger coverage category, then payment to County shall be limited to the unused benefit amount. Owner hereby assigns any and all rights, benefits, and proceeds of any unused benefit amount that is eligible for vehicle removal remaining in a larger coverage category to County, in an amount not to exceed the actual cost of the vehicle removal.

In the event the insurance company or companies listed below issue insurance proceeds for Debris and Hazard Tree Removal or vehicle removal directly to Owner, then Owner shall promptly inform the County of the amount of such proceeds and remit such insurance proceeds to County, not to exceed the actual cost of the applicable Debris and/or Hazard Tree Removal.

Homeowner's Insurance:

Insurance Company: _____

Policy Number: _____

Claim Number: _____

Agent's Name: _____

Agent's Phone / Email: _____

Secondary Insurance, or personal property insurance for other damaged items on the Property:

Insurance Company: _____

Policy Number: _____

Claim Number: _____

Agent's Name: _____

Agent's Phone / Email: _____

Automobile Insurance for car, boat, trailer or other vehicles on the Property:

Insurance Company: _____

Policy Number: _____

Claim Number: _____

Agent's Name: _____

Agent's Phone / Email: _____

If Owner does NOT have homeowner's and/or automobile insurance, or other similar insurance, then Owner certifies under penalty of perjury by his/her signature below that no insurance coverage for the costs associated with fire Debris and/or Hazard Tree Removal at the Property was in effect at the time of the wildfire:

Owner's signature	Date
Owner's signature	Date
Owner's signature	Date

Any property that is sold prior to issuance of the cleanup certification will be withdrawn from the program, unless both new and former Owners sign a property transfer affidavit. Costs for work completed will be billed to the insurance company listed above if applicable.

6. Waiver of Liability: Owner acknowledges that the Government's decisions about when, where, and how to provide Debris and Hazard Tree Removal services on Owner's property are discretionary functions. Owner hereby acknowledges that the Government is not liable for any claim based on the exercise or performance, or failure to exercise or perform, a discretionary function, and promises not to make such a claim. **Owner further releases and agrees to hold and save harmless the Government from all liability for any damage or loss whatsoever that may occur during or after performance of the Government's Debris and Hazardous Tree Removal activities. Please also see sections 10 and 11, below.** Owner therefore waives any claims or legal action against the Government. This indemnification is required by state and federal law, including the California Emergency Services Act, California Government Code section 8655, California Code of Regulations, Title 19, section 2925, and the Stafford Act, 42 United States Code, sections 5148 and 5173. Nothing in this section impacts the Owner's right to pursue claims with insurance companies under their applicable insurance policy or policies.

Owner agrees that the methodology for identifying and removing hazard trees, and other debris material, and the selection of personnel to identify hazard trees and other debris material, shall be at the sole discretion of the Government and Owner expressly waives and releases any claims in that regard. Owner expressly waives his or her rights to bring proceedings in law or equity against the Government with respect to the identification and/or removal of hazard trees and other debris material.

7. **Foundations:** In order to participate in this program, Owner must allow removal of all foundations from the subject Property. Stem walls and retaining walls may be left on a case-by-case basis, as approved by the State. Owner acknowledges and understands that the removal of a foundation may leave a depression in the ground, and that it is Owner's responsibility to fill any depression(s) following the removal of a foundation.

8. **Soil Sampling:** Debris removal includes taking soil samples in the debris footprint to ensure that all contaminants have been removed. If initial soil samples do not meet the cleanup goals for this project, then additional soil will be removed from the debris footprint and more soil samples will be taken. Owner acknowledges and hereby authorizes the Government to remove enough soil to ensure cleanup goals have been met. Owner acknowledges this may leave a depression on the Property and that it is Owner's responsibility to fill any depression left on the Property.

9. **Markings of Infrastructure Facilities:** Owner agrees to make their best efforts to mark subgrade utility lines (sewer, water, electricity, gas, cable, etc.), and to mark the location of septic tanks, leach fields, water wells, hand dug wells/cisterns, or other subgrade structures. Owner should carefully complete the attached *Property Information Form* **and append any maps, diagrams, or legible notes** that may be useful to the Government's contractor in locating subgrade structures and instructing the crews which items the Owner may want to remain on the Property following Debris and/or Hazard Tree Removal. The Government will endeavor to avoid all marked structures, however, Owner acknowledges pursuant to Section 6, they indemnify, hold and save harmless the Government from any damages to marked or unmarked structures.

10. **Driveway, Roadway and Other Incidental Damage:** Multi-ton excavators must perform much of the demolition, consolidation and loading of fire debris into trucks for removal to appropriate recycling and disposal and end use sites. The scale and weight of this equipment, and the weight of loaded trucks hauling debris out of fire-damaged neighborhoods, often exceeds the design capacity of residential driveways, sidewalks, and roadways. Crews will take reasonable precautions to mitigate against damage. However, Owner acknowledges cracking and damage to asphalt and concrete pavement is a common and unavoidable consequence, and is therefore considered incidental to Debris and Hazard Tree Removal. By signing this ROE and opting into the Government Debris and Hazard Tree Removal at this Property, the Owner acknowledges the risk of such incidental damage as well as responsibility for the cost of any repairs to private property or jointly-owned private roadways that may be caused by Government contractors in the performance of Debris and Hazard Tree Removal operations. Owner hereby promises to indemnify, hold and save harmless the Government from any repair claims described above, or any other incidental and unavoidable damage occurring as a result of routine operations

associated with such Debris and Hazard Tree Removal.

11. **Damage to Improved Property:** Debris and ash removal crews will attempt to minimize impacts to improved property that was not damaged by the fire. Owner may submit a complaint regarding any improved property that Owner believes was damaged during the Debris and Hazard Tree Removal operations at ROE@ButteCounty.net. However, Owner acknowledges Section 6 of this ROE limits the liability of the Government with respect to such damage, if any.

12. **Erosion Control:** Owner acknowledges that erosion control measures may be necessary, such as wattles and hydromulch, to stabilize soil on or about the Property. Such erosion control measures are at the sole discretion of Government.

13. **Modification:** The provisions of this ROE may not be modified. Owner may cancel this ROE only by submitting an executed *Withdrawal Form* to the County at ROE@ButteCounty.net (see below).

14. **Fraudulent or Willful Misstatement of Fact:** An individual who fraudulently or willfully misstates any fact in connection with this ROE may be subject to penalties under state and federal law, including civil penalties, imprisonment for not more than five years, or both, as provided under 18 United States Code, section 1001.

15. **Public Records Act:** Owner acknowledges that completed ROE forms may be subject to public disclosure under the California Public Records Act (Government Code section 6250 et seq.). Other state and federal laws may apply. While efforts will be made to redact personally identifiable information, such redactions will be made at the sole discretion of Government.

Printed name of Owner or Agent

Signature of Owner or Agent

Date

Printed name of Owner or Agent

Property Address: _____
APN: _____

Signature of Owner or Agent

Date

Printed name of Owner or Agent

Signature of Owner or Agent

Date

Phone number of Owner or Agent

Email address of Owner or Agent

Mailing address of Owner or Agent

Approved by County of Butte and verified that the Property, APN, and Owner are accurate and meet the eligibility requirements of program:

Title and Printed name of County Representative

Signature of County Representative

Date

Property Address: _____
APN: _____

**Disaster Debris and Hazard Tree Removal Program
Property Information**

Please identify all that apply on the Property:

Vehicles	Location	Description	Comments
Car			
Boat or Trailer			
Other vehicles (ATVs, motorcycles, trailers, vans, motorhomes, recreational vehicles, trailers, etc)			
Other (farm equipment, construction equip, etc):			

Underground Tanks	Location	Construction Date (If Known)	Comments
Septic ¹ Tanks and Leach Fields			
Fuel/Oil ²			
Water			
Other:			

1. Septic tanks will be pumped of all waste as part of the Debris and Hazard Tree Removal project only if they posed a hazard to crews.

2. Owner must provide documentation of ownership for large propane tanks to be removed.

Underground Structures	Location	Construction Date (If Known)	Comments
Basement			
Root Cellar			
Other (water wells, cisterns/dug wells, mine shafts, etc):			

Attach, Insert or Draw Map of Property

Property Address: _____
APN: _____

STOP HERE AND DO NOT FILL OUT THE BELOW PAGE UNLESS YOU WISH TO WITHDRAW FROM THE DEBRIS AND HAZARD TREE REMOVAL PROGRAM

Withdrawal Form

To cancel this ROE, this Withdrawal Form must be signed by the Owner, delivered to the ROE Center at P.O. Box 1708, Oroville, CA, 95965-1708 or ROE@ButteCounty.net, and acknowledged by an authorized employee in advance of Debris and Hazard Tree Removal activities at the Property. Allow at least three (3) days to process.

Alternatively, the ROE may be cancelled at the Property site **by obtaining the signature of designated Butte County Representative present when the crew appears for work**. Due to scheduling constraints, the Government cannot provide specific dates and times when they will be available at the Property site to accept a cancellation. Owner should therefore turn in the Withdrawal Form at the location designated by the County in the above paragraph if possible.

I have read and understand the foregoing statement concerning cancellation policies. I hereby certify that the Debris and Hazard Tree Removal at the Property has not yet commenced, and that I request to cancel the Right of Entry (ROE).

Printed name of Owner or Agent

Signature of Owner or Agent

Date

Phone number of Owner or Agent

Email address of Owner or Agent

Mailing address of Owner or Agent

I hereby acknowledge receipt of the foregoing request for cancellation:

Title and Printed name of County Representative

Signature of County Representative

Date

Property Address: _____
APN: _____

CalOES and CalRecycle Statewide Contacts

California Department of Fish and Wildlife

Regional Boundaries, 2021



Due to COVID-19 teleworking restrictions, CDFW staff are most readily accessible via email

	1 - Northern Region	2 - North Central Region	3 - Bay Delta Region	4 - Central Region	5 - South Coast Region	6 - Inland Deserts Region
Name	Cary Japp	Sarah Lose	Robynn Swan	Margarita Gordus	Audrey Kelly	Edith Martinez
Classification	Sr. Environmental Scientist Supervisor	Sr. Environmental Scientist Specialist	Sr. Environmental Scientist Specialist	Sr. Environmental Scientist Specialist	Environmental Scientist	Sr. Environmental Scientist Specialist
E-mail	Cary.Japp@wildlife.ca.gov	Sarah.Lose@wildlife.ca.gov	Robynn.Swan@wildlife.ca.gov	Margarita.Gordus@wildlife.ca.gov	Audrey.Kelly@wildlife.ca.gov	Edith.Martinez@wildlife.ca.gov
Phone	(530) 782-3149	(916) 747-5226	(707) 210-4467	(559) 243-4014 x236	(562) 430-7882	(909) 239-1241
	Del Norte	Alpine	Alameda	Fresno	Los Angeles	Imperial
	Humboldt	Amador	Contra Costa	Kern	Orange	Inyo
	Lassen	Butte	Marin	Kings	San Diego	Mono
	Mendocino	Calaveras	Napa	Madera	Santa Barbara	Riverside
	Modoc	Colusa	Sacramento*	Mariposa	Ventura	San Bernardino
	Shasta	EIDorado	San Mateo	Merced		
	Siskiyou	Glenn	Santa Clara	Monterey		
	Tehama	Lake	Santa Cruz	San Benito		
	Trinity	Nevada	San Francisco	San Luis Obispo		
		Placer	San Joaquin*	Stanislaus		
		Plumas	Solano	Tulare		
		Sacramento*	Sonoma	Tuolumne		
		San Joaquin*	Yolo*			
		Sierra				
		Sutter				
		Yolo*				
		Yuba				

Note: These counties with a * are split between regions.

**2021 Statewide Fires
Habitats and Special Status Species Impacted,
by Fire Name, CDFW Region, and County**

Updated on 9/8/2021

For the most recent update to this document, please contact Elliot Chasin at
Elliot.Chasin@wildlife.ca.gov

The species including in this summary are intended to be a guide and are not comprehensive, please consult with a California Department of Fish and Wildlife (CDFW) CalOES contact for up-to-date information.

The species included in this summary are the California Endangered Species Act (CESA) listed species, CESA Candidate species, CDFW Species of Special Concern, CDFW Fully Protected species, CDFW Watch List species, California Board of Forestry Sensitive Species, as well as plant species protected under the Native Plant Protection Act (NPPA) and plant species with California Rare Plant Ranks 1 and 2. This list does not include solely Federally protected species, and to ensure compliance with federal regulations those species should be determined based on the federal Endangered Species Act and with guidance from the U.S. Fish and Wildlife Service.

For more information, please refer to CDFW's Special Animals List <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline>, CDFW's Special Vascular Plants, Bryophytes, and Lichens List <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline>, and CDFW's Fully Protected Animals list <https://wildlife.ca.gov/Conservation/Fully-Protected>.

Fire Name: Antelope Fire

CDFW Region: Northern Region

Counties: Siskiyou County

Acres Burned: 79,704 acres

Dominant Habitat Types:

- Conifer – 66,998 acres with White Fir (14,969 ac), Eastside Pine (13,406 ac), Ponderosa Pine (12,052 ac), Red Fir (11,077 ac), and Sierran Mixed Conifer (10,050 ac)
- Shrub – 10,172 acres with Montane Chaparral (5,890 ac), Bitterbrush (2,388 ac), and Sagebrush (1,760 ac)

Species:

- Amphibians: Cascades frog, southern long-toed salamander
- Birds: bank swallow, Northern spotted owl, California spotted owl, northern goshawk, prairie falcon, Great egret, Great blue heron
- Fish: McCloud River redband trout
- Mammals: American badger
- Plants:
 - Bryophytes: Blandow's bog moss
 - Dicots: Little-leaved huckleberry

Fire Name: Beckwourth Fire

CDFW Region: Northern Region and North Central Region

Counties: Lassen and Plumas Counties

Acres Burned: 105,008 acres

Dominant Habitat Types:

- Conifer – 58,666 acres with Eastside Pine (42,174ac), Sierran Mixed Conifer (13,922 ac), and Montane Hardwood-Conifer (1,778 ac)
- Shrub – 36,780 acres with Sagebrush (27,721 ac) and Montane Chaparral (9,059 ac)
- Herbaceous – 6,934 acres with Annual Grassland (6,788 ac)

Species:

- Amphibians: Sierra Nevada yellow-legged frog
- Birds: bald eagle, bank swallow, California spotted owl, long-eared owl, prairie falcon, Swainson's hawk, Great egret, Great blue heron
- Fish: mountain sucker
- Mammals: Townsend's big-eared bat, western white-tailed jackrabbit
- Plants:
 - Dicots: Bailey's ivesia, lance-leaved scurf-pea, lens-pod milk-vetch, Nevada daisy, Plumas ivesia, Plummer's clover, Pulsifer's milk-vetch, Schoolcraft's wild buckwheat, Sierra Valley ivesia, sticky pyrrocoma, Suksdorf's broom-rape, western seablite
 - Monocots: Nuttall's ribbon-leaved pondweed, Santa Lucia dwarf rush

Fire Name: Caldor Fire

CDFW Region: North Central Region

Counties: Alpine, Amador, El Dorado, and Placer Counties

Acres Burned: 217,565 acres

Dominant Habitat Types:

- Conifer – 182,975 acres with Sierran Mixed Conifer (111,121 ac), Red Fir (34,742 ac), and Ponderosa Pine (15,050 ac)
- Shrub – 18,467 acres with Montane Chaparral (15,605 ac), and Mixed Chaparral (2,045 ac)
- Hardwood – 6,348 acres with Montane Hardwood (6,242 ac)

Species:

- Amphibians: Foothill yellow-legged frog, Mount Lyell salamander, Sierra Nevada yellow-legged frog, southern long-toed salamander
- Birds: golden eagle, California spotted owl, Great gray owl, northern goshawk, willow flycatcher, Great egret, Great blue heron
- Insects: western bumble bee
- Mammals: American badger, California wolverine, Fisher, Pallid bat, Sierra Nevada mountain beaver, Sierra Nevada snowshoe hare,
- Plants:
 - Dicots: Parry's horkelia
 - Ferns: Mingan moonwort, scalloped moonwort, western goblin
 - Monocots: Davy's sedge, Pleasant Valley mariposa-lily
- Reptiles: western pond turtle

Fire Name: Dixie Fire

CDFW Region: Northern Region and North Central Region

Counties: Butte, Lassen, Plumas, and Tehama Counties

Acres Burned: 922,180 acres

Dominant Habitat Types:

- Conifer – 767,856 acres with Sierran Mixed Conifer (486,979 ac), White Fir (91,829 ac), Red Fir (64,015 ac), Eastside Pine (49,143 ac), Montane Hardwood-Conifer (17,588 ac), Lodgepole Pine (16,629 ac), Jeffrey Pine (16,583 ac), and Ponderosa Pine (15,841 ac)
- Shrub – 87,852 acres with Montane Chaparral (56,943 ac), Sagebrush (25,637 ac), and Mixed Chaparral (3,681 ac)
- Herbaceous – 23,179 acres with Annual Grassland (13,415 ac), Wet Meadow (6,891 ac), and Perennial Grassland (2,864 ac)
- Hardwood – 20,900 acres with Montane Hardwood (14,344 ac) and Montane Riparian (5,690 ac)

Species:

- Amphibians: Cascades frog, Foothill yellow-legged frog, Sierra Nevada yellow-legged frog, southern long-toed salamander
- Birds: bald eagle, bank swallow, California spotted owl, great gray owl, greater sandhill crane, northern goshawk, osprey, prairie falcon, willow flycatcher, yellow rail, Great egret, Great blue heron
- Fish: chinook salmon – Central Valley spring-run ESU, hardhead
- Insects: western bumble bee
- Mammals: American badger, California wolverine, Fisher, Pallid bat, Sierra Nevada mountain beaver, Sierra Nevada red fox, Townsend's big-eared bat, western red bat,
- Plants:
 - Bryophytes: broad-nerved hump moss, cylindrical tichodon, Lassen Peak copper moss
 - Dicots: adobe lomatium, Ahart's buckwheat, alder buckthorn, Barron's buckwheat, buttercup-leaf hemieva, Cantelow's lewisia, Caribou coffeeberry, Cascade alpine campion, Clifton's eremogone, closed-throated beardtongue, Constance's rockcress, cream-flowered bladderwort, cut-leaf anemone, dwarf resin birch, English sundew, Feather River stonecrop, fern-leaved monkeyflower, flat-leaved bladderwort, Follett's monardella, Lassen paintbrush, lens-pod milk-vetch, Lewis Rose's ragwort, little hulsea, long-leaved starwort, long-stiped campion, Macdougall's lomatium, marsh skullcap, marsh willowherb, Mildred's clarkia, Plumas ivesia, Plumas rayless daisy, Pulsifer's milk-vetch, pyrola-leaved buckwheat, rosy orthocarpus, Schoolcraft's wild buckwheat, Serpentine Canyon monkeyflower, Sierra Valley ivesia, snow fleabane daisy, Stebbins' monardella, sticky pyrrocoma, Suksdorf's milk-vetch, tall alpine-aster, tufted loosestrife, watershield, Webber's ivesia, Webber's milk-vetch, winged dock
 - Monocots: American Scheuchzeria, California twisted spikerush, Davy's sedge, Dudley's rush, Geysers panicum, Liddon's sedge, mud sedge, northern coralroot, Nuttall's ribbon-leaved pondweed, Robbins' pondweed, Santa Lucia dwarf rush, Sheldon's sedge, Sierra blue grass, slender bulrush, slender Orcutt grass, water bulrush, white beaked-rush, white-stemmed pondweed, woolly-fruited sedge

Fire Name: Fly Fire (has been subsumed by Dixie Fire)

CDFW Region: North Central Region

Counties: Plumas County

Acres Burned: 5,087 acres

Dominant Habitat Types:

- Conifer – 4,545 acres with Sierran Mixed Conifer (3,898 ac) and Montane Hardwood-Conifer (359 ac)

Species:

- Birds: northern goshawk, California spotted owl, Great egret, Great blue heron
- Plants:
 - Dicots: Webber's ivesia

Fire Name: Lava Fire

CDFW Region: Northern Region

Counties: Siskiyou County

Acres Burned: 26,328 acres

Dominant Habitat Types:

- Conifer – 12,139 acres with White Fir (3,563 ac), Red Fir (2,904 ac), and Eastside Pine (2,370 ac)
- Shrub – 10,756 acres with Bitterbrush (7,843 ac) and Montane Chaparral (2,868 ac)

Species:

- Birds: Northern spotted owl, California spotted owl
- Mammals: Sierra Nevada red fox, Townsend's big-eared bat
- Plants:
 - Dicots: alkali hymenoxys, Cooke's phacelia, Modoc green-gentian, Mt. Eddy draba, pallid bird's-beak, Shasta orthocarpus, snow fleabane daisy

Fire Name: McFarland Fire

CDFW Region: Northern Region

Counties: Shasta, Tehama, and Trinity Counties

Acres Burned: 122,442 acres

Dominant Habitat Types:

- Conifer – 59,593 acres with Klamath Mixed Conifer (31,583 ac), Douglas Fir (19,459 ac), and Montane Hardwood-Conifer (2,933 ac)
- Shrub – 35,361 acres with Mixed Chaparral (18,991 ac), Montane Chaparral (9,821 ac), and Chamise-Redshank Chaparral (6,548 ac)
- Hardwood – 24,864 acres with Blue Oak-Foothill Pine (14,244 ac), Montane Hardwood (7,386 ac), and Blue Oak Woodland (3,213 ac)

Species:

- Amphibians: foothill yellow-legged frog, Pacific tailed frog
- Birds: Northern spotted owl, California spotted owl, Great egret, Great blue heron
- Fish: chinook salmon - Central Valley spring-run ESU
- Plants:
 - Dicots: Jepson's dodder, Konocti manzanita, Mt. Tedoc leptosiphon, Niles' harmonia, Oregon fireweed, Stebbins' harmonia

- Monocots: northern meadow sedge
- Reptiles: western pond turtle

Fire Name: Monument Fire

CDFW Region: Northern Region

Counties: Trinity County

Acres Burned: 191,733 acres

Dominant Habitat Types:

- Conifer – 157,453 acres with Douglas Fir (117,221 ac), Montane Hardwood-Conifer (20,058 ac), and Klamath Mixed Conifer (14,437 ac)
- Hardwood – 21,967 acres with Montane Hardwood (20,970 ac)
- Shrub – 5,898 acres with Montane Chaparral (5,008 ac)

Species:

- Amphibians: foothill yellow-legged frog, Pacific tailed frog, southern torrent salamander
- Birds: northern goshawk, northern spotted owl, osprey, Great egret, Great blue heron
- Fish: chinook salmon - upper Klamath and Trinity Rivers ESU, summer-run steelhead trout
- Insects: western bumble bee
- Mammals: American badger, Fisher, Humboldt marten
- Mollusks: Trinity bristle snail
- Plants:
 - Bryophytes: buxbaumia moss, flagella-like atractylocarpus,
 - Dicots: Canyon Creek stonecrop, Heckner's Lewisia, Niles' harmonia, pink-margined monkeyflower, Trinity River jewelflower
 - Monocots: Regel's rush
- Reptiles: western pond turtle

Fire Name: River Fire

CDFW Region: North Central Region

Counties: Nevada and Placer Counties

Acres Burned: 9,653 acres

Dominant Habitat Types:

- Hardwood – 8,797 acres with Blue Oak Woodland (5,719 ac), Blue Oak-Foothill Pine (1,696 ac), and Montane Hardwood (1,382 ac)

Species:

- Amphibians: foothill yellow-legged frog, western spadefoot
- Birds: California spotted owl, Great egret, Great blue heron

Fire Name: Tamarack Fire (within California boundary)

CDFW Region: North Central Region

Counties: Alpine County

Acres Burned: 52,450 acres

Dominant Habitat Types:

- Conifer – 26,032 acres with Pinyon-Juniper (9,197 ac), Eastside Pine (6,366 ac), Sierran Mixed Conifer (5,451 ac), and Jeffery Pine (2,494 ac)
- Shrub – 23,091 acres with Sagebrush (10,947 ac), Montane Chaparral (7,049 ac), Bitterbrush (4,559 ac)

Species:

- Birds: great gray owl, California spotted owl, Great egret, Great blue heron
- Fish: mountain sucker, mountain whitefish
- Mammals: western white-tailed jackrabbit
- Plants:
 - Dicots: golden violet

SPECIES TABLE

CDFW/Other Key: CFPR = Board of Forestry Sensitive Species, FP = Fully Protected, SSC = Species of Special Concern, WL = Watch List

Sci NAME	Common NAME	TAXONGROUP 1	TAXONGROUP 2	CDFW T&E	CRPR	CDFW/ Other
Ambystoma macrodactylum sigillatum	southern long-toed salamander	Amphibians	Mole Salamanders	None		SSC
Ascaphus truei	Pacific tailed frog	Amphibians	Tailed Frogs	None		SSC
Hydromantes brunus	Mount Lyell salamander	Amphibians	Lungless Salamanders	None		WL
Rana boylei	foothill yellow-legged frog	Amphibians	True Frogs	Endangered		SSC
Rana cascadae	Cascades frog	Amphibians	True Frogs	Candidate Endangered		SSC
Rana sierrae	Sierra Nevada yellow-legged frog	Amphibians	True Frogs	Threatened		WL
Rhyacotriton variegatus	southern torrent salamander	Amphibians	Olympic Salamanders	None		SSC
Spea hammondi	Western spadefoot	Amphibians	Spadefoot Toads	None		SSC
Accipiter gentilis	northern goshawk	Birds	Hawks	None		SSC/CFPR
Antigone canadensis tabida	greater sandhill crane	Birds	Cranes	Threatened		FP
Aquila chrysaetos	Golden eagle	Birds	Eagles	None		FP/CFPR
Ardea alba	Great egret	Birds	Egrets	None		CFPR
Ardea Herodias	Great blue heron	Birds	Hérons	None		CFPR
Asio otus	long-eared owl	Birds	Owls	None		SSC
Brachyramphus marmoratus	Marbled murrelet	Birds	Auklets, Puffins, and Relatives	Endangered		CFPR
Buteo swainsoni	Swainson's hawk	Birds	Hawks	Threatened		
Coturnicops noveboracensis	yellow rail	Birds	Rails	None		SSC
Empidonax traillii	willow flycatcher	Birds	Tyrant Flycatchers	Endangered		
Falco mexicanus	prairie falcon	Birds	Falcons	None		WL
Falco peregrinus anatum	American peregrine falcon	Birds	Falcons	None		FP/CFPR
Gymnogyps californianus	California condor	Birds	New World Vultures	Endangered		FP/CFPR
Haliaeetus leucocephalus	bald eagle	Birds	Eagles	Endangered		FP/CFPR
Pandion haliaetus	osprey	Birds	Ospreys	None		WL/CFPR
Riparia riparia	bank swallow	Birds	Swallows	Threatened		
Strix nebulosa	great gray owl	Birds	Owls	Endangered		CFPR
Strix occidentalis caurina	Northern spotted owl	Birds	Owls	Threatened		CFPR
Strix occidentalis occidentalis	California spotted owl	Birds	Owls	None		SSC
Catostomus platyrhynchus	mountain sucker	Fish	Suckers	None		SSC
Mylopharodon conocephalus	hardhead	Fish	Carp	None		SSC
Oncorhynchus mykiss irideus pop. 36	summer-run steelhead trout	Fish	Trout	Candidate Endangered		SSC
Oncorhynchus mykiss ssp. 2	McCloud River redband trout	Fish	Trout	None		SSC
Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	Fish	Salmon	Threatened		
Oncorhynchus tshawytscha pop. 30	chinook salmon - upper Klamath and Trinity Rivers ESU	Fish	Salmon	Candidate Endangered		SSC
Prosopium williamsoni	mountain whitefish	Fish	Trout	None		SSC
Bombus occidentalis	western bumble bee	Insects	Bees	Candidate Endangered		
Antrozous pallidus	pallid bat	Mammals	Evening Bats	None		SSC
Aplodontia rufa californica	Sierra Nevada mountain beaver	Mammals	Mountain Beavers	None		SSC
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	Evening Bats	None		SSC
Gulo gulo	California wolverine	Mammals	Weasels and Relatives	Threatened		FP
Lasiurus blossevillii	western red bat	Mammals	Evening Bats	None		SSC
Lepus townsendii townsendii	western white-tailed jackrabbit	Mammals	Hares	None		SSC

<i>Martes caurina humboldtensis</i>	Humboldt marten	Mammals	Weasels and Relatives	Endangered	SSC
<i>Pekania pennanti</i>	Fisher	Mammals	Weasels and Relatives	None	SSC
<i>Taxidea taxus</i>	American badger	Mammals	Weasels and Relatives	None	SSC
<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	Mammals	Foxes	Threatened	
<i>Monadenia infumata setosa</i>	Trinity bristle snail	Mollusks	Snails	Threatened	
<i>Buxbaumia viridis</i>	buxbaumia moss	Plants	Bryophytes	None	2B.2
<i>Campylopodiella stenocarpa</i>	flagella-like atractylocarpus	Plants	Bryophytes	None	2B.2
<i>Elodium blandowii</i>	Blandow's bog moss	Plants	Bryophytes	None	2B.3
<i>Haplodontium tehamense</i>	Lassen Peak copper moss	Plants	Bryophytes	None	1B.3
<i>Meesia uliginosa</i>	broad-nerved hump moss	Plants	Bryophytes	None	2B.2
<i>Trichodon cylindricus</i>	cylindrical trichodon	Plants	Bryophytes	None	2B.2
<i>Anemone multifida</i> var. <i>multifida</i>	cut-leaf anemone	Plants	Dicots	None	2B.2
<i>Arctostaphylos manzanita</i> ssp. <i>elegans</i>	Konocti manzanita	Plants	Dicots	None	1B.3
<i>Astragalus lentiformis</i>	lens-pod milk-vetch	Plants	Dicots	None	1B.2
<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i>	Pulsifer's milk-vetch	Plants	Dicots	None	1B.2
<i>Astragalus pulsiferae</i> var. <i>suksdorfii</i>	Suksdorf's milk-vetch	Plants	Dicots	None	1B.2
<i>Astragalus webberi</i>	Webber's milk-vetch	Plants	Dicots	None	1B.2
<i>Betula glandulosa</i>	dwarf resin birch	Plants	Dicots	None	2B.2
<i>Boechera constancei</i>	Constance's rockcress	Plants	Dicots	None	1B.1
<i>Brasenia schreberi</i>	watershield	Plants	Dicots	None	2B.3
<i>Castilleja lassenensis</i>	Lassen paintbrush	Plants	Dicots	None	1B.3
<i>Clarkia mildrediae</i> ssp. <i>mildrediae</i>	Mildred's clarkia	Plants	Dicots	None	1B.3
<i>Cordylanthus tenuis</i> ssp. <i>pallescens</i>	pallid bird's-beak	Plants	Dicots	None	1B.2
<i>Cuscuta jepsonii</i>	Jepson's dodder	Plants	Dicots	None	1B.2
<i>Draba carnosula</i>	Mt. Eddy draba	Plants	Dicots	None	1B.3
<i>Drosera anglica</i>	English sundew	Plants	Dicots	None	2B.3
<i>Epilobium oregonum</i>	Oregon fireweed	Plants	Dicots	None	1B.2
<i>Epilobium palustre</i>	marsh willowherb	Plants	Dicots	None	2B.3
<i>Eremogone cliftonii</i>	Clifton's eremogone	Plants	Dicots	None	1B.3
<i>Erigeron eatonii</i> var. <i>nevadincola</i>	Nevada daisy	Plants	Dicots	None	2B.3
<i>Erigeron lassenianus</i> var. <i>deficiens</i>	Plumas rayless daisy	Plants	Dicots	None	1B.3
<i>Erigeron nivalis</i>	snow fleabane daisy	Plants	Dicots	None	2B.3
<i>Eriogonum microthecum</i> var. <i>schoolcraftii</i>	Schoolcraft's wild buckwheat	Plants	Dicots	None	1B.2
<i>Eriogonum pyrolifolium</i> var. <i>pyrolifolium</i>	pyrola-leaved buckwheat	Plants	Dicots	None	2B.3
<i>Eriogonum spectabile</i>	Barron's buckwheat	Plants	Dicots	None	1B.2
<i>Eriogonum umbellatum</i> var. <i>ahartii</i>	Ahart's buckwheat	Plants	Dicots	None	1B.2
<i>Erythranthe filicifolia</i>	fern-leaved monkeyflower	Plants	Dicots	None	1B.2
<i>Erythranthe percaulis</i>	Serpentine Canyon monkeyflower	Plants	Dicots	None	1B.1
<i>Erythranthe trinitiensis</i>	pink-margined monkeyflower	Plants	Dicots	None	1B.3
<i>Frangula purshiana</i> ssp. <i>ultramafica</i>	Caribou coffeeberry	Plants	Dicots	None	1B.2
<i>Frasera albicaulis</i> var. <i>modocensis</i>	Modoc green-gentian	Plants	Dicots	None	2B.3
<i>Harmonia doris-nilesiae</i>	Niles' harmonia	Plants	Dicots	None	1B.1

Harmonia stebbinsii	Stebbins' harmonia	Plants	Dicots	None	1B.2
Hemieva ranunculifolia	buttercup-leaf hemieva	Plants	Dicots	None	2B.2
Horkelia parryi	Parry's horkelia	Plants	Dicots	None	1B.2
Hulsea nana	little hulsea	Plants	Dicots	None	2B.3
Hymenoxys lemmonii	alkali hymenoxys	Plants	Dicots	None	2B.2
Ivesia aperta var. aperta	Sierra Valley ivesia	Plants	Dicots	None	1B.2
Ivesia baileyi var. baileyi	Bailey's ivesia	Plants	Dicots	None	2B.3
Ivesia sericoleuca	Plumas ivesia	Plants	Dicots	None	1B.2
Ivesia webberi	Webber's ivesia	Plants	Dicots	None	1B.1
Ladeania lanceolata	lance-leaved scurf-pea	Plants	Dicots	None	2B.3
Leptosiphon nuttallii ssp. howellii	Mt. Tedoc leptosiphon	Plants	Dicots	None	1B.3
Lewisia cantelovii	Cantelow's lewisia	Plants	Dicots	None	1B.2
Lewisia cotyledon var. heckneri	Heckner's lewisia	Plants	Dicots	None	1B.2
Lomatium foeniculaceum ssp. Macdougalii	Macdougall's lomatium	Plants	Dicots	None	2B.2
Lomatium roseanum	adobe lomatium	Plants	Dicots	None	1B.2
Lysimachia thyrsoiflora	tufted loosestrife	Plants	Dicots	None	2B.3
Monardella follettii	Follett's monardella	Plants	Dicots	None	1B.2
Monardella stebbinsii	Stebbins' monardella	Plants	Dicots	None	1B.2
Oreostemma elatum	tall alpine-aster	Plants	Dicots	None	1B.2
Orobanche ludoviciana var. arenosa	Suksdorf's broom-rape	Plants	Dicots	None	2B.3
Orthocarpus bracteosus	rosy orthocarpus	Plants	Dicots	None	2B.1
Orthocarpus pachystachyus	Shasta orthocarpus	Plants	Dicots	None	1B.1
Packera eurycephala var. lewisrosei	Lewis Rose's ragwort	Plants	Dicots	None	1B.2
Penstemon personatus	closed-throated beardtongue	Plants	Dicots	None	1B.2
Phacelia cookei	Cooke's phacelia	Plants	Dicots	None	1B.1
Pyrrocoma lucida	sticky pyrrocoma	Plants	Dicots	None	1B.2
Rhamnus alnifolia	alder buckthorn	Plants	Dicots	None	2B.2
Rumex venosus	winged dock	Plants	Dicots	None	2B.3
Scutellaria galericulata	marsh skullcap	Plants	Dicots	None	2B.2
Sedum albomarginatum	Feather River stonecrop	Plants	Dicots	None	1B.2
Sedum paradisum ssp. paradisum	Canyon Creek stonecrop	Plants	Dicots	None	1B.3
Silene occidentalis ssp. longistipitata	long-stiped campion	Plants	Dicots	None	1B.2
Silene suksdorfii	Cascade alpine campion	Plants	Dicots	None	2B.3
Stellaria longifolia	long-leaved starwort	Plants	Dicots	None	2B.2
Streptanthus oblancoelatus	Trinity River jewelflower	Plants	Dicots	None	1B.2
Suaeda occidentalis	western seablite	Plants	Dicots	None	2B.3
Trifolium gymnocarpon ssp. plummerae	Plummer's clover	Plants	Dicots	None	2B.3
Utricularia intermedia	flat-leaved bladderwort	Plants	Dicots	None	2B.2
Utricularia ochroleuca	cream-flowered bladderwort	Plants	Dicots	None	2B.2
Vaccinium scoparium	little-leaved huckleberry	Plants	Dicots	None	2B.2
Viola purpurea ssp. aurea	golden violet	Plants	Dicots	None	2B.2
Asplenium septentrionale	northern spleenwort	Plants	Ferns	None	2B.3
Botrychium ascendens	upswept moonwort	Plants	Ferns	None	2B.3
Botrychium crenulatum	scalloped moonwort	Plants	Ferns	None	2B.2
Botrychium minganense	Mingan moonwort	Plants	Ferns	None	2B.2

<i>Botrychium montanum</i>	western goblin	Plants	Ferns	None	2B.1	
<i>Botrychium pinnatum</i>	northwestern moonwort	Plants	Ferns	None	2B.3	
<i>Calochortus clavatus</i> var. <i>avius</i>	Pleasant Valley mariposa-lily	Plants	Monocots	None	1B.2	
<i>Carex davyi</i>	Davy's sedge	Plants	Monocots	None	1B.3	
<i>Carex lasiocarpa</i>	woolly-fruited sedge	Plants	Monocots	None	2B.3	
<i>Carex limosa</i>	mud sedge	Plants	Monocots	None	2B.2	
<i>Carex petasata</i>	Liddon's sedge	Plants	Monocots	None	2B.3	
<i>Carex praticola</i>	northern meadow sedge	Plants	Monocots	None	2B.2	
<i>Carex sheldonii</i>	Sheldon's sedge	Plants	Monocots	None	2B.2	
<i>Corallorhiza trifida</i>	northern coralroot	Plants	Monocots	None	2B.1	
<i>Eleocharis torticulmis</i>	California twisted spikerush	Plants	Monocots	None	1B.3	
<i>Juncus dudleyi</i>	Dudley's rush	Plants	Monocots	None	2B.3	
<i>Juncus luciensis</i>	Santa Lucia dwarf rush	Plants	Monocots	None	1B.2	
<i>Juncus regelii</i>	Regel's rush	Plants	Monocots	None	2B.3	
<i>Orcuttia tenuis</i>	slender Orcutt grass	Plants	Monocots	Endangered	1B.1	
<i>Panicum acuminatum</i> var. <i>thermale</i>	Geysers panicum	Plants	Monocots	Endangered	1B.2	
<i>Poa sierrae</i>	Sierra blue grass	Plants	Monocots	None	1B.3	
<i>Potamogeton epihydrus</i>	Nuttall's ribbon-leaved pondweed	Plants	Monocots	None	2B.2	
<i>Potamogeton praelongus</i>	white-stemmed pondweed	Plants	Monocots	None	2B.3	
<i>Potamogeton robbinsii</i>	Robbins' pondweed	Plants	Monocots	None	2B.3	
<i>Rhynchospora alba</i>	white beaked-rush	Plants	Monocots	None	2B.2	
<i>Scheuchzeria palustris</i>	American scheuchzeria	Plants	Monocots	None	2B.1	
<i>Schoenoplectus heterochaetus</i>	slender bulrush	Plants	Monocots	None	2B.1	
<i>Schoenoplectus subterminalis</i>	water bulrush	Plants	Monocots	None	2B.3	
<i>Emys marmorata</i>	western pond turtle	Reptiles	Box and Water Turtles	None		SSC



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2018-F-3331-1

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

MAR 27 2019

Mr. Alessandro Amaglio
Regional Environmental Officer, Region IX
Federal Emergency Management Agency
1111 Broadway, Suite 1200
Oakland, California 94607

Subject: 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

Dear Mr. Amaglio:

This letter is in response to the Federal Emergency Management Agency's (FEMA) request to initiate formal section 7 consultation under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act), and provides the U.S. Fish and Wildlife Service's (Service) programmatic biological opinion on FEMA's Disaster, Mitigation, and Preparedness Programs (proposed project) in California as described in FEMA's June 20, 2018 *Programmatic Biological Assessment for Disaster, Mitigation, and Preparedness Programs in California* (programmatic biological assessment). We received your June 20, 2018, letter requesting initiation of consultation in our Sacramento Fish and Wildlife Office (SFWO) on June 20, 2018. On September 14, 2018, we received a letter from FEMA changing effects determinations for 20 species. At issue are the effects of FEMA's proposed action on 35 federally-listed species and their designated or proposed critical habitats which the Sacramento Fish and Wildlife Office has lead responsibility and seven federally-listed species and their critical habitat which occur within the jurisdiction of the Sacramento Fish and Wildlife Office but for which other Service field offices have lead responsibility. FEMA requested formal consultation based on your determination that the proposed project may affect, and is likely to adversely affect the following 17 federally-listed species and their designated critical habitat, and may affect, but not likely to adversely affect the following 25 federally-listed species and their designated critical habitat.

Sacramento Fish and Wildlife Office Species

Likely to Adversely Affect

California red-legged frog (*Rana draytonii*) (Threatened) and critical habitat

California tiger salamander (*Ambystoma californiense*)

- Central California DPS (Threatened) and critical habitat
- Sonoma DPS (Endangered) and critical habitat

Giant garter snake (Threatened) (*Thamnophis gigas*)

Alameda whipsnake (*Masticophis lateralis euryxanthus*) (Threatened) and critical habitat

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (Threatened) and critical habitat

California freshwater shrimp (*Syncaris pacifica*) (Endangered)
 Bay checkerspot butterfly (*Euphydryas editha bayensis*) (Threatened) and critical habitat
 Callippe silverspot butterfly (*Speyeria callippe callippe*) (Endangered)
 Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*) (Endangered)
 Vernal pool fairy shrimp (*Branchinecta lynchi*) (Threatened) and critical habitat
 Vernal pool tadpole shrimp (*Lepidurus packardii*) (Endangered) and critical habitat
 Conservancy fairy shrimp (*Branchinecta conservatio*) (Endangered) and critical habitat
 Longhorn fairy shrimp (*Branchinecta longiantenna*) (Endangered) and critical habitat
 Sacramento Orcutt grass (*Orcuttia viscida*) (Endangered) and critical habitat

Not Likely to Adversely Affect

Mission blue butterfly (*Icaricia icarioides missionensis* [= *Plebejus icarioides missionensis*]) (Endangered)
 San Bruno elfin butterfly (*Callophrys mossii bayensis*) (Endangered)
 Burke's goldfields (*Lasthenia burkei*) (Endangered)
 Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*) (Endangered) and critical habitat
 Calistoga allocarya (*Plagiobothrys strictus*) (Endangered)
 Colusa grass (*Neostapfia colusana*) (Threatened) and critical habitat
 Contra Costa goldfields (*Lasthenia conjugens*) (Endangered) and its critical habitat
 Few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora* [= *N. pauciflora*]) (Endangered)
 Fleshy owl's-clover (*Castilleja campestris* ssp. *succulenta*) (Threatened) and critical habitat
 Greene's tuctoria (*Tuctoria greenei*) (Endangered) and critical habitat
 Hairy Orcutt grass (*Orcuttia pilosa*) (Endangered) and critical habitat
 Hoover's spurge (*Chamaesyce hooveri* [= *Euphorbia hooveri*]) (Threatened) and critical habitat
 Lake County stonecrop (*Parvisedum leiocarpum* [= *Sedella leiocarpa*]) (Endangered)
 Loch Lomond coyote thistle (*Eryngium constancei*) (Endangered)
 Many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*) (Endangered)
 San Joaquin Orcutt grass (*Orcuttia inaequalis*) (Threatened) and critical habitat
 Sebastopol meadowfoam (*Limnanthes vinculans*) (Endangered)
 Slender Orcutt grass (*Orcuttia tenuis*) (Threatened) and critical habitat
 Solano grass (*Tuctoria mucronata*) (Endangered) and critical habitat
 Sonoma sunshine (*Blennosperma bakeri*) (Endangered)

Carlsbad Fish and Wildlife Office Species

Likely to Adversely Affect

Least bell's vireo (*Vireo bellii pusillus*) (Endangered)

May Affect, Not Likely to Adversely Affect

California least tern (*Sterna antillarum browni*) (Endangered)
 Southwestern willow flycatcher (*Empidonax traillii eximius*) (Endangered) and critical habitat

Ventura Fish and Wildlife Office Species

Likely to Adversely Affect

Tidewater goby (*Eucyclogobius newberryi*) (Endangered) and critical habitat

Arcata Fish and Wildlife Office Species

May Affect, Not Likely to Adversely Affect

Western snowy plover (*Charadrius nivosus* ssp. *nivosus*) (Threatened) and critical habitat

Marbled murrelet (*Brachyramphus marmoratus*) (Threatened) and critical habitat

Yreka Fish and Wildlife Office Species

May Affect, Not Likely to Adversely Affect

Northern spotted owl (*Strix occidentalis caurina*) (Threatened) and critical habitat

Based on our review of the information provided in FEMA's June 20, 2018, programmatic biological assessment, the Service concurs that the proposed project may affect, but is not likely to adversely affect the 25 federally-listed species listed above and their respective critical habitat. The general avoidance and minimization measures and species-specific conservation measures will help ensure that adverse effects to the species from proposed project activities are likely to be insignificant. If any activity proposed by a FEMA Subapplicant (entity that has applied to receive a FEMA grant administered by the state or federally-recognized tribe) demonstrates the potential to adversely affect any of these 25 species or their critical habitat, that project will not be covered by this programmatic biological opinion and FEMA will submit that project for formal consultation.

The remainder of this document provides our programmatic biological opinion on the effects of the proposed action on the remaining 17 species.

This programmatic biological opinion is based on information provided in the following: (1) FEMA's *Programmatic Biological Assessment for Disaster, Mitigation, and Preparedness Programs in California*, dated June 20, 2018; (2) FEMA's September 14, 2018 letter changing effects determinations for 20 species; (3) conversations and emails between the Service (C. Martin and J. Knight) and FEMA staff or their contracted agents, (S. Amaglio, L. Solorzano-Vincent.); (4) conversations between FEMA and other Service biologists from the Ventura, and Arcata Fish and Wildlife Offices; and (4) information contained in Service files.

A complete administrative record of this consultation is on file at the Sacramento Fish and Wildlife Office (Service File No. 08ESMF00-2018-F-3331).

Consultation History

March 2017 – January 2018	Weekly coordination calls between the Sacramento Fish and Wildlife Office, other Service field offices, and FEMA.
March 2017 – May 2018	Correspondence exchange and meetings between the Sacramento Fish and Wildlife Office, other Service field offices, and FEMA.
January 11, 2018	Received the Draft Programmatic Biological Assessment from FEMA.
April 17, 2018	Received additional supplemental information for the Draft Biological Assessment.
May 2, 2018	Provided final comments on the Draft Programmatic Biological Assessment.
June 20, 2018	Received a Programmatic Biological Assessment from FEMA.

September 14, 2018

Received a letter from FEMA changing the effects determinations for 20 species from Likely to Adversely Affect to Adversely Affect.

PROGRAMMATIC BIOLOGICAL OPINION

Scope of the Consultation

This document is a programmatic biological opinion for FEMA's disaster, mitigation, and preparedness program (proposed action) within the Sacramento Fish and Wildlife Office's Jurisdiction in California. This is designed to facilitate FEMA's compliance with the Act for projects of a similar nature that occur as a result of Presidentially-declared disasters, and that are likely to adversely affect 17 federally-listed species and their respective designated or proposed critical habitats within the Sacramento Fish and Wildlife Office's jurisdiction. It is intended to provide Section 7(a)(2) compliance to FEMA for the proposed projects from applicants and sub-grantees (Subapplicants) requesting funding under FEMA's disaster, mitigation, and preparedness program in California. It does not cover emergency consultations or FEMA's implementation of the National Flood Insurance Program.

This programmatic biological opinion will cover a period of five years from the signature date of this document, with the potential for extension if warranted. When the 5-year period has expired or incidental take coverage under this programmatic biological opinion is met, FEMA may reinstate a consultation to extend or amend the coverage provided in this programmatic biological opinion.

This programmatic biological opinion only applies to FEMA Subapplicants' proposed projects for which FEMA is the Lead Federal Agency for compliance under the Act. When FEMA and the U.S. Army Corps of Engineers (USACE) are both involved with a Subapplicant's proposed project, the process described in the 2015 Memorandum of Understanding (MOU) (executed in 2015, updated in 2018, and subsequent annual updates) among FEMA, USACE, Service, and NMFS will be followed to determine whether FEMA or the USACE is the lead federal agency for compliance with the Act.

Procedure to Cover Individual Projects Under this Programmatic Biological Opinion

To determine a Subapplicant's proposed project eligibility for coverage under this programmatic biological opinion, FEMA will determine whether a Subapplicant's proposed project meets the suitability criteria established under FEMA's programmatic biological assessment. If the proposed project meets the suitability criteria, FEMA will conduct a project-specific effects analysis and provide a summary of the potential direct and indirect effects associated with the covered project by submitting a completed ESA Review Form to the Service (Appendix C, programmatic biological assessment). If the covered project may result in adverse effects to species, the ESA Review Form will include:

- A brief description of the potential effects and mechanisms of take;
- A description of the general avoidance and minimization measures, the species-specific Conservation Measures, and any additional measures developed specifically for the project that the Subapplicant will implement; and
- A quantification of the incidental take anticipated.

FEMA will submit the completed ESA Review Form to the Service and request concurrence that the project is applicable for coverage under the programmatic biological opinion. The Service will

notify FEMA by electronic mail whether the Service does or does not concur with the proposed project's coverage under the programmatic biological opinion.

Description of the Proposed Programmatic Actions

Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S. Code [U.S.C.] §§ 5121–5206), as amended, FEMA is authorized to provide grant funding to state and local governments, federally-recognized tribe and individuals (referred to as Subapplicants) who are adversely affected or potentially affected by human-caused or natural disasters. FEMA provides such grants to assist Subapplicants in repairing, restoring, or replacing disaster-damaged facilities, and to provide assistance with actions that will reduce or eliminate threats to public health and safety and reduce the risk of damage to public and private property during future disasters. FEMA has determined through experience with other disasters that the majority of the typically recurring actions proposed for funding can be grouped by type of action or location. Some of these projects may directly or indirectly affect federally-listed species and their designated or proposed critical habitats. FEMA's programmatic biological assessment contains a comprehensive description of all potential actions. These are summarized below.

Non-Emergency Debris Removal

For purposes of this document, debris removal performed in non-emergency situations includes:

- Removing rock, silt, sediment, or woody debris that floodwaters have deposited in harbors and ports, stream channels, bridge and culvert openings, canals, sedimentation basins, sewage treatment ponds, ditches, and other facilities in such a manner as to disrupt normal flows, navigation, recreation, or municipal services;
- Removing woody debris and other vegetation following events that damage or destroy trees;
- Removing rock and earth from landslides caused by events such as earthquakes or heavy rains; and
- Removing rubble after earthquakes.

All removed debris will be disposed of at approved and licensed disposal sites, in compliance with existing laws and regulations. Any hazardous materials or other contaminants will be removed and disposed of in an appropriate manner. If possible, woody debris and construction materials will be recycled.

Constructing, Modifying or Relocating Facilities

FEMA is authorized to provide funds for constructing, modifying, or relocating facilities. Relevant actions include:

- Upgrading or otherwise modifying facilities;
- Providing temporary facilities;
- Acquiring and demolishing existing facilities;
- Repairing, realigning, or otherwise modifying roads, trails, utilities, and rail lines;
- Constructing new facilities or relocating existing facilities;
- Relocating the function of an existing facility; and
- Developing demonstration projects.

During construction, avoidance and minimization measures are typically used and incorporated as part of the action. These typical measures are described later in this document.

Upgrading or Otherwise Modifying Facilities

FEMA may provide funds to implement changes required by current building codes and standards, or otherwise modify existing structures. Often, these changes make the structure more resistant to damage in future events. Typical activities include:

- Making structures more fire-resistant (e.g., by replacing roofs and doors with fire-resistant materials);
- Installing bracing, shear panels, shear walls, anchors, or other features so that structures are better able to withstand seismic events or high wind or snow loads;
- Modifying structures to reduce the risk of damage during floods by elevating structures above the expected flood level or by flood proofing; and
- Modifying structures to meet another need of a Subapplicant, such as through an improved project or an alternate project under the Public Assistance Program.

Providing Temporary Facilities

FEMA may provide temporary housing facilities when a disaster renders homes uninhabitable for long periods. Such facilities typically consist of manufactured housing. Typical activities may involve:

- Developing the pads for dwellings;
- Constructing ancillary facilities, such as roads, streets, and parking lots;
- Installing utilities, such as potable water lines, sewer hookups, electricity (including street lighting), and telephones lines; and
- Installing manufactured homes.

FEMA may provide temporary facilities if other housing options are not feasible. Appropriate sites will not be located in a floodplain and do not contain wetlands or critical habitat, affect historic properties or archaeological sites, or contain hazardous materials. Installation of housing units and utilities will be accomplished in accordance with current codes and standards. After temporary housing is no longer needed at the disaster site, FEMA will remove the temporary housing units and associated ancillary facilities, and restore the land to its original use. All removed materials will be stored for future use or disposed of in accordance with applicable laws and regulations.

Another method that FEMA uses to provide temporary housing involves modifying existing facilities to serve as temporary housing. These facilities may consist of existing residential property or the adaptive reuse of non-residential facilities. Specific activities range from conducting repairs and minor upgrades to complete reconstruction of a building's interior. This action may involve acquisition or leasing of facilities. Modifying existing facilities for temporary housing may be conducted by FEMA directly or by providing funding to a Subapplicant.

FEMA also may provide funding for temporary relocation of essential public services, in the event that the structures housing these services are damaged, destroyed, or otherwise rendered inaccessible by a disaster. Funds also may be provided for upgrades necessary to meet current codes and standards, and for the installation or modification of appurtenances, such as utilities, that are necessary to operate facilities.

Acquiring and Demolishing Existing Facilities

FEMA may provide funds for the acquisition and demolition of existing facilities, particularly if they are located in high-hazard areas and are subject to repetitive loss. Typically, these facilities are at a high risk because of: (1) damage from flooding; (2) erosion of stream banks, beaches, slopes, or bluffs; (3) landslides; or (4) wildfire. These facilities may consist of private properties, such as houses and commercial buildings, or publicly owned facilities, such as utilities, roads, and bridges.

Existing facilities will be either removed or demolished. All demolition materials will be disposed of at approved and licensed disposal sites, in compliance with applicable laws and regulations. Any hazardous materials or other contaminants will be removed and disposed of in an appropriate manner. Construction debris and household materials may be recycled if recycling facilities exist. Once structures are removed, lots will be graded to conform to the local topography, and disturbed areas will be revegetated with species approved for the local area.

Repairing, Realigning or Otherwise Modifying Roads, Trails, Utilities and Rail Lines

Roads, trails, utilities (water, sewer, natural gas, power/electrical systems infrastructure), and rail lines are typically damaged when floods or heavy rains cause erosion, subsidence, or landslides. Earthquakes may cause similar damage. Repairs are accomplished by replacing earthen material lost during the disaster and replacing the damaged surface, utility line, or, in the case of rail lines, ballast, and track. Stabilizing the replacement fill using rock, grout, timber walls, or steel sheet piling may be necessary. Hazard mitigation measures may be performed to prevent or limit future damage. For example, a pipe may be installed to convey drainage beneath a road, thus preventing future washouts, or a utility line may be encased in concrete in an area vulnerable to erosion.

If the area of damage is unstable, does not allow for repair, or is subject to repetitive loss, a facility may be realigned so that the area of damage is avoided. Property acquisition or a change in easement may be necessary.

Facilities may also be modified as part of improved projects or alternate projects under the Public Assistance Program to meet additional needs of the Subapplicant.

Constructing New Facilities or Relocating Existing Facilities

If a facility is located in a floodplain or other hazardous area, is subject to repetitive damage, or has been damaged in such a way that restoration in the current location is not practical or cost-effective, FEMA may fund the construction of a new facility or the physical relocation of the existing facility. FEMA defines hazardous areas as those areas susceptible to some type of natural hazard, such as flooding, seismic activity, coastal inundation, or mudslide. Examples of this action include construction of roads, trails, utilities and utility lines, and rail lines in a different area from the existing facility; construction and relocation of buildings; construction of safe rooms; and construction of drainage improvements.

In both new facility construction and physical relocation, FEMA may fund the cost of land acquisition and the construction of appurtenant features, such as access roads and utilities. For properties in the hazard area, FEMA acquires damaged properties, demolishes existing structures (except in cases of physical relocation), and places deed restrictions that limit future uses to open space in perpetuity. However, FEMA does not acquire land directly nor does it become a land owning agency as a result of this process.

Relocating the Function of an Existing Facility

FEMA may fund relocating the function of a facility to an existing facility that has adequate capacity to handle the additional load with minor modifications, if necessary. For structures, the occupants and materials are relocated to alternative structures, traffic may use alternate routes, and utility services are provided by alternative methods. This action will not entail any major physical construction or addition to the existing facility and, if any work is required, it will consist only of minor modifications. For properties in the hazard area, FEMA may acquire damaged properties, demolish existing structures, and place deed restrictions to limit future uses to open space in perpetuity.

Developing Demonstration Projects

Demonstration projects focus on public education and are designed to highlight procedures the public can use to reduce property damage during flood, earthquake, wildfire, wind, and rainstorm disasters. Demonstration projects may involve the development of a model facility to demonstrate how hazard mitigation technologies can be used to reduce potential damage during a disaster. Flood demonstration projects may involve items such as elevating a structure or waterproofing windows and doors that are below the base flood elevation. A fire demonstration project may include vegetation management around a facility and replacing roofs, doors, and windows with fire-resistant materials. Wind and earthquake demonstration projects may include changes to the structural design of buildings to allow them to withstand higher wind velocity or more movement during an earthquake.

Actions Involving Watercourses and Coastal Features

Many FEMA funded activities pertain to inland water sources, such as streams, rivers, lakes, and coastal features such as harbors and beaches. Inland water sources may be perennial or dry during the summer months. During construction, avoidance and minimization measures typically will be used and incorporated as part of the action. Work in a stream channel often includes temporary diversion of the channel using sandbags or a cofferdam constructed of fill. Heavy equipment typically is operated from an adjacent road, bank, or other feature; however, in some cases, operating equipment in a channel area once flow has been diverted may be necessary. A pipe or a temporary secondary channel may be used to convey the diverted water.

If the action involves channel modifications, changes to the capacity of bridges and culverts, or the installation of attenuation structures, conducting hydraulic/hydrologic analyses to evaluate the changes of upstream and downstream flow rates and determine whether additional action components need to be added to address any changes in hydraulics and hydrology outside the project area may be necessary.

Relevant categories of activities include the following:

- Repairing, stabilizing, or armoring embankments;
- Creating, widening, clearing, or dredging a waterway;
- Constructing or modifying a water crossing;
- Constructing or modifying a water detention, retention, storage, or conveyance facility;
- Constructing or modifying other flood control structures; and
- Constructing or modifying a coastal feature.

Repairing, Stabilizing or Armoring Embankments

Repairing, stabilizing, or armoring embankments involves the repair of earthen or rock embankments damaged by floodwaters. Examples are natural stream banks; road, trail, and rail line embankments; embankments for irrigation and navigation canals; and levees used for flood control and reclamation. In addition to repair of damaged features, FEMA may fund measures designed to prevent damage in future flood events.

In addition to replacing fill material, embankments may be stabilized or armored through:

- Placing of rock riprap;
- Hardening with concrete or soil cement;
- Installing retaining walls, gabions, or geotextile fabrics; and/or
- Using bioengineering techniques, such as planting vegetation, placing root wads, or placing willow bundles.

A combination of these techniques may be employed. For example, rock and geotextiles, when used with root wads and willow bundles, may provide mitigation from erosion while enhancing the natural values of a stream corridor.

Creating, Widening, Clearing or Dredging a Waterway

Creating, widening, clearing, or dredging a waterway may be used to reduce the flood hazard to adjacent lands, facilities, or populated areas. New channels may be constructed to convey excess flows around flood-prone areas during flood events. Drainage swales, earthen channels, concrete channels, or subsurface concrete pipes also may be used as a means of conveyance. A new channel may be constructed in a dry environment and connected to a stream after completion. This channel may have an inlet weir higher than the elevation of the normal flow so that the normal flows remain in the natural channel. The outlet may be armored with concrete or rock riprap to prevent excessive erosion of the existing channel.

Existing channels may be widened to allow a channel to convey a larger volume of water. Conveyance may also be increased by replacing earthen banks or channel bottoms with concrete. To the extent possible, construction will be conducted from the top of the bank, but many activities may require construction equipment to work in the stream channel. In perennially flowing streams, work in a stream channel generally will be restricted to the low-flow period, and the flow will be diverted around the construction area. A pipe or a temporary secondary channel will be used to convey the diverted water.

As an alternative to constructing a bypass or modifying an existing channel, the existing channel may be cleared of vegetation or sediment to increase conveyance. This action often will be used in developed areas where modifications are not feasible, as well as in areas where years of inadequate maintenance have allowed trees and brush to grow within the channel or sediment and debris to accumulate in the channel or around culverts and bridges. Vegetation may be removed through mechanical means, by hand, or by application of herbicides. Vegetation may be removed not only from the channel but also from the banks and high-water areas, thus reducing the risk that floating debris could be trapped by trees or heavy brush. Sediment and debris may be removed by dredging, through use of heavy equipment, or by hand. All removed debris will be disposed of at approved and licensed disposal sites, in compliance with applicable laws and regulations. Woody debris and vegetation can be recycled if recycling facilities exist.

Constructing or Modifying Water Crossings

FEMA may fund the repair or replacement of damaged water crossings, the enlargement of openings to allow greater conveyance and reduce the risk that debris may be trapped during floods, or the installation of bank protection or other means to reduce the risk of erosion. Crossings may be relocated or improved to avoid high-hazard areas, repetitive damage, or areas where reconstruction is not cost-effective or feasible.

Culverts may consist of corrugated metal pipes, reinforced concrete pipes, or reinforced concrete box culverts. The capacity of a culvert crossing may be increased to reduce the risk of flooding to the surrounding area, or the culvert may be modified to prevent overtopping or erosion of the crossing. Typical measures include:

- Increasing the size of a culvert or adding culvert barrels;
- Replacing or changing the type of culvert;
- Changing the location or alignment of a culvert; and
- Adding features, such as a headwall, discharge apron, or riprap to reduce the risk of erosion or damage to a culvert or the crossing.

Similarly, bridges may be modified to increase capacity to reduce the risk of flooding or to reduce the risk of damage to the crossing. Typical activities include:

- Widening existing openings or constructing new openings;
- Reconfiguring bracing to reduce the risk that debris will be trapped;
- Installing protective features, such as concrete abutments or riprap, to reduce the risk of damage due to erosion and scour; and
- Replacing a multi-span structure with a clear-span structure.

A bridge may be installed to replace a culvert to increase the flow capacity of a crossing. Low-water crossings may be installed or improved as an alternative to repairing or replacing a culvert or bridge. Constructing or upgrading a low-water crossing typically involves hardening the banks and bottom of a water body. A temporary diversion may be necessary during construction activities.

Constructing and Water Detention, Retention, Storage or Conveyance Facility

Constructing a water detention, retention, storage, or conveyance facility may include the construction, enlargement, or restoration of detention basins, retention basins, sediment ponds, reservoirs, or conveyance facilities, such as irrigation ditches or flumes, to reduce flood flows or to provide a water source for fighting fires in an area of high fire hazard. The creation and/or enlargement of water storage reservoirs is most frequently associated with flood disasters and to a lesser extent, fire disasters.

Detention basins, retention basins, sediment ponds, and reservoirs will be constructed to temporarily store floodwater to reduce downstream peak flows. The stored water will be released at a slower rate so that the existing drainage-ways can convey water without contributing to downstream flooding. All areas disturbed during the construction of these features will be revegetated with native plant species. This action also will include the repair or restoration of water retention or conveyance structures. All sediment removed from these features will be disposed of in a manner consistent with Federal, State, and local laws and regulations.

In rural areas, firefighting may be constrained by the lack of water readily accessible to firefighters. In response to this need, proposed activities also may include the creation of retention facilities in locations that firefighters can readily access, either as a direct source of water or as a source of water to fill water supply trucks. All areas disturbed during the construction of a retention facility will be revegetated with native plant species.

Constructing Other Flood-Control Structures

A flood-control structure is a facility designed to prevent floodwaters from entering a flood-prone area. Typical examples are levees (also referred to as dikes) and floodwalls. Activities include:

- Repairing damaged facilities, usually during emergency situations;
- Installing embankment protection;
- Raising the height of existing facilities to prevent overtopping in future floods;
- Constructing new facilities to protect flood-prone areas from damage during future floods; and
- Modifying or installing interior drainage systems to reduce the risk of damage behind levees and floodwalls during heavy rains or flooding events on tributary streams.

Levees will be repaired or constructed using compacted fill and, in some cases, riprap protection. Bare earth will be seeded with grasses to prevent erosion. Typically, a gravel road will be installed on the levee's crest to allow for maintenance. Floodwalls, typically built in urban areas, will be constructed using reinforced concrete or grouted, reinforced concrete block. Excavation will be necessary to install footings. Levees and floodwalls both will have interior drainage systems that may include pumps for removing accumulated water.

Constructing a Coastal Feature

Constructing a coastal feature may involve the repair, replacement, or construction of facilities in coastal environments, such as estuaries, inlets, harbors, and beaches. These facilities include:

- Recreational facilities, such as piers and boat ramps;
- Facilities for maritime use, such as docks and slips;
- Shoreline protection devices, such as seawalls, groins, jetties, and revetments; and
- Coastal flood-control structures, such as levees.

Construction activities are expected to occur in water and involve driving piles, placing rock or soil, or dredging sand, mud, or other sediment.

Wildfire Risk Reduction

Vegetation management is intended to reduce the risk of loss and damage due to wildfire and, as described above under "Actions Involving Watercourses and Coastal Features", increase the ability of channels to convey flows, thus reducing the risk of flood damage. Vegetation management for wildfire risk reduction may be accomplished using mechanical means, hand-clearing, application of herbicides, or grazing. Some activities may include a combination of these methods. During implementation, avoidance and minimization measures will be used and incorporated as part of the action.

Relevant categories of activities are:

- Mechanical or hand clearing of vegetation;
- Herbicidal treatments; and
- Biological control.

Mechanical or Hand Clearing of Vegetation

Mechanical or hand clearing of vegetation will be used for the selective removal of vegetation so that a certain proportion of vegetation is left in place. This is done to reduce the amount of vegetative fuels in an area where mechanical removal of vegetation is impractical or the remaining vegetation needs to be protected. Per FEMA's Wildfire Mitigation Policy vegetation may be removed to create defensible space around buildings and structures, and to protect life and property beyond defensible space perimeters but proximate to (less than 2 miles from) at-risk structures. The creation and maintenance of firebreaks, access roads, and staging areas are not eligible for FEMA funding.

In mechanical removal, heavy equipment will be used to uproot, crush, pulverize, or cut the trees and brush being removed. Hand removal will involve the use of chainsaws, axes, and hoes to cut and uproot vegetation. Depending on the location of the vegetation removal project and State and local regulations, vegetation downed as a result of mechanical or hand removal will be piled and burned onsite, chipped and spread onsite, or loaded and hauled away from the site. After the removal of the targeted vegetation, cleared areas may be revegetated with native, fire-resistant species. Vegetation hauled offsite can be recycled but must be disposed of in accordance with appropriate requirements.

Herbicidal Treatments

Activities generally associated with herbicidal treatment include the removal of targeted exotic invasive species within specific areas and the prevention of growth and re-sprouting of undesirable vegetation once an area has been cleared of excessive vegetation by mechanical removal and/or hand removal. Only U.S. Environmental Protection Agency-approved herbicides will be used to control the growth of undesired vegetation in a manner consistent with labeling instructions and applicable Federal and State regulations. After treatment, some areas may be revegetated with native vegetation that is fire resistant.

Biological Control

In biological control, cattle, horses, goats, sheep, or other livestock are allowed to graze on grasses and other vegetation as a means of control. Any area proposed for grazing will be fenced. The type of animals, timing, duration, and stocking rate will be selected based on the targets of the vegetation management plan (i.e., the quantity and quality of residue to remain).

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-2 Bank Stabilization: If bank stabilization activities are necessary, then such stabilization will be constructed to minimize erosion potential, and will contain design elements suitable for supporting riparian vegetation, if feasible.

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-12 Work Involving Boats and Barges: For projects that involve in-water work for which boats and/or temporary floating work platforms are necessary, buoys will be installed so moored vessels will not beach on the shoreline, anchor lines will not drag, and moored vessels and buoys are not located within 25 feet of vegetated shallow waters. Temporary floating work platforms will not anchor or ground in fish spawning areas in freshwater or in eelgrass, kelp, or macro algae. To reduce the likelihood of introducing aquatic invasive species, vessels will use the State's Marine Invasive Species Program. Drip pans and other spill control measures will be used so that oil or fuel from barge-mounted equipment is properly contained.

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 of 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-20 Revegetation of Stream Banks: For projects that require revegetation of stream and riverbanks as a result of riparian vegetation removal during construction activities, the Subapplicant will implement revegetation techniques. Where such revegetation is needed, the Subapplicant will prepare and implement a revegetation plan that includes information regarding

monitoring for success. Revegetation plantings will be replaced at a 3:1 ratio with an 80 percent planting survival within 5 years of the plantings.

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.

GEN AMM-22 Invasive Aquatic Species: The Subapplicant will follow the guidelines in the California Department of Fish and Wildlife's (CDFW's) *California Aquatic Invasive Species Management Plan* to prevent the spread of invasive aquatic plant and animal species (CDFW 2008).

Construction equipment will be clean of debris or material that may harbor seeds or invasive pests before entering the work area. This debris or material includes dirt on construction equipment, tools, boots, pieces of vegetation, and water in the bilge of boats. All aquatic sampling equipment will be sterilized using appropriate guidelines before its use in aquatic habitats.

GEN AMM-23 Work below Mean Higher High Water: In freshwater, estuarine, and marine areas that support covered species, disturbance to habitat below mean higher high water will be limited to the maximum extent possible.

GEN AMM-24 Avoidance of Submerged Vegetation: The removal of submerged vegetation (such as eelgrass and kelp estuarine or marine areas, or submerged aquatic vegetation in freshwater areas) will be avoided to the maximum extent possible.

GEN AMM-25 Minimization of Shading by Overwater Structures: To reduce shading effects, new and replacement structures placed over freshwater, estuarine, and marine waters (such as bridges, piers, floating docks, and gangways) will incorporate design elements (such as metal grating or glass paver blocks) that allow light transmission when feasible.

GEN AMM-26 Water Diversion and Dewatering: In-channel work and channel diversion of live flow during project construction will be conducted in a manner to reduce impacts to covered species. Dewatering will be used to create a dry work area and will be conducted in a manner that minimizes turbidity into nearby waters. Water diversion and dewatering will include the following measures:

- a. Heavy equipment will avoid flowing water other than temporary crossing or diverting activities.
- b. If covered species may be present in the areas to be dewatered, relocation will be conducted by a Service-approved biologist in accordance with applicable Service species-specific Conservation Measures. Because this measure involves take of a species, it is only applicable to covered species for which an Incidental Take Statement is provided.
- c. Water pumped or removed from dewatered areas will be treated before its release so that it does not contribute to turbidity in nearby waters.
- d. Temporary culverts to convey live flow during construction activities will be placed at stream grade and be of an adequate size as to not increase stream velocity.
- e. Silt fences or mechanisms to avoid sediment input to the flowing channel will be erected adjacent to flowing water if sediment input to the stream may occur.

Species-Specific Conservation Measures

In cases where the species-specific Conservation Measures are duplicative of the General Avoidance and Minimization Measures, the most comprehensive measure (i.e., the measure providing the most restriction) will apply.

California Red-Legged Frog California Tiger Salamander, Central California DPS, California Tiger Salamander, Sonoma DPS

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 SFWO-approved biologist(s) will be onsite during all activities that may result in take of California red-legged frogs or California tiger salamanders.

CRLF-CTS-2 Seasonal Avoidance: Project activities will be scheduled to minimize adverse effects to the California red-legged frog and California tiger salamander and their habitat. Disturbance to upland habitat will be confined to the dry season, generally May 1 through October 15 (or the first measurable fall rain of 1" or greater) because that is the time period when California red-legged frogs and California tiger salamanders are less likely to be moving through upland areas. However, if unavoidable, conduct grading and other disturbance in pools and ponds only when they are dry, typically between July 15 and October 15. Work within a pool or wetland may begin prior to July 15 if the pool or wetland has been dry for a minimum of 30 days prior to initiating work.

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 SFWO-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 SFWO-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 SFWO-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 SFWO-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 (ESAs) – 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 ESA 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 ESA 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 ESAs. With prior approval from the Service, a hybrid ESA/WEF fencing material that is both hi-visibility and impermeable to wildlife movement may be used in place of paired ESA fencing and WEF 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 ESA 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-7 Wildlife Exclusion Fencing: Prior to the start of construction, Wildlife Exclusion Fencing (WEF) will be installed at the edge of the project footprint in all areas where California red-legged frogs and California tiger salamanders could enter the construction area. The onsite Project Manager and the SFWO-approved biologist will determine location of the fencing prior to the start of staging or surface disturbing activities.

- a. Exclusion fencing will be at least 3 feet high and the lower 6 inches of the fence will be buried in the ground to prevent animals from crawling under. The remaining 2.5 feet will be left above ground to serve as a barrier for animals moving on the ground surface.
- b. Such fencing will be inspected and maintained daily by the SFWO-approved biologist until completion of the project and removed only when all construction equipment is removed from the site.
- c. The WEF specifications will be included in the final project plans and in the bid solicitation package (special provisions) and will include the WEF specifications including installation and maintenance criteria.
- d. The WEF will remain in place throughout the duration of the project and will be regularly inspected and fully maintained. Repairs to the WEF will be made within 24 hours of discovery.
- e. Upon project completion the WEF will be completely removed, the area cleared of debris and trash, and returned to natural conditions.
- f. 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 are very short (e.g., 3 days or less), the work activities occur during the dry season, and the installation of exclusion 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, species monitoring will occur during all project activities at that site. Modifications to this fencing measure may be made on a case-by-case basis with approval from the Service.

- g. With prior approval from the Service, a hybrid ESA/WEF fencing material that is both hi-visibility and impermeable to wildlife movement may be used in place of paired ESA fencing and WEF fencing.

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 SFWO-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 SFWO-approved biologist will be notified immediately and the SFWO-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 SFWO-approved biologist will be notified. Based on the professional judgment of the SFWO-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 SFWO-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 SFWO-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 SFWO-approved biologist will implement the species observation and handling protocol outlined below. Only SFWO-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 SFWO-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 SFWO-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 relocation efforts.
 - c. If an injured California red-legged frog or California tiger salamander is encountered and the SFWO-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 SFWO-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 SFWO-approved biologist, or designee, will immediately take it to a SFWO-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 SFWO-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 SFWO-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 (ESAs) and Wildlife Exclusion Fencing (WEF).

CRLF-CTS-12 Disease Prevention and Decontamination Procedures: To ensure that diseases are not conveyed between work sites by the SFWO-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-13 Pump Screens: If a water body is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh not larger than 5 millimeters and the intake will be placed within a perforated bucket or other method to attenuate suction to prevent California red-legged frogs and California tiger salamanders from entering the pump system. Pumped water will be managed in a manner that does not degrade water quality and upon completion be released back into the water body, or at an appropriate location in a manner that does not cause erosion. No re-watering of the water body is necessary if sufficient surface or subsurface flow exists to fill it within a few days, or if work is completed during the time of year the water body will have dried naturally. To avoid effects to eggs and larvae, work within seasonal ponds will be conducted when the pond has been dry naturally for at least 30 days

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 SFWO-approved biologist will be present during all vegetation clearing and grubbing activities. Prior to vegetation removal, the SFWO-approved biologist will thoroughly survey the area for California red-legged frogs and California tiger salamanders. Once the SFWO-approved biologist has thoroughly surveyed the area, clearing and grubbing may continue without further restrictions on equipment; however, the SFWO-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-15 Wildlife Passage for Road Improvement: When constructing a road improvement, wherever possible, enhance or establish wildlife passage for the California red-legged frog and California tiger salamander across roads, highways, or other anthropogenic barriers. This includes upland culverts, tunnels, and other crossings designed specifically for wildlife movement, as well as making accommodations in curbs, median barriers, and other impediments to terrestrial wildlife movement at locations most likely beneficial to the California red-legged frog and California tiger salamander.

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 storm-water 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-19 Limitation on Insecticide/Herbicide Use: Insecticides or herbicides will not be applied at the project site during construction where there is the potential for these chemical agents to enter creeks, streams, waterbodies, or uplands that contain habitat for the California red-legged frog and California tiger salamander.

CRLF-CTS-20 Limitation on Rodenticide Use: No rodenticides will be used at the project site during construction or long-term operational maintenance in areas that support suitable upland habitat for the California red-legged frog and California tiger salamander.

CRLF-CTS-21 Invasive Non-Native Plant Species Prevention: The SFWO-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-22 Removal of Diversion and Barriers to Flow: Upon completion of construction activities, any diversions or barriers to flow will be removed in a manner that will allow flow to resume with the least disturbance to the substrate. Alteration of creek beds will be minimized to the maximum extent possible; any imported material will be removed from stream beds upon completion of the project.

CRLF-CTS-23 Removal of Non-Native Species: A SFWO-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.

CRLF-CTS-25 Use of Native Plants for Revegetation: Plants used in revegetation will consist of native riparian, wetland, and upland vegetation suitable for the area. Locally collected plant materials will be used to the extent practicable. This measure will be implemented in all areas disturbed by activities associated with the project, unless the Subapplicant and the Service determine that it is not feasible or practical.

CRLF-CTS-26 Practices to Prevent Pathogen Contamination in Revegetation and

Restoration: The Subapplicant will refer to the following restoration design considerations and practices to help prevent pathogen contamination in revegetation and restoration as published by the Working Group for *Phytophthora* in Native Habitats in order to address the risk of introduction and spread of *Phytophthora* and other plant pathogens in site plantings:

- a. Design restoration with lower initial plant density. Planting large quantities of nursery plants increases the likelihood that some of those plants may be infested with *Phytophthora* or other plant pathogens. The greater the number of plants installed the higher the risk for pathogen introduction. The closer the plants are to one another the higher the likelihood of pathogen spread.
- b. To the extent possible, use direct seeding of native plant seeds or cuttings instead of container stock. Planting locally-collected seeds or cuttings rather than installing container stock can minimize the risk of introducing pathogens to a site.
- c. Ensure the use of clean nursery stock. To prevent and manage the introduction and spread of *Phytophthora* and other plant pathogens during revegetation and restoration activities, it is essential that projects use clean nursery stock grown with comprehensive best management practices.
- d. Prevent contamination in site preparation, installation, and maintenance. Implementing best management practices to prevent pathogen introduction and spread is also critical during all other phases of revegetation and restoration to reduce contamination risk. For detailed guidance on how to prevent and manage *Phytophthora* during various aspects of restoration, including nursery plant production, see The Phytophthora in Native Habitats Work Group “Restoration Guidance” at www.calphytos.org.
- e. Reduce the potential for pathogen spread and introduction due to movement or use of non-sanitized vehicles, tools, footwear or inadvertent use of contaminated materials (e.g. soil erosion protection wattles and mulch, or non-sanitized materials recycled from other projects such as rebar, fencing materials, etc.). Fundamental principles include:
 - i. Minimize project footprint and soil disturbance. Keep the number of vehicle pass-throughs and other disturbances during site activities to the least necessary. Avoid visits when conditions are wet, and areas are muddy. Park vehicles in designated staging areas.
 - ii. Follow sanitation practices. *Phytophthora* and many other pathogens move when contaminated soil is transferred on vehicle tires, footwear, on contaminated tools or infested plant materials. Follow sanitation best management practices: tools, boots, and vehicles will be visibly free of soil before and after use.
 - iii. Promote prevention through education. Ensure that onsite personnel are aware of the risk of inadvertent pathogen introductions and understand how to prevent pathogen introduction and spread. A pre-project meeting that provides appropriate BMP training to all workers and oversight managers who will be onsite during the project will help avoid confusion and delays in the field and will ensure in advance that everyone understands the project goals related to pathogen prevention.

Giant Garter Snake Conservation Measures

GGS-1 Seasonal Avoidance: To the extent practicable, confine construction activity within 200 feet of giant garter snake habitat to the period between May 1 and October 1. This is the active period for giant garter snake and direct mortality is lessened because snakes are expected to actively move and avoid danger.

GGG-2 Site Restrictions: Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, and disturbance is giant garter snake habitat, vegetation will be removed by hand to prevent mortality associated with mowers and other landscaping equipment. Project-related vehicles will observe a 15-mph speed limit within construction areas and access roads (except on County road and state and federal highways). This is particularly important during the time period when the snake may be sunning or moving along roadways.

GGG-3 Clearance Surveys: Within 24 hours prior to the commencement of construction activities, the Action Area will be surveyed for giant garter snakes by a SFWO-approved biologist. The biologist will provide the Service with a written report (e-mail is acceptable) that adequately documents the pre-construction survey results within 24-hours of commencement of construction activities. The Action Area will be re-inspected by the SFWO-approved biologist whenever a lapse in construction activity of 2 weeks or greater has occurred. If a giant garter snake is encountered during surveys, cease activities until the SFWO-approved biologist has determined that the snake will not be harmed or the snake leaves the work area on its own.

GGG-4 Dewatering: Aquatic habitat for the snake will be dewatered, and then remain dry and absent of aquatic prey for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, the Service will be contacted to determine what additional measures may be necessary to minimize effects to the snake.

GGG-5 Fencing: Prior to October 1st and after aquatic habitat has been dewatered, high visibility fencing will be erected along the edge of construction areas bordering suitable giant garter snake habitat to identify and protect these areas from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing will be inspected by the Subapplicant before the start of each work day and maintained by the Subapplicant until completion of the project. Fencing will be established in the uplands immediately adjacent to aquatic snake habitat and extending up to 200 feet from construction activities. Snake exclusionary fencing will be buried at least six inches below the ground to prevent snakes from attempting to burrow or move under the fence. To prevent giant garter snake from becoming entangled, trapped, or injured, erosion control materials that use plastic or synthetic monofilament netting will not be used in the Action Area. Acceptable materials include natural fibers such as jute, coconut, twine or other similar fibers.

GGG-6 Contacting the Service: If construction activities in giant garter snake habitat are necessary between October 2 and April 30, the Service's SFWO will be contacted to determine whether additional measures are necessary to avoid and minimize take. Recommended measures will be implemented.

GGG-7 Biological Monitor: A SFWO-approved biologist will inspect and monitor all construction-related activities within the Action Area to attempt to minimize take of the snake or the destruction of its habitat. If snakes are encountered during construction activities, the biologist will notify the SFWO immediately to determine the appropriate procedures. A report will be submitted, including date(s), location(s), habitat description, and any corrective measures taken to protect the snake, within one (1) business day.

GGG-8 Reporting: The SFWO-approved biologist will be required to report any take of listed species to the SFWO immediately by a written letter addressed to the appropriate Service office within one (1) working day of the incident.

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 SFWO-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 SFWO-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 SFWO-approved biologist will keep copies of applicable permits in their possession when onsite. Through the Resident Engineer, Project Manager or their designee, the SFWO-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 SFWO-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 SFWO-approved biologist exercises this authority, the SFWO 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-5 Seasonal Avoidance: Construction activities will occur between June 15 - October 31, when Alameda whipsnakes are more active, capable of escaping, and less likely to be impacted.

AWS-6 Use Hand Operated Equipment: Work activities will be restricted to existing roads and trails to the maximum extent possible. When existing roads and trails cannot be followed, shrub vegetation will be removed by equipment operated by hand to prevent mortality associated with mowers or other large mechanical equipment. A SFWO-approved biologist experienced in identifying Alameda whipsnake will be present during vegetation removal.

AWS-7 Pre-construction Surveys: Pre-construction surveys for the Alameda whipsnake will be conducted by the SFWO-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 SFWO-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 SFWO-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 SFWO-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 SFWO-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 SFWO-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 SFWO will be notified of the incident by telephone and e-mail within 24 hours.

AWS-10 Wildlife Exclusion Fencing: Prior to the start of construction in individual construction areas, wildlife exclusion fencing will be installed along the project footprint in all areas where the Alameda whipsnake could enter the active site. The location and extent of wildlife exclusion fencing will be presented to the SFWO for approval prior to project initiation. The Subapplicant will include the exclusion fencing specifications on the final project plans. The Subapplicant will include the exclusion fencing specifications, including installation and maintenance criteria, in the bid solicitation package special provisions. The fencing will remain in place throughout the duration of the construction activities within the individual work areas and will be regularly inspected and fully maintained. Repairs to the fence will be made within 24 hours of discovery. Upon completion of activities within the given area, the fence will be completely removed; the area cleaned of debris and trash, and returned to natural conditions.

AWS-11 Fencing: Prior to ground disturbance, active areas within the project footprint will be delineated with temporary, high-visibility fencing to prevent the encroachment of construction personnel and equipment outside the described project footprint. The fencing will be removed after all construction equipment is removed from those segments of the project.

AWS-12 Using Cover Boards: The SFWO-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 SFWO-approved biologist is onsite.

AWS-13 Reporting: The SFWO 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 SFWO-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 SFWO-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-15 Limitation on Rodenticide Use: No rodenticides will be used at the project site during construction in areas that support suitable habitat for the Alameda whipsnake

AWS-16 Encounters with Species: Each Alameda whipsnake encounter will be treated on a case-by-case basis in coordination with the SFWO but general guidance is as follows: (1) leave the non-injured 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 SFWO once the site is secure. Contact the SFWO 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 SFWO-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 SFWO, 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 SFWO 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 SFWO-approved biologists for the project can capture Alameda whipsnakes.

Valley Elderberry Longhorn Beetle Conservation Measures

In general terms, the *May 2017 Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (VELB) will be followed. Below is a summary of some of the key measures to implement on Subapplicant's proposed projects that may affect VELB. If elderberry shrubs occur on or within 50 meters (165 feet) of the Action Area, adverse effects to VELB may occur as a result of project implementation. If the project may affect VELB or its habitat, appropriate avoidance and minimization measures are recommended. Not all measures may be appropriate for every project, and Subapplicants will implement the measures that are identified in the ESA Review Form for a specific project. FEMA will submit to the SFWO the completed ESA Review Form for projects that are covered under this programmatic biological opinion, outlining the applicable measures to protect VELB. This text is intended to provide language that may be used by the Subapplicants to describe avoidance and minimization measures for their proposed project.

VELB-1 Fencing: All areas to be avoided during construction activities will be fenced and/or flagged as close to construction limits as feasible.

VELB-2 Avoidance Area: Activities that may damage or kill an elderberry shrub (e.g., trenching, paving, etc.) may need an avoidance area of at least 6 meters (20 feet) from the drip-line, depending on the type of activity.

VELB-3 Worker Education: A SFWO-approved biologist will provide training for all contractors, work crews, and any onsite personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for non-compliance.

VELB-4 Biological Monitor: A SFWO-approved biologist will monitor the work area at project-appropriate intervals to assure that all avoidance and **minimization** measures are implemented. The amount and duration of monitoring will depend on the project specifics and the contractor will discuss it with the SFWO-approved biologist.

VELB-5 Seasonal Avoidance: As much as feasible, all activities that could occur within 50 meters (165 feet) of an elderberry shrub will be conducted between August and February, outside of the flight season of the VELB, which occurs from March to July, coinciding with the bloom period of the elderberry plant.

VELB-6 Trimming: Trimming may remove or destroy VELB eggs or larvae and may reduce the health and vigor of the elderberry shrub. In order to avoid and **minimize** adverse effects to VELB when **trimming**, **trimming** will occur between November and February and will avoid the removal of any branches or stems that are ≥ 1 inch in diameter. Measures to address regular or large-scale maintenance (trimming) will be established in consultation with the SFWO.

VELB-7 Limitations on Chemical Use: Herbicides will not be used within the drip-line of the shrub. Insecticides will not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals will be applied using a backpack sprayer or similar direct application method.

VELB-8 Mowing: Mechanical weed removal within the drip-line of the shrub will be limited to the season when adults are not active (August - February) and will avoid damaging the elderberry.

VELB-9 Erosion Control and Revegetation: Erosion control will be implemented and the affected area will be revegetated with appropriate native plants.

VELB-10 Transplanting: In order to protect VELB larvae to the greatest extent possible, we recommend that all elderberry shrubs with stems greater than 1 inch in diameter be transplanted under the following conditions:

- a. If the elderberry shrub cannot be avoided.
- b. If indirect effects will result in the death of stems or the entire shrub.

Removal of entire elderberry plants without disturbance to the surrounding habitat is uncommon, but may occur on certain projects. The removal may either include the roots or just the removal of the aboveground portion of the plant. The SFWO encourages project applicants to attempt to remove the **entire** root ball and transplant the shrub, if possible. In order to **minimize** the fragmentation of VELB habitat, the SFWO encourages applicants to relocate elderberry shrubs as close as possible to their original location. Elderberry shrubs may be relocated adjacent to the project footprint if: 1) the planting location is suitable for elderberry growth and reproduction; and 2) the project proponent is able to protect the shrub and ensure that the shrub becomes reestablished. If these criteria cannot be met, the shrub may be transplanted to an appropriate SFWO-approved mitigation site. Any elderberry shrub that is unlikely to survive transplanting because of poor condition or location, or a shrub that will be extremely difficult to move because of access problems, may not be appropriate for transplanting. The following transplanting guidelines may be used by agencies/applicants in developing their VELB conservation measures:

Monitor. A SFWO-approved biologist will be onsite for the duration of transplanting activities to assure compliance with avoidance and **minimization** measures and other conservation measures.

Exit Holes. Exit-hole surveys will be completed immediately before transplanting. The number of exit holes found, GPS location of the plant to be relocated, and the GPS location of where the plant is transplanted will be reported to the Service and to the California Natural Diversity Database (CNDDDB).

Timing. Elderberry shrubs will be transplanted when the shrubs are dormant (November through the first two weeks in February) and after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the shrub and increase transplantation success.

Transplanting Procedure. Transplanting will follow the most current version of the ANSI A300 (Part 6) guidelines for transplanting (<http://www.tcia.org/>).

Trimming Procedure. Trimming will occur between November and February and will minimize the removal of branches or stems that exceed 1 inch in diameter.

VELB-11 Impacts to Individual Shrubs: In certain instances, impacts to elderberry shrubs, but not the surrounding habitat may occur. This could take the form of trimming or complete removal of the plant. Trimming elderberry shrubs may result in injury or death of eggs, larva, or adults depending on the timing and extent of the trimming. Since the larva feed on the elderberry pith while they are developing, any trimming that may affect the health of the plant and cause the loss of stems may kill any larva in those stems. No adverse impacts to the VELB will occur if trimming does not remove stems/branches that are ≥ 1 inch in diameter and is conducted between November and February. Trimming that occurs outside of this window or removes branches ≥ 1 inch in diameter may result in adverse effects to VELB. In order to assess the risk of take from trimming activities, we recommend the following be evaluated:

- a. Conduct an exit hole survey on the plant.
- b. Evaluate the surrounding habitat (riparian vs. non-riparian).
- c. Evaluate the potential suitability of the plant to provide VELB habitat.
 - i. Riparian plants are much more likely to be occupied or colonized by VELB.
 - ii. Plants in non-riparian locations will be evaluated using the criteria in Figure 2.

VELB-12 Other Activities: The SFWO's Framework for VELB may not be applicable for restoration, floodway maintenance, and other large scale habitat modification activities. These activities and the potential effects to VELB and its habitat will be considered on a project-by-project basis and discussed with the SFWO. The SFWO recommends that project proponents consider the effects to the species on a landscape level and ultimately seek to protect, preserve, and restore the continuity of VELB habitat. These and similar activities that may adversely impact the VELB and its habitat at landscape scales will consider avoidance and minimization strategies that are appropriate for the specific project. Some possible conservation measures to consider for these large-scale projects include:

- a. Transplanting all affected elderberries to a similar onsite location.
- b. Maintaining patches of appropriate habitat in areas where large-scale removal of elderberry shrubs will occur.
- c. Scale trimming, removal, and other activities that allow VELB to persist within the area.

California Freshwater Shrimp Conservation Measures

CAFS-1 Biological Monitor: A SFWO-approved biologist will conduct surveys of suitable habitat within the Action Area for presence of the California freshwater shrimp in the work area 24 hours prior to any vegetative clearing work, dewatering, or ground disturbing activities.

CAFS-2 Species Observations and Handling Protocol: If California freshwater shrimp are present in the Action Area the following procedures will be used:

- a. Prior to any California freshwater shrimp handle/capture activities, the SFWO will be contacted to identify relocations sites and options appropriate for the species in the location of the project activity.
- b. California freshwater shrimp will be captured by hand-held nets [e.g., heavy-duty aquatic dip nets (12" D-frame net) or small minnow dip nets] and relocated out of the work area in the net or placed in buckets containing stream water and then moved directly to the nearest suitable habitat in the same branch of the creek. Suitable habitat will be identified prior to capturing California freshwater shrimp to minimize holding time. Suitable habitat is defined as creek sections that will remain wet over the summer and where banks are structurally diverse with undercut banks, exposed fine root systems, overhanging woody debris, or overhanging vegetation. No California freshwater shrimp will be placed in buckets containing other aquatic species.
- c. Once the SFWO-approved biologist has determined that all shrimp have been effectively relocated, barrier seines or exclusion fencing no greater than 5 mm will be installed to prevent shrimp from moving back in, as appropriate.
- d. Only SFWO-approved biologists will participate in the capture, handling, and monitoring of California freshwater shrimp. The SFWO-approved biologist will report the number of captures, releases, injuries, and mortalities to the Service within 30 days of project completion. If take exceeds the levels anticipated in this programmatic biological opinion, work will stop immediately and the SFWO will be notified within one working day.

CAFS-3 Seasonal Avoidance: No work during wet weather or where saturated ground conditions exist; if a 60% chance of a one half inch of rain or more within a 24-hour period is forecasted, then operations will cease until 24 hours after rain has ceased.

CAFS-4 Habitat Protection: Habitat for this species will be protected, as follows:

- a. No large woody debris (LWD) will be removed in active (wetter) channels. Trees may be removed for access routes for construction equipment. If trees need to be removed from other portions of the project site, willows over 3 inches in diameter at breast height will not be removed and there will be no reduction in canopy cover provided by hardwoods or conifers.
- b. Disturbance and removal of aquatic vegetation will be minimized to the extent practicable. Downed trees, stumps and other basking sites and refuges within these aquatic habitats will remain undisturbed as much as possible.

CAFS-5 Revegetation: The stream bank will be planted with species which will enhance the year-round habitat value of the stream edge by providing adequate shelter, stability, complexity and food production potential for California freshwater shrimp. The revegetation will include plantings such as widely spaced trees, willow sprigs, and sedges near the water's edge, plantings of herbaceous plant species to fill in gaps and therefore augment existing habitat.

CAFS-6 Site Restrictions: New access routes requiring tree removal and grading will be limited to no more than two. Access routes will not be along the top of the stream bank but relatively perpendicular (45 to 90 degrees is acceptable) to the bank.

CAFS-7 Site Access: Where available, access to the work area will use existing ingress or egress points, or work will be performed from the top of the stream banks.

CAFS-8 Erosion Control: Any disturbed ground must receive appropriate erosion control treatment (mulching, seeding, planting, etc.) prior to the end of the construction season, prior to ceasing operations due to forecasted wet weather, and within seven days of project completion. Operations will use all feasible techniques to prevent any sediment from entering a drainage system.

CAFS-9 Suitable Erosion Control Materials: Erosion control materials will not include plastic mono-filament netting or similar materials in which animals might become entangled.

CAFS-10 Cleanup After Construction: Work pads, falsework, and other construction items will be removed from the 100 year floodplain by the end of the construction window.

CAFS-11 Construction Design: Prior to removal of an existing structure, a debris catching platform will be constructed under the structure.

CAFS-12 Waste Management: Trash will be properly contained, removed from the work areas, and disposed of regularly. Following construction, all trash and construction debris will be removed from the Project footprint.

CAFS-13 Fueling Restrictions: Fueling and maintenance of vehicles and equipment will occur at least 50 feet from any riparian or aquatic habitat. Prior to the start of construction a plan will be prepared to ensure a 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 take if a spill occurs.

Multiple Butterfly Species Conservation Measures

Butterfly Species	Bloom/Flight Season	Host Plants
Bay Checkerspot Butterfly	February - early May	California plantain (<i>Plantago erecta</i>), purple owl's clover (<i>Castilleja densiflora</i>) and exserted paintbrush (<i>C. exserta</i>)
Callipe Silverspot Butterfly	mid-May - late July	Johnny jump-up (<i>Viola pedunculata</i>)
Mission Blue Butterfly	Late March - early July	Three lupine species (<i>Lupinus albifrons</i> , <i>L. formosus</i> ; and <i>L. varicolor</i>)
Myrtle's silverspot butterfly	mid-June - early October	western dog violet (<i>Viola adunca</i>)
San Bruno elfin	Late February - mid-April	Stone crop (<i>Sedum spathulifolium</i>)

LEP-1 Pre-construction Surveys: The Subapplicant will implement the following measure depending on the time of year for project construction:

- a. During the non-flight season, pre-construction surveys for caterpillars and the larval host plants will be conducted during the typical bloom season. A SFWO-approved biologist, able to identify the larval host plants and caterpillars of the listed butterfly species, will conduct up to three surveys prior to the start of construction to determine the use of the site by the listed butterflies.

- b. During the flight season, pre-construction surveys for butterflies and the larval host plants will be conducted. A SFWO-approved biologist, able to identify the butterflies and their host plants, will conduct up to three surveys prior to the start of construction to determine the use of the site by the listed butterflies. If flight surveys are not possible, then the butterfly species associated with the larval host plant will be assumed present.

LEP-2 Biological Monitor: During the adult flight season of listed butterfly species, a SFWO-approved biologist will be present when construction activities occur in or within 100 feet of suitable habitat (dispersal habitat as well as areas containing the larval host plant and adult food plants). If one or more adult listed butterflies are observed in the work area, work activities will temporarily cease unless the SFWO-approved biologist determines that work activities will not directly affect the individual(s).

LEP-3 Fencing: Any larval food plants found within 300 feet of the project footprint will be clearly marked and will be avoided to the maximum extent practicable. Orange fencing/flagging will be placed along the edge of the work area near any larval food plants to prevent workers and vehicles from entering this area. Fencing/flagging will be installed prior to any ground disturbing or vegetation removal activities. A SFWO-approved biologist will supervise the installation of flagging or fencing around stands of known listed butterfly host/food plants. The fencing/flagging will be placed the maximum distance from the plants possible (up to 100 feet), while still allowing work to occur in the adjacent area. The location of the flagging/fencing will be field-adjusted by the SFWO-approved biologist as necessary. The temporary fencing/flagging will be furnished, constructed, maintained, and later removed and specified in the construction bid documents. Temporary fencing/flagging will be at least 4-foot-high and constructed of high visibility material (e.g., orange, commercial-quality woven polypropylene or similar material). No construction activities will be permitted within the fenced/flagged area. Warning signs indicating the sensitivity of the area will be attached to the fencing/flagging.

LEP-4 Monitoring Log: Each day the SFWO-approved biologist will monitor for listed butterflies, inspect the fencing/flagging and immediately notify the resident engineer (or their designated contact) to address any necessary fencing/flagging repairs. A biological monitoring log of construction site conditions and observations will be maintained and kept on file.

LEP-5 Dust Control: The SFWO-approved biologist will ensure that dust is controlled during construction by periodically watering down construction areas within 100 feet of listed butterfly habitat as necessary. Watering down the construction area will prevent dirt from becoming air borne and accumulating on larval host plants and adult food source plants for listed butterflies.

Conservation Measures for Vernal Pool Fairy Shrimp, Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, Vernal Pool Tadpole Shrimp

To avoid and minimize adverse effects to the vernal pool branchiopods, the measures listed below will be implemented in the project footprint where suitable listed branchiopod habitat (e.g., vernal pools, seasonal wetlands) occurs and the species have potential to occur.

VPBR-1 Pre-construction Surveys: If possible, prior to construction activities, the SFWO-approved biologist will conduct pre-construction, reconnaissance surveys in seasonally inundated habitats (seasonal wetland, non-inundated wetlands) within the project footprint. The SFWO-approved biologist will conduct general aquatic surveys at a suitable interval after the first significant storm event of the rainy season (October 15 to June 1), prior to construction activities. The surveys

will include a habitat assessment of the hydrological, biological, and ecological conditions of each seasonal wetland and open waters. The habitat assessment will provide information regarding the quality and suitability of seasonal wetlands for the vernal pool branchiopods covered under this programmatic biological opinion (vernal pool fairy shrimp, Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp). If any vernal pool branchiopods are found during the surveys, the SFWO-approved biologist will submit a report to the SFWO within 1 month of completing the field work. The report will provide results of all surveys, a summary of all the data collected, and the habitat assessment. If surveys are not possible, then listed vernal pool branchiopod species presence will be assumed on all suitable habitat within the Action Area.

VPBR-2 Biological Monitor: A SFWO-approved biologist will monitor all construction activities within 250 feet of suitable habitat for listed vernal pool branchiopods to ensure that no unnecessary take or destruction of habitat occurs.

VPBR-3 Exclusion Areas: Non-disturbance exclusion zones will be established, maintained, and monitored by a SFWO-approved biological monitor to ensure that take of vernal pool branchiopods or destruction of their habitat does not occur outside of the project footprint, in areas where suitable habitat (e.g., vernal pools, seasonal wetlands) occurs and the species have potential to occur. A buffer of at least 250 feet from any vernal pool, vernal pool grassland, or seasonal wetland will be established for the following:

- a. Staging areas of all equipment for storage, fueling, and maintenance with hazardous material absorbent pads available in the event of a spill; and
- b. Mixing of pesticides, herbicides, or other potentially toxic chemicals.

VPBR-4 Seasonal Avoidance: Work within 250 feet of suitable listed vernal pool branchiopod habitat (e.g., vernal pools, seasonal wetlands) will be performed between June 1 and October 15 under dry site conditions to the maximum extent possible to minimize adverse impacts to aquatic habitats.

VPBR-5 Work Restrictions During Dry Season: A SFWO-approved biologist will flag or monitor all operations and maintenance work during the *dry season* (generally June 1 to October 15) within 250 feet of a vernal pool, vernal pool grassland, or seasonal wetland. The following buffers will be enforced:

- a. hand-held herbicide application is prohibited within the pool or at the edge of the pool;
- b. power spray herbicide application is prohibited within 100 feet of the edge of the pool;
- c. broadcast herbicide application is prohibited within 150 feet of the edge of the pool; and
- d. ground-disturbing activities are prohibited within 25 feet of the edge of the pool.

VPBR-6 Work Restrictions During Wet Season: If any construction activities remain and must occur during the October 15 - June 1 *wet period*, exclusion fencing and erosion control materials will be placed around the vernal pools and other seasonal wetlands as determined by the SFWO-approved biologist to reduce sedimentation into vernal pool habitat. The fencing will provide a buffer between construction activities and the vernal pools and other seasonal wetlands. The SFWO-approved biologist will erect and maintain the exclusion fencing.

VPBR-7 Erosion Control: Any vernal pool, vernal pool grassland, or seasonal wetland will be protected from siltation and contaminant runoff by use of erosion control. Erosion-control measures will be placed between the outer edge of the buffer and the activity area.

VPBR-8 Suitable Erosion Control Materials: Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No micro-filament netting will be used. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed.

VPBR-9 Dust Control: Dust control measures will be implemented to prevent the transport of soil from exposed surfaces to vernal pool, swale, and rock pool habitat. Sprinkling with water will not be done in excess to minimize the potential for non-storm water discharge.

VPBR-10 Monitoring During Wet Season: A SFWO-approved biologist will flag or monitor all operations and maintenance work during the *wet season* (generally October 1 to June 1) within 150 feet of a vernal pool, vernal pool grassland, or seasonal wetland. The following buffers will be enforced:

- a. Hand-held herbicide application is prohibited within 25 feet of the edge of the pool;
- b. Power spray herbicide application is prohibited within 100 feet of the edge of the pool;
- c. Broadcast herbicide application is prohibited within 150 feet of the edge of the pool;
- d. Manual clearing of vegetation is prohibited at the pool or beyond the edge of the pool;
- e. Mechanical clearing of vegetation is prohibited within 100 feet of the edge of the pool; and
- f. Ground-disturbing activities are prohibited within 50 feet of the edge of the pool.

VPBR-11 Vehicle Maintenance: Vehicles will be inspected daily for fluid leaks before leaving a staging area.

VPBR-12 Site Restrictions: Routine maintenance activities within 250 feet of vernal pool and swale habitat will be avoided to the maximum extent possible.

VPBR-13 Use of Native Plants for Revegetation: When revegetating upland areas to pre-project condition, native plants will be used to the maximum extent practicable.

VPBR-14 Invasive Plant Species Prevention: To minimize the introduction of invasive plant species, construction vehicles will be cleaned prior to any work within 150 feet of vernal pool branchiopod habitat.

Conservation Measures for Vernal Pool Listed Plants

These measures apply to the following 19 listed vernal pool plant species: Burke's goldfields (*Lasthenia burkei*), Butte County meadowfoam (*Limnanthes floccosa ssp. californica*), Calistoga allocarya (*Plagiobothrys strictus*), Colusa grass (*Neostapfia colusana*), Contra Costa goldfields (*Lasthenia conjugens*), few-flowered navarretia (*Navarretia leucocephala ssp. pauciflora [=N. pauciflora]*), fleshy owl's-clover (*Castilleja campestris ssp. succulenta*), Greene's tuctoria (*Tuctoria greenei*), hairy Orcutt grass (*Orcuttia pilosa*), Hoover's spurge (*Chamaesyce hooveri [=Euphorbia hooveri]*), Lake County stonecrop (*Parvisedum leiocarpum [=Sedella leiocarpa]*), Loch Lomond coyote thistle (*Eryngium constancei*), many-flowered navarretia (*Navarretia leucocephala ssp. plieantha*), Sacramento Orcutt grass (*Orcuttia viscida*), San Joaquin Orcutt grass (*Orcuttia inaequalis*), Sebastopol meadowfoam (*Limnanthes vinculans*), Slender Orcutt grass (*Orcuttia tenuis*), Solano grass (*Tuctoria mucronata*), and Sonoma sunshine (*Blennosperma bakeri*).

To avoid and minimize adverse effects to the vernal pool plants, the measures listed below will be implemented in the project footprint where suitable vernal pool habitat (e.g., vernal pools, seasonal wetlands) occurs and the species have potential to occur.

VP PLANT-1 Pre-construction Surveys: If possible, prior to construction activities, the SFWO-approved biologist will conduct protocol-level bloom-season plant surveys in seasonally inundated habitats (seasonal wetland, non-inundated wetlands) within the project footprint. If any listed vernal pool plant species are found during the surveys, the SFWO-approved biologist will submit a report to the SFWO within 1 month of completing the field work. The report will provide results of all surveys, a summary of all the data collected, and the habitat assessment. Information regarding the location of listed plant populations will be provided to CDFW's California Natural Diversity Database (CNNDDB) according to their reporting protocols. If surveys are not possible, then listed vernal pool species presence will be assumed on all suitable habitats within the Action Area.

VP PLANT-2 Flagging: Flagging or other field markers identifying the plants, or in the event protocol-level surveys were not conducted – the suitable habitat, will be placed prior to each work event and removed after that work event is completed for all phases of the proposed project.

VP PLANT-3 Biological Monitor: A SFWO-approved biologist will monitor all construction activities within 250 feet of suitable habitat for listed vernal pool plants to ensure that no unnecessary loss or destruction of habitat occurs.

VP PLANT-4 Exclusion Areas: A SFWO-approved biologist will delineate a 50-foot avoidance buffer around all federally-listed plants or their suitable habitat. The non-disturbance exclusion zones will be established, maintained and monitored by a SFWO-approved biological monitor to ensure that loss of listed vernal pool plants or destruction of their habitat does not occur outside of the project footprint where suitable habitat (e.g., vernal pools, seasonal wetlands) occurs and the species have potential to occur. In addition, a buffer of at least 250 feet from any vernal pool, vernal pool grassland, or seasonal wetland will be established for the following:

- a. Staging areas of all equipment for storage, fueling, and maintenance with hazardous material absorbent pads available in the event of a spill; and
- b. Mixing of pesticides, herbicides, or other toxic chemicals.

VP PLANT-5 Seasonal Avoidance: Work within 250 feet of suitable listed vernal pool plant habitat (e.g., vernal pools, seasonal wetlands) will be performed between June 1 and October 15 under dry site conditions to the maximum extent possible to minimize adverse impacts to aquatic habitats.

VP PLANT-6 Work Restrictions During Dry Season: A SFWO-approved biologist will flag or monitor all operations and maintenance work during the *dry season* (generally June 1 to October 15) within 250 feet of a vernal pool, vernal pool grassland, or seasonal wetland. The following buffers will be enforced:

- a. Hand-held herbicide application is prohibited within the pool or at the edge of the pool;
- b. Power spray herbicide application is prohibited within 100 feet of the edge of the pool;
- c. Broadcast herbicide application is prohibited within 150 feet of the edge of the pool; and
- d. Ground-disturbing activities are prohibited within 25 feet of the edge of the pool.

VP PLANT-7 Work Restrictions During Wet Season: If any construction activities remain and must occur during the October 15 - June 1 *wet period*, exclusion fencing and erosion control materials will be placed around the vernal pools and other seasonal wetlands as determined by the SFWO-approved biologist to reduce sedimentation into vernal pool habitat. The fencing will provide a

buffer between construction activities and the vernal pools and other seasonal wetlands. The SFWO-approved biologist will erect and maintain the exclusion fencing.

VP PLANT-8 Erosion Control: Any vernal pool, vernal pool grassland, or seasonal wetland will be protected from siltation and contaminant runoff by use of erosion control. Erosion-control measures will be placed between the outer edge of the buffer and the activity area.

VP PLANT-9 Suitable Erosion Control Materials: Erosion-control materials will be of a tightly woven natural fiber netting or similar material that will not entrap reptiles and amphibians (e.g., coconut coir matting). No micro-filament netting will be used. All fiber rolls and hay bales used for erosion control will be certified as free of noxious weed seed.

VP PLANT-10 Dust Control: Dust control measures will be implemented to prevent the transport of soil from exposed surfaces to vernal pool, swale, and rock pool habitat. Sprinkling with water will not be done in excess to minimize the potential for non-storm water discharge.

VP PLANT-11 Monitoring During Wet Season: A SFWO-approved biologist will flag or monitor all operations and maintenance work during the *wet season* (generally October 1 to June 1) within 150 feet of a vernal pool, vernal pool grassland, or seasonal wetland. The following buffers will be enforced:

- a. Hand-held herbicide application is prohibited within 25 feet of the edge of the pool;
- b. Power spray herbicide application is prohibited within 100 feet of the edge of the pool;
- c. Broadcast herbicide application is prohibited within 150 feet of the edge of the pool;
- d. Manual clearing of vegetation is prohibited at the pool or beyond the edge;
- e. Mechanical clearing of vegetation is prohibited within 100 feet of the edge of the pool; and
- f. Ground-disturbing activities are prohibited within 50 feet of the edge of the pool.

VP PLANT-12 Vehicle Maintenance: Vehicles will be inspected daily for fluid leaks before leaving a staging area.

VP PLANT-13 Site Restrictions: Routine maintenance activities within 250 feet of vernal pool and swale habitat will be avoided to the maximum extent possible.

VP PLANT-14 Use of Native Plants for Revegetation: When revegetating upland areas to pre-project condition, native plants will be used to the maximum extent practicable.

VP PLANT-15 Invasive Plant Species Prevention: To minimize the introduction of invasive plant species, construction vehicles will be cleaned prior to entering any vernal pool habitat.

Tidewater Goby Conservation Measures

TIGO-1 Installation of In-water Nets: Prior to initiation of dewatering or sediment removal work, a Service-approved biologist will install 1/8 inch block nets outside the impact areas and across the stream a minimum of 20 feet above and below the locations proposed for excavation. If widely separated sites are involved, more than one set of block nets will be placed to protect the work area. The nets will be installed on the first day of work and monitored thereafter for the duration of the work.

TIGO-2 Environmental Awareness Training: Prior to initiation of dewatering or sediment removal work, hold an environmental awareness training to inform maintenance and management personnel about tidewater gobies, including tidewater goby protected status, proximity to the project site, avoidance/minimization measures to be implemented during the particular project, and the implications of violating the Act and FEMA funding conditions.

TIGO-3 Capture and Relocation: Once the block nets are secured, a Service-approved biologist(s) will remove all tidewater gobies found between the block nets using a 1/8 inch seine and dip nets, and relocate tidewater gobies to suitable habitat downstream of the Action Area. If excavation of a given extent of a basin cannot be completed in one day, a new set or successive sets of block nets will be deployed each day, and subsequent surveys and capture/relocation performed accordingly. Fish released from one day's work will not be released into areas projected to be excavated on successive days.

TIGO-4 Flagging: Clearly flag the limits of construction areas to avoid or minimize impacts to adjacent riparian and upland habitat. Flagging will be no more than 50 feet apart and will be clearly visible to construction workers on the ground and to operators on heavy equipment.

TIGO-5 Erosion Control: Implement erosion and sedimentation control measures (e.g., silt fences, straw bales or wattles) in all areas where disturbed substrate may potentially wash into waters via rainfall or runoff, particularly around stockpiled material and at the downstream end of each project reach. Such measures will remain in place and be inspected periodically until the project is complete and exposed soils are stabilized. Diversion structures, sediment traps/basins and associated equipment (e.g., pumps, lines) will be maintained in optimal working condition for the entire duration of the preparation and construction periods.

TIGO-6 Biological Monitor: A Service-approved biological monitor will remain onsite and search for tidewater gobies and assess turbidity levels within the work areas during all dewatering activities, and will capture and relocate tidewater gobies to suitable habitat as necessary.

TIGO-7 Reporting: Provide a written summary of work performed (including biological survey and monitoring results), best management practices implemented (i.e., use of biological monitor, flagging of work areas, erosion and sedimentation controls) and supporting photographs of each stage. Furthermore, the documentation describing listed species surveys and re-location efforts (if appropriate) will include name of biologist(s), location and description of area surveyed, time and date of survey, all survey methods used, a list and tally of all sensitive animal species observed during the survey, a description of the instructions/recommendations given to the applicant during the project, and a detailed discussion of capture and relocation efforts (if appropriate).

TIGO-8 Hydrology and Topography Protection: Project activities will avoid creation of berms and dykes, steepening of channel slopes, placement of rock slope protection, and other actions that could result in alteration of hydrology, changes to water surface elevation levels, increased flooding, changes to flow velocities, and increased scour within tidewater goby designated critical habitat. However, the in-kind replacement of existing or damaged rock slope protection may occur.

TIGO-9 Limits on Habitat Disturbance: Project activities will not result in permanent loss of tidewater goby designated critical habitat unless the impacts to habitat are determined to be insignificant via project-level consultation (i.e., small permanent impacts that will have a negligible effect on habitat quality for tidewater goby).

Southwestern Willow Flycatcher

SWWF-1 Habitat Assessment: A habitat assessment will be conducted by a Service-approved biologist to determine whether suitable habitat (including foraging, nesting, and dispersal) for the flycatcher occurs in the action area. If suitable habitat for this species is identified in the Action Area and the proposed project may affect suitable habitat that is not known to be occupied by the flycatcher, the Service will be contacted regarding the need for surveys according to Service protocol and those surveys will be conducted, as appropriate. Otherwise, if the Service agrees based on other biological data or reasoning, the species will be determined present in areas with suitable habitat.

SWWF-2 Habitat Buffer: If project activities are conducted during the breeding season (i.e., May 1-September 1), a 500-foot disturbance-free buffer will be established and demarcated by fencing or flagging around occupied habitat. This buffer may be adjusted provided noise levels do not exceed 60 dBA at the edge of the nest site. If the noise meets or exceeds the 60 dBA threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist will have the authority to halt the construction and will devise methods to reduce the noise and/or disturbance in the vicinity.

SWWF-3 No Permanent or Temporary Loss of Habitat: No permanent or temporary loss of flycatcher occupied or designated critical habitat will occur (within or outside of the breeding season).

Least Bell's Vireo Conservation Measures

LBV-1 Habitat Assessment: A habitat assessment will be conducted by a biologist to determine whether suitable habitat (including foraging, nesting, and dispersal) for the least Bell's vireo occurs in the Action Area. If suitable habitat for this species is identified in the Action Area and the proposed project may affect suitable habitat that is not known to be occupied by the least Bell's vireo, the Service will be contacted regarding the need for surveys according to Service protocol and those surveys will be conducted, as appropriate. With Service concurrence, FEMA may also forgo surveys by making a determination that suitable habitat is occupied for the purposes of section 7 consultation.

LBV-2 Seasonal Avoidance: To minimize direct effects to nesting least Bell's vireos, all clearing of vegetation within occupied habitat will occur outside the breeding season (i.e., March 15-September 15) to the maximum extent practicable. If the breeding season cannot be avoided, a Service-approved biologist will conduct preconstruction nesting bird surveys, at least 48 hours before and no more than 1 week prior to vegetation removal. If no active nests are found to occur within 300 feet of the Action Area, project activities may proceed.

LBV-3 Work Restrictions Near Active Nests: If an active nest is detected during the survey, either work will be suspended until the young have fledged/beginning of the non-breeding season OR the following will apply:

- a. An exclusionary buffer will be established around the nest. The buffer distance will be determined by the Service-approved biologist considering several factors: presence of natural buffers (vegetation/topography), nest height, location of foraging territory, nature of the proposed activities, and baseline levels of noise and human activity. The buffer may range from 50 feet to over 300 feet in width. AND
- b. A biologist will monitor the nest during construction for signs of adverse effects including

distress/disturbance (unless “take” is authorized). If adverse effects are detected then the Service-approved biologist will have the authority to stop all construction activating in the vicinity of the nest and will coordinate with the Service to determine whether additional conservation measures will avoid or minimize effects on the nesting birds. Construction may resume only with approval from the Service. AND

- c. If construction must occur within the buffer and exclusion zones or otherwise may cause adverse effects on the least Bell’s vireo, then take may be authorized and disturbance may occur (as covered under this programmatic biological opinion). Unanticipated adverse effects on the least Bell’s vireo will require reinitiation of consultation.

LBV-4 Habitat Avoidance: Staging and temporary construction areas will be located outside of suitable habitat and will utilize existing roads and developed areas to the extent possible. All mature riparian vegetation (e.g., willows and cottonwoods), that are greater than 30 feet in height, will be avoided to the maximum extent possible. If mature riparian vegetation cannot be avoided, it will be either transplanted elsewhere within or near the Action Area or placed horizontally or diagonally outside the project footprint under the direction of a Service-approved biologist.

LBV-5 Habitat Restoration Plan: Prior to construction, prepare a Restoration Plan will be prepared that describes the efforts to restore all the areas of suitable habitat for the least Bell’s vireo that were temporarily impacted. The Restoration Plan will be reviewed and approved by the Service.

LBV-6 Limits on Habitat Disturbance: For any specific project, temporary impacts on occupied or designated critical habitat by the least Bell’s vireo will be limited to a maximum of 1 acre. Temporary impacts from all the projects covered under this programmatic consultation will also be limited to a maximum of 20 acres of least Bell’s vireo occupied or designated critical habitat. In addition, impacts will be limited to 10 territories.

LBV-7 No Permanent Loss of Habitat: No permanent loss of occupied or designated critical habitat for the least Bell’s vireo will occur unless the impact to habitat are determined to be insignificant via project-level consultation (i.e., small permanent impacts that will have negligible effect on habitat quality for the least Bell’s vireo).

California Least Tern Conservation Measures

CLT-1 Seasonal Avoidance: To avoid the nesting season of the California least tern, project activity in occupied habitat will be allowed from September 30-March 31. Occupied habitat for this species is well documented online. If project activities occur during the nesting season, they will occur at least 800 feet away from California least tern occupied habitat, and noise within occupied habitat will be monitored to ensure that it does not exceed 60 dBA hourly.

CLT-2 Biological Monitor: A Service-approved biologist will monitor all construction activities within occupied habitat to ensure that no take of the species or destruction of occupied habitat occurs. The Service-approved biologist will have stop work authority if adverse effects of nesting California least terns are observed.

CLT-3 Use of Handheld Tools: Non-breeding season project activity in occupied habitat will be limited to the use of handheld tools, including handheld motorized implements such as chain saws and power augers. Tools will be washed prior to use in these habitats to reduce the spread of non-native and invasive plant species and their seeds. No heavy equipment will be allowed within suitable nesting habitats. If handheld motorized tools are used, operators will employ best management

practices to avoid and minimize soil and water contamination from fuel and lubricants. Measures include: a) use spill-resistant fuel and lubricant containers; b) use a portable containment pad for refueling in the field; c) immediately report petroleum spills to the landowner, or land management agency, and notify appropriate local authorities for advice and action on containment and cleanup of spills; and d) clearly mark the location and/or boundaries of the spill site to enable rapid remedial action.

CLT-4 Habitat Protection: No soil stabilization materials or offsite materials (e.g., decomposed granite, soil, rocks, etc.) will be added to the surface within occupied habitat. No excavation or grading will be allowed within occupied habitat either.

CLT-5 Flagging: When necessary to minimize the area affected by the project, work site boundaries will be marked with flagging or other visible materials, which will be removed at the conclusion of the project.

CLT-6 Avoid Placement of Predator Perches: Workers will avoid temporary or permanent placement of structures (e.g., posts, railings, tall equipment, or fence lines) that could provide elevated perches for predatory birds near or within occupied habitat.

CLT-7 Access Restrictions: Access to work sites in occupied habitat will be by foot travel only. Motorized vehicles, including all-terrain vehicles, will not be used in occupied habitat.

CLT-8 Restoration of Work Areas: At the conclusion of the project, areas temporarily affected by project activity will be restored to their pre-project condition (for example, footpaths will be raked to their original ground contour and native vegetation will be reestablished, if necessary).

CLT-9 Waste Management: Trash, food, food containers, and food waste will be secured at all times by individual workers, or placed in animal-proof trash containers placed at the work site. The contents of trash containers will be transferred from the work site at the end of each day.

Marbled Murrelet Conservation Measures

MAMU-1 Work Restrictions in Occupied Habitat: If marbled murrelet surveys (using the 2003 Service survey protocol; Evans Mack *et al.* 2003) determine that the Action Area is occupied or if FEMA or the Service presumes marbled murrelet occupancy without conducting surveys, the project Subapplicant will adhere to the following Conservation Measures. Surveyors are required to meet or exceed all training recommendations in Evans Mack *et al.* (2003), and be registered as qualified surveyors on a current Service 10(a)(1)(A) Recovery Permit.

- a. Vegetation Removal or Alteration of Known or Potential Nest Trees:
 - i. No potential marbled murrelet nest trees will be removed during nesting season (24 March to 15 September). Potential habitat defined as: (1) mature (with or without an old-growth component) and old-growth coniferous forests; and (2) younger coniferous forests that have platforms (relatively flat, at least 4-inch diameter and at least 33 feet above the base of the live crown of a coniferous tree). Platform presence is more important than tree size.
 - ii. Avoid removing or damaging known or potential nest trees, unless they are a confirmed safety hazard. For sites that have not been surveyed according to 2003 survey protocol, potential habitat is defined as (1) mature (with or without an old-

- growth component) and old growth coniferous forests; **and** (2) younger coniferous forest that have platforms.
- iii. Avoid removing or damaging trees with potential nesting platforms. A platform is a relatively flat surface at least 4-inch diameter and 33-feet high in the live crown of a coniferous tree. Platforms can be created by a wide bare branch, moss or lichen covering a branch, mistletoe, witches brooms, or other deformities, or structures such as squirrel nests.
 - iv. Project activities will not remove the function of suitable nesting habitat.
 - While habitat elements may be removed, such as individual large trees if they are a confirmed safety hazard, from nesting habitat, the treatment must not be so extensive as to remove the overall function of the nesting habitat, and will be conducted outside of the nesting season.
 - v. Non-suitable nest trees or limb ~~trimming~~ or pruning, brush ~~trimming~~ or removal, and hazard tree felling within suitable habitat may occur outside of the nesting season, 16 September to 23 March.

b. Auditory, Visual, or Other Disturbance:

- i. Construction equipment must be in good working order, with emphasis on hydraulic and noise abatement systems. Hydraulic leakage and damaged mufflers (or spark arresters) must be promptly addressed and remedied to the degree practicable.
- ii. No proposed activity generating sound levels 20 or more decibels above ambient sound levels or with maximum sound levels (ambient sound levels plus activity-generated sound levels) above 90 decibels (excluding vehicle back-up alarms) may occur within suitable marbled murrelet nesting habitat during the majority of the murrelet nesting season (*i.e.*, 24 March to 05 August)(Service 2006f).
- iii. Between August 06 (date when most marbled murrelets have fledged in coastal northern California) and September 15 (end of marbled murrelet nesting season) of any year, project activities, with adjacent suitable nesting habitat, that will generate sound levels ≥ 10 dB above ambient sound levels will observe a daily work window beginning 2 hours post-sunrise and ending 2 hours pre-sunset. However, prep work that does not generate sound levels above ambient sound levels, including street sweeping and manual removal of pavement markers, can occur during all hours. The need for this daily work window depends on the distance between suitable nesting habitat and the above-ambient sound generating activity following the Service guidelines (Service 2006f). For example, if above-ambient sound levels generated by proposed activities will become attenuated back down to ambient sound levels prior to reaching suitable nesting habitat, the daily work window will not be necessary.
- iv. No human activities will occur within visual line-of-sight of 40 m (131 feet) or less from a known nest or suitable nest tree during the nesting season (24 March to 15 September) (Service 2006f).

MAMU-2 Work Restrictions in Unoccupied Habitat: If recent protocol surveys determine that all suitable marbled murrelet nesting habitat within the Action Area is considered unoccupied, the auditory, visual, and other disturbance measures listed above do not apply for habitat determined to be unoccupied.

MAMU-3 Work Restrictions in Marbled Murrelet Critical Habitat: Ensure that there are no “adverse effects” to designated critical habitat for marbled murrelet within the Action Area. However, the Service has no specific quantitative thresholds, above which there will likely be an

adverse effect to critical habitat. If a Subapplicant's proposed project encounters this situation, contact the Service to determine whether proposed habitat removal within designated critical habitat constitutes an adverse effect. Generally, the removal of a few small trees in unoccupied habitat will not result in "adverse effect" on designated critical habitat.

When working in designated critical habitat for marbled murrelet, all measures described in MAMU-1 Occupied Habitat, or MAMU-2 Unoccupied Habitat for reducing impacts in suitable habitat will also be implemented. This will help reduce effects, and may result in some instances in effects that are insignificant and discountable.

Western Snowy Plover Conservation Measures

The following avoidance and **minimization** measures apply to Action Areas within suitable snowy plover nesting habitat and designated critical habitat regardless of whether snowy plovers have been detected during Service-approved protocol surveys.

WSP-1 Seasonal Avoidance: Project construction activities in suitable nesting habitat will occur during the species non-breeding season: the period beginning October 1 and continuing through February 28 of the following year or through February 29 in a leap year.

WSP-2 Use of Handheld Tools Only: Project construction activities in suitable nesting habitat will be limited to the use of handheld tools, including handheld motorized implements such as chain saws and power augers. No heavy equipment will be allowed within suitable nesting habitat.

WSP-3 Guidelines for Handheld Tools: If handheld motorized implements are used, operators will employ best management practices to avoid and **minimize** soil and water contamination from fuel and lubricants. Measures include:

- a. Use spill-resistant fuel and lubricant containers;
- b. Consider the use of a portable containment pad for re-fueling in the field;
- c. Immediately report petroleum spills to the landowner, or land management agency, and notify appropriate local authorities for advice and action on containment and cleanup of spills; and
- d. Clearly mark the location and/or boundaries of the spill site to enable rapid remedial action.

WSP-4 Biological Monitor: If project construction activities occur in adjacent to, but not within suitable nesting habitat, then project activities will be conducted during the species non-breeding season, if possible. If non-breeding season construction is not possible, then the Subapplicant will employ a Service-approved biologist to conduct weekly western snowy plover surveys. If western snowy plovers are observed, the Service-approved biologist will notify the Service within 1 day of the observation and will monitor all construction activities conducted adjacent to western snowy plovers suitable nesting habitat. The qualified biologist will have the right and responsibility to stop work if adverse effects of nesting western snowy plovers are observed.

WSP-5 Flagging: When necessary to **minimize** the area affected by the project, the Subapplicant or their contractors will mark the work site boundaries with flagging or other visible materials, and remove those markers at the conclusion of the project.

WSP-6 Avoid Placement of Predator Perches: Workers will avoid temporary or permanent placement of structures (e.g., posts, railings, tall equipment, or fence lines) that could provide elevated perches for predatory birds.

WSP-7 Access Restrictions: Access to work sites will be by foot travel only. Motorized vehicles, including all-terrain vehicles, are not permitted on work sites located within suitable nesting habitat.

WSP-8 Site Restrictions: Vehicles used for transport of personnel will be restricted to existing parking lots or roadside parking areas.

WSP-9 Restore Contours of Temporarily Disturbed Areas: At the conclusion of the project, areas temporarily impacted by project activity will be restored to their pre-project condition (for example, footpaths are to be raked to their original ground contour and cut vegetation is to be removed or piled for future disposal).

WSP-10 Waste Management: Trash, food, food containers, and food waste will be secured at all times by individual workers, or placed in animal-proof trash containers placed at the work site. The contents of trash containers will be transferred from the work site at the end of each day.

WSP-11 Prohibition of Pets Onsite: Pets will be prohibited from all work sites.

Northern Spotted Owl Conservation Measures

The following Conservation Measures are required for Subapplicant's proposed projects and their interrelated and interdependent activities that may affect the northern spotted owl (NSO). These measures are designed to reduce direct and indirect disturbance to individual NSOs, and habitat effects, to an insignificant and discountable level.

NSO-1 Contact the Service for NSO Data Records: If the Subapplicant's proposed project is located within suitable nesting, roosting or foraging habitat (NRF) for the NSO, and may directly or indirectly affect the NSO or its habitat, contact the Service to obtain contact information for local Forest Service, County, or other biologists who can provide NSO survey, Activity Center and habitat suitability data for the Action Area. An Activity Center represents the 'best of detections' such as a nest tree, an area used by roosting pairs or territorial singles, or an area of concentrated nighttime detections. This step will provide baseline information for the Action Area, and will help determine if and where surveys will be done, or if recent surveys have been completed.

NSO-2 Protocol Level Surveys: If NSO surveys have not been done, or are not current per the 2012 NSO Survey Protocol guidance (depending on activity), and surveys are planned, conduct them according to the 2012 NSO Survey Protocol and follow the seasonal restrictions described below for 'Surveyed Landscape'. If surveys are not planned or feasible, assume occupancy based on the presence of suitable NRF habitat; adhere to the guidance and seasonal restrictions described below for operating in an 'Un-surveyed Landscape'.

- a. As an option to the full 6-visit protocol surveys described in the 2012 NSO Survey Protocol, three surveys can be conducted in the year of action implementation. If no NSOs are detected within 0.25 mile of the proposed activities, activities may proceed that year without seasonal restrictions.

NSO-3 Work Restrictions in Previously Surveyed Landscape: If surveys are completed or are current for the Action Area (based on surveys conducted by the applicant/project proponent, or other data provided from other agencies):

- a. Do not conduct activities that result in loud or continuous noise above ambient levels within 0.25 mile (or 1,320 feet) of a nest site between February 1 and July 9.
 - This includes activities that generate sound levels 20 or more decibels above ambient sound levels or activities that generate maximum sound levels above 90 decibels, excluding vehicle back-up alarms. Maximum sound levels are the combined ambient and activity-generated sound levels.
- b. Do not conduct any suitable habitat modification or smoke-generating activities within 0.25 mile (or 1,320 feet) of a nest site between February 1 and September 15.
 - Suitable habitat includes NSO NRF habitat. Modification includes cutting and removal of large trees, down logs or snags. Tree or limb trimming or pruning, brush trimming or removal, and hazard tree felling may occur as long as the noise levels described above are not exceeded during the critical breeding period of February 1-July 9.

NSO-4 Work Restrictions in Previously Un-surveyed Landscape: If surveys have not been completed and cannot be done, assume occupancy in the Action Area/portion of it based on the presence of suitable NRF habitat:

- a. Do not conduct activities that result in loud and continuous noise above ambient levels within 0.25 mile (or 1,320 feet) of un-surveyed suitable NRF habitat between February 1 and July 9.
 - This includes activities that generate sound levels 20 or more decibels above ambient sound levels or activities that generate maximum sound levels above 90 decibels, excluding vehicle back-up alarms. Maximum sound levels are the combined ambient and activity-generated sound levels.
- b. Do not conduct any suitable habitat modification or smoke-generating activities within 0.25 mile (or 1,320 feet) of un-surveyed suitable NRF habitat between February 1 and September 15.
 - Suitable habitat includes NSO NRF habitat. Modification includes cutting and removal of large trees, down logs or snags. Tree or limb ~~trimming~~ or pruning, brush ~~trimming~~ or removal, and hazard tree felling may occur as long as the noise levels described above are not exceeded during the critical breeding period of February 1-July 9.

NSO-5 Noise Abatement: Equipment must be in good working order with standard noise abatement devices attached.

NSO-6 Habitat Avoidance: Within all suitable NRF habitat:

- a. Avoid removing or damaging known nest trees and associated screen trees, unless they are a confirmed safety hazard per the guidance documents from the implementing agency or another agency with jurisdiction in the Action Area.
- b. Avoid removing or damaging trees or snags with potential nesting platforms and associated screen trees. These include trees with large flattened tops, large broken topped trees, trees with decadence such as large cavities, mistletoe broom structures, cat faces, or large limbs; or large snags with these similar characteristics.

- c. Avoid removing large (20" diameter at breast height or larger) snags, unless they are a confirmed safety hazard per the implementing agency's guidance documents.

NSO-7 Avoid Reducing Habitat Quality: Project activities will not downgrade or remove the function of suitable nesting/roosting habitat to the degree that the habitat does not function in the capacity that existed pre-treatment:

- a. While habitat elements may be removed, such as individual large trees or snags if they are a confirmed safety hazard, from nesting/roosting habitat, the treatment must not be so extensive as to downgrade or remove the overall function of the habitat.
- b. If the Subapplicant's proposed project removes or downgrade nesting/roosting habitat function, this programmatic biological opinion is not applicable and a separate consultation with the Service is warranted.

NSO-8 Avoid Foraging Habitat: Within suitable foraging habitat in NSO core areas (0.5 mile radius, or 500-acre area, around an Activity Center) and within suitable foraging habitat in NSO home ranges (1.3 mile radius, including core, or 3,398-acre area around an Activity Center):

- a. Avoid downgrading or removing suitable foraging habitat function.
- b. While habitat elements may be removed, such as individual trees, shrubs, down logs and snags, from foraging habitat, the treatment must not be so extensive as to downgrade or remove the overall function of the habitat in an NSO core or home range below the recommended habitat levels for supporting survival, reproduction and occupancy (USDI-FWS 2009). This level is a combination of 400 acres of suitable NRF habitat in the core. For the home range, the level is 40 percent suitable NRF (approximately 1,336 acres).
- c. If the Subapplicant's proposed project removes or downgrades suitable foraging habitat function in a core and home range to below the recommended levels, this programmatic biological opinion is not applicable and a separate consultation with the Service is warranted.

NSO-9 Work Restrictions in NSO Critical Habitat: When working in designated critical habitat, adhere to all measures described in NSO-6, NSO-7, and NSO-8 for reducing impacts in suitable nesting/roosting and foraging habitat. This will assure that effects to Physical and Biological Features (PBFs) of PBF-2 (nesting/roosting) and PBF-3 (foraging) are insignificant and discountable. Adhering to these Conservation Measures (NSO-6, NSO-7, and NSO-8 above) will also assure that effects to PBF-1 and PBF-4 are insignificant and discountable, given the larger scale at which effects to these critical habitat PBFs are to be considered under the 2012 Revised Critical Habitat final rule (77 FR 71876). PBF-1 refers to forest types that may be in early, mid, or late seral stages and that support the NSO across its geographical range. PBF-4 refers to habitat that supports the transience and colonization phases of dispersal.

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 encompasses the entire jurisdiction of the Sacramento Fish and Wildlife Office, which encompasses all or parts of 40 counties.

https://www.fws.gov/sacramento/GIS_resources/Maps/Images/sacramento_jurisdiction.jpg

Analytical Framework for the Jeopardy Determinations

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this programmatic biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the range wide survival and recovery of the listed species. It relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the species; and (4) the Cumulative Effects, which evaluates the effects of future, non-federal activities in the action area on the species.

In accordance with the implementing regulations for Section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the current status of 42 species. Additionally, for non-Federal activities in the action area, we will evaluate those actions likely to affect the species in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both its survival and recovery in the wild.

The following analysis places an emphasis on using the range-wide survival and recovery needs of these species, and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed programmatic Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Analytical Framework Adverse Modification

Section 7(a)(2) of the Act requires that federal agencies insure that any action they authorize, fund, or carry out is not likely to destroy or adversely modify designated critical habitat. A final rule revising the regulatory definition of “destruction or adverse modification” (DAM) was published on February 11, 2016 (81 FR 7214). The final rule became effective on March 14, 2016. The revised definition states:

“Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features.”

The DAM analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which describes the range-wide condition of the critical habitat in terms of the key components (i.e., essential habitat features, primary constituent elements, or physical and biological

features) that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat overall for the conservation/recovery of the listed species; (2) the Environmental Baseline, which analyzes the condition of the critical habitat in the action area, the factors responsible for that condition, and the value of the critical habitat in the action area for the conservation/recovery of the listed species; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated and interdependent activities on the key components of critical habitat that provide for the conservation of the listed species, and how those impacts are likely to influence the conservation value of the affected critical habitat; and (4) Cumulative Effects, which evaluate the effects of future non-federal activities that are reasonably certain to occur in the action area on the key components of critical habitat that provide for the conservation of the listed species and how those impacts are likely to influence the conservation value of the affected critical habitat.

For purposes of making the DAM determination, the Service evaluates if the effects of the proposed federal action, taken together with cumulative effects, are likely to impair or preclude the capacity of critical habitat in the action area to serve its intended conservation function to an extent that appreciably diminishes the range wide value of critical habitat for the conservation of the listed species. The key to making that finding is understanding the value (i.e., the role) of the critical habitat in the action area for the conservation/recovery of the listed species based on the *Environmental Baseline* analysis.

Environmental Baseline and Status of the Species

Depending on the intensity of a disaster, it is possible for habitat areas directly impacted by disasters to be completely destroyed and landscapes to be severely altered. Additionally, during response and recovery efforts, areas outside of or undisturbed by a disaster may be affected due to the construction of new facilities, the relocation of existing facilities (e.g., schools or hospitals), or relocating the function of existing facilities. Therefore, the environmental baseline for the Action Area cannot be defined at this time.

California Red-Legged Frog

Listing Status

The California red-legged frog was listed as a threatened species on May 23, 1996 (Service 1996). 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 2010). At that time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010). A recovery plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

Description

The California red-legged 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); dorsolateral folds are prominent on the back. The California red-legged frog is sexually dimorphic; the females are larger than the males (Dodd 2013a, b). California red-legged frog 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 California red-legged 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 California red-legged 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 California red-legged 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 California red-legged 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 California red-legged 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 California red-legged 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 manmade ponds in valley bottoms and foothills (Jennings and Hayes 1994; Bulger et al. 2003; Stebbins 2003). Since the 1850's, manmade ponds may actually supplement stream pool breeding habit 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 2010). 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 California red-legged 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 2010).

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 California red-legged frog. Riparian habitat consists of vegetation growing nearby, 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 2010). Adult California red-legged 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, California red-legged 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 California red-legged frogs within a watershed and can be a factor limiting frog population numbers and survival.

Breeding: The California red-legged frog typically breeds between November and April; however, breeding may occur later in the Sierra Nevada Range (Barry 2002). Females deposit their egg masses on emergent vegetation, floating on or near the surface of the water. The California red-legged frog is often a prolific breeder, laying eggs during or shortly after large rainfall events in late winter and early spring. Egg masses containing 300-4,000 eggs hatch after six to fourteen days (Storer 1925; Jennings and Hayes 1994; Fellers 2005). Historically, the California red-legged 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).

California red-legged 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, California red-legged 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 California red-legged 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 California red-legged frogs collected in southern California; however, they speculated that this was opportunistic and varied based on prey availability. Vertebrates, such as Pacific tree frogs (*Hyla 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: California red-legged 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). Although, 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).

California red-legged 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, California red-legged 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 further 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 California red-legged 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, 2010). Urbanization often leaves isolated habitat fragments and creates barriers to frog dispersal.

Non-native species pose a major threat to the recovery of California red-legged 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 California red-legged frog's range. The chytrid fungus has been documented within the California red-legged 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 California red-legged 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 California red-legged 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 the California red-legged frog populations.

Recovery Plan

The Recovery Plan for the California red-legged frog identifies eight recovery units (Service 2002). Based on various regional areas of the species' range, the establishment of these recovery units are essential to its survival and recovery. 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 California red-legged 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 California red-legged frogs.

Critical Habitat

The Service designated critical habitat for the California red-legged frog on March 13, 2001 (Service 2001a) and a revised designation to the critical habitat was published on April 13, 2006 (Service 2006b) and again on March 17, 2010 (Service 2010). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer *et al.* 2010). The rule identifies approximately 1,636,609 acres within 48 critical habitat units in Alameda, Butte, Calaveras, Contra Costa, El Dorado, Kern, Kings, Los Angeles, Marin, Mendocino, Merced, Monterey, Napa, Nevada, Placer, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Cruz, Solano, Sonoma, Stanislaus, Ventura, and Yuba Counties, California.

The physical and biological features (PBFs) defined for the California red-legged frog were derived from its biological needs. The area designated as revised critical habitat provides aquatic habitat for breeding and non-breeding activities and upland habitat for shelter, foraging, predator avoidance, and dispersal across its range. The PBFs and, therefore, the resulting physical and biological features essential for the conservation of the species were determined from studies of California red-legged frog ecology. Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the PBFs essential to the conservation of the California red-legged frog are:

PBF 1 Aquatic Breeding: Habitat Standing bodies of fresh water (with salinities less than 7.0 parts per thousand), including: natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years;

PBF 2 Non-Breeding Aquatic Habitat: Freshwater and wetted riparian habitats, as described above, that may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs. Other wetland habitats considered to meet these elements include, but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period.

PBF 3 Upland Habitat: Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of one mile in most cases and comprised of various vegetation series such as grasslands, woodlands, wetland, or riparian plant species that provide the frog shelter, forage, and predator avoidance. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the wetland or riparian habitat. These upland features contribute to the filling and drying of the wetland or riparian habitat and are responsible for maintaining suitable periods of pool inundation for larval frogs and their food sources, and provide breeding, non-breeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), as well as small mammal burrows and moist leaf litter; and

PBF 4: Dispersal Habitat: Accessible upland or riparian dispersal habitat within designated units and between occupied locations within a minimum of 1 mile of each other that allow for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which do not contain barriers (e.g., heavily traveled road without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large reservoirs over 50 acres in size, or other areas that do not contain those features identified in PBFs 1, 2, or 3 as essential to the conservation of the subspecies.

With the revised designation of critical habitat, the Service intends to conserve the geographic areas containing the physical and biological features that are essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the PBFs sufficient to support the life-history functions of the species.

Based on the documented presence of this species in the Action Area, and the biology and ecology of this species, the Service has determined that the California red-legged frog is likely to be present in the Action Area and use this area for breeding, sheltering, foraging, and dispersal.

California Tiger Salamander Central Distinct Population Segment

The central California tiger salamander occurs or has the potential to occur within the Action Area in Alameda, Amador, Calaveras, Contra Costa, Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, Sacramento, San Benito, San Mateo, San Joaquin, San Luis Obispo, Santa Clara, Santa Cruz, Stanislaus, Solano, Tulare, Tuolumne, and Yolo Counties (Service 2017b). The CNDDDB (2018) lists 1,177 occurrences throughout its range. The central California tiger salamander occurs at sites on the Central Valley floor near sea level, up to a maximum elevation of roughly 3,940 feet (1,200 meters) in the Coast Ranges and 1,640 feet (500 meters) in the Sierra Nevada foothills Shaffer et al. 2013). Central California tiger salamanders are adapted to breeding in natural vernal pools and ponds; however, they now frequently use livestock ponds and other modified ephemeral and permanent ponds (Service 2014a). Upland habitats surrounding known central California tiger salamander breeding pools are usually dominated by grassland, oak savanna, or oak woodland (CNDDDB 2015). The species requires upland habitat that is occupied by small burrowing mammals such as California ground squirrel (*Otospermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) that create underground burrow systems used by the salamanders throughout the year (Shaffer et al. 1993; Seymour and Westphal 1994; Loreda et al. 1996; Pittman 2005). Large tracts of upland habitat, preferably with multiple breeding ponds, are necessary for the Central California tiger salamander to persist.

Multiple factors have contributed to population declines of the central California tiger salamander, including habitat loss and fragmentation due to agriculture and urbanization; predation from and competition with invasive species; hybridization with non-native barred tiger salamanders (*Ambystoma tigrinum*) (sometimes referred to as *Ambystoma tigrinum mavortium*) (Fitzpatrick and Shaffer 2004; Riley *et al.* 2003); mortality from road crossings; contaminants; and small mammal burrow control efforts (Service 2004, 2014a). Other threats include disease, predation, interspecific competition, exposure to contaminants, and rodent and mosquito control (Service 2004, 2014a).

The Recovery Plan for the Central California tiger salamander (Service 2017a) identifies four recovery units: Central Valley, Southern San Joaquin Valley, Bay Area and Central Coast Range. The Action Area includes all recovery units and occurrences. While there have been continued losses of central California tiger salamander habitat, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. 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 2017a).

Critical Habitat

The Service designated critical habitat for the Central California tiger salamander on September 22, 2005 (Service 2005b). The rule identifies approximately 199,109 acres within 32 critical habitat units in Alameda, Amador, Calaveras, Contra Costa, Fresno, Kern, Kings, Madera, Mariposa, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Clara, Solano, Stanislaus, Tulare, and Yolo Counties, California.

The PBFs defined for the Central California tiger salamander were derived from its biological needs. The area designated as revised critical habitat provides aquatic habitat for breeding and non-breeding activities and upland habitat for shelter, foraging, predator avoidance, and dispersal across its range. The PBFs and, therefore, the resulting physical and biological features essential for the conservation of the species were determined from studies of California tiger salamander ecology. Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the PBFs essential to the conservation of the Central California tiger salamander are:

PBF 1 Aquatic Breeding Habitat: Standing bodies of fresh water (including natural and manmade (e.g., stock) ponds, vernal pools, and other ephemeral or permanent water bodies which typically support inundation during winter rains and hold water for a minimum of 12 weeks in a year of average rainfall;

PBF 2 Upland Habitat Upland: habitats adjacent and accessible to and from breeding ponds that contain small mammal burrows or other underground habitat that Central California tiger salamanders depend upon for food, shelter, and protection from the elements and predation; and

PBF 3 Dispersal Habitat: Accessible upland dispersal habitat between occupied locations that allow for movement between such sites.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the central California tiger salamander occurs within the Action Area.

California Tiger Salamander Sonoma Distinct Population Segment

The Sonoma California tiger salamander occurs or has the potential to occur within the Action Area, in Sonoma County. The CNDDDB (2018) lists 81 currently known occurrences within Sonoma County. The Sonoma County California tiger salamander inhabits vernal pools and seasonal ponds, associated grassland, and oak savannah plant communities below 200 feet (60 meters) (Service 2003a). They also use modified ephemeral or permanent ponds and manmade features such as constructed ponds or livestock ponds (Service 2016). Sonoma County California tiger salamanders spend the majority of their lives underground in small mammal burrows in uplands, while ephemeral ponds play a critical role because they are necessary for breeding. As with the Central California tiger salamander, large tracts of upland habitat, preferably with multiple breeding ponds, are necessary for the Sonoma tiger salamander to persist (Service 2016).

The primary threats the Sonoma County California tiger salamander are the modification and destruction of suitable habitat due to urbanization, agricultural conversion, and competition with non-native plants. In addition to habitat loss, the fragmented condition of remaining Sonoma County California tiger salamander habitat restricts migration between aquatic breeding sites and upland non-breeding habitat, along with dispersal among aquatic breeding sites (Cook *et al.* 2005). Since 1991, these threats have continued to such an extent that many populations appear to have been extirpated or severely reduced in numbers.

The Recovery Plan for the Santa Rosa Plains (Service 2016) identifies three core areas for the Sonoma County California tiger salamander (Wright-Kelly Core Area, Llano Crescent-Stony Point Core Area, and West Cotati Core Area) and four bounded management areas (the Alton Lane, Horn-Hunter, Americano-Stemple, and East Cotati Management Areas). The Action Area includes all occurrences and core areas. While there have been continued losses of Central California tiger salamander habitat, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the range-wide status of this plant species, please refer to the Recovery Plan for the Santa Rosa Plains (Service 2016).

Critical Habitat

The Service designated critical habitat for the Sonoma California tiger salamander on December 14, 2005 (Service 2005c) and a revised designation to the critical habitat was published on August 31, 2011 (Service 2011a). The rule identifies approximately 47,383 acres within one critical habitat unit in Sonoma County, California.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the following PBFs are essential to the conservation of the Sonoma County California tiger salamander:

PBF 1 Aquatic Breeding Habitat: standing bodies of fresh water (including natural and manmade (e.g., stock) ponds, vernal pools and other ephemeral or permanent water bodies that typically support inundation during winter/early spring and hold water for a minimum of 12

consecutive weeks in a year of average rainfall);

PBF 2 Upland Habitat: upland habitats adjacent and accessible to and from breeding ponds that contain small mammal burrows or other underground refugia that Sonoma County California tiger salamanders depend upon for food, shelter, and protection from the elements and predation; and

PBF 3 Dispersal Habitat: accessible upland dispersal habitat between occupied locations that allow for movement between such sites.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the Sonoma California tiger salamander occurs within the Action Area.

Giant Garter Snake

The giant garter snake occurs or has the potential to occur within the Action Area in Sacramento and San Joaquin Valleys. The giant garter snake is endemic to the wetlands of the Sacramento and San Joaquin Valleys of California. The CNDDDB (2018) lists 366 occurrences of the species in Amador, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Sacramento, San Joaquin, Solano, Sutter, Yolo, and Yuba Counties. The giant garter snake now inhabits the remaining high-quality fragmented wetlands that include marshes, ponds, small lakes, low-gradient streams with silt substrates, and managed waterways (Service 2017a). Giant garter snakes typically occur in or adjacent to aquatic habitats possessing protective emergent vegetative cover that allow for foraging. Upland areas are also an important habitat component; the giant garter snake spends half of the year, roughly November through April, hibernating in uplands. The snake also is known to spend more than half the time in terrestrial environments during the active period during summer (Halstead et al. 2015b). While in such terrestrial habitats in summer, the snake is often underground, especially during extreme temperatures. Animal burrows are considered an important component of upland refugia, although other elements such as brush piles and even riprap may be used (e.g., Wylie and Amarello 2008). Although snakes can venture as much as 500 feet or more from the water edge, the overwhelming majority of both the summer and winter upland captures are within the first 10 meters from the water edge.

Threats to giant garter snake include habitat loss from urbanization, the subsequent fragmentation and population isolation, flood channel maintenance, agricultural practices (e.g., rice fallowing due to drought conditions, habitat disturbance and loss from irrigation and drainage ditch maintenance), climate change, water transfers, and invasive species. Habitat fragmentation restricts dispersal and isolates giant garter snake populations, increasing the likelihood of inbreeding, decreasing fitness, and reducing genetic diversity. These factors have ultimately resulted in the snake's extirpation from the southern one-third of its range in former wetlands associated with the historical Buena Vista, Tulare, and Kern lakebeds. In addition to habitat loss, the remaining Central Valley populations of the giant garter snake are subject to the cumulative effects of a number of other existing and potential threats, including roads and vehicular traffic, climate change, and predation by non-native species.

The Recovery Plan (Service 2017a) for the giant garter snake identifies nine recovery units that correspond directly to the nine geographically and genetically distinct populations: Butte Basin, Colusa Basin, Sutter Basin, American Basin, Yolo Basin, Delta Basin, Cosumnes-Mokelumne Basin, San Joaquin Basin, and Tulare Basin. The Action Area includes all recovery units and occurrences.

While there have been continued losses of giant garter snake habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*) (Service 2017a).

Critical Habitat

Critical habitat has not been designated for the giant garter snake.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the giant garter snake occurs within the Action Area.

Alameda Whipsnake

The Alameda whipsnake occurs or has the potential to occur within the Action Area in Alameda, Contra Costa, western San Joaquin, northern Santa Clara, and northwestern Stanislaus Counties. The CNDDDB (2018) lists 164 occurrences for Alameda whipsnake, the majority of which are in the Mount Diablo State Park and Los Vaqueros Watershed specifically, and on various East Bay Regional Park land. The current distribution is five populations within a fragmented regional metapopulation (Service 2002b). General habitat types of Alameda whipsnake include chaparral and coastal scrub, and associated native vegetation and rock land up to 500 feet (150 meters) from chaparral and coastal scrub (Service 2011e). While the Alameda whipsnake uses all slope aspects and brush community canopy closures, Swaim (1994) found areas of concentrated use on southwest-, south-, southeast-, east-, or northeast-facing slopes at both the Tilden Regional Park and the Moller Ranch.

Habitat loss and fragmentation are the primary threats to the Alameda whipsnake. Habitat loss and fragmentation from urban development, associated impacts due to increased population densities and associated highway and road construction likely has prevented or severely reduced movement of individuals between areas of suitable habitat, and exacerbated impacts of other threats. Urban development has also reduced the total amount of suitable habitat available for the Alameda whipsnake. Other current threats to the habitat of the Alameda whipsnake are incompatible grazing practices; spread of nonnative plants; increased predation from native and nonnative predators associated with urbanization; unauthorized collection; and alteration of suitable habitat from fire suppression, which creates closed-canopy habitat and increases fire severity.

The Draft Recovery Plan for the Alameda whipsnake (Service 2002b) identifies seven Recovery Units: Unit 1 (Tilden-Briones), Unit 2 (Oakland-Las Trampas), Unit 3 (Hayward-Pleasanton Ridge), Unit 4 (Mount Diablo-Black Hills), Unit 5 (Sunol-Cedar Mountain), Unit 6 (Caldecott Tunnel Corridor) and Unit 7 (Niles Canyon/Sunol Corridor). The Action Area includes all recovery units and occurrences. While there have been continued losses of Alameda whipsnake habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Alameda Whipsnake (*Masticophis lateralis euryxanthus*) 5-year Review: Summary and Evaluation (Service 2011e). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

On October 2, 2006, the Service published the final rule determining critical habitat for the Alameda whipsnake in the Federal Register (Service 2006c). The rule designates approximately 154,834 acres within six critical habitat units in Alameda, Contra Costa, Santa Clara, and San Joaquin counties, California.

Based on our current knowledge of the life history, biology, and ecology of the Alameda whipsnake and the requirements of the habitat necessary to sustain the essential life history functions of the subspecies, the Service has determined that the PBFs for the Alameda whipsnake are:

PBF 1: Scrub/shrub communities with a mosaic of open and closed canopy. Scrub/shrub vegetation dominated by low-to medium-stature woody shrubs with a mosaic of open and closed canopy as characterized by the chamise, chamise-eastwood manzanita, chaparral whitethorn, and interior live oak shrub vegetation series (as identified in the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995), A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988), and California Wildlife Habitat Relationship System (CDFG 1998)), occurring at elevations from sea level to approximately 3,850 feet. Such scrub/ shrub vegetation within these series forms a pattern of open and closed canopy used by the Alameda whipsnake for shelter from predators; temperature regulation because it provides sunny and shady locations; prey-viewing opportunities; and nesting habitat and substrate. These features contribute to support a prey base consisting of western fence lizards and other prey species such as skinks, frogs, snakes, and buds;

PBF 2: Woodland or annual grassland plant communities contiguous to lands that contain PBF 1. Woodland or annual grassland vegetation series comprised of one or more of the following: blue oak, coast live oak, California bay, California buckeye, and California annual grassland vegetation series (as identified in the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995), A Guide to Wildlife Habitats of California ((Mayer and Laudenslayer 1988), and California Wildlife Habitat Relationship System (CDFG 1998)) are PBF 2. This mosaic of vegetation is essential to the conservation of the Alameda whipsnake because it supports a prey base, consisting of western fence lizards and other prey species such as skinks, frogs, snakes, and buds. This provides opportunities for foraging by allowing snakes to come in contact with and visualize, track, and capture prey (especially western fence lizards along with other prey such as skinks, frogs, buds); short and long distance dispersal within, between, or to adjacent areas containing essential features (i.e., PBF 1 or PBF 3); and contact with other Alameda whipsnakes for mating and reproduction; and

PBF 3: Lands containing rock outcrops, talus, and small mammal burrows within or adjacent to PBF 1 and or PBF 2. These areas are essential to the conservation of the Alameda whipsnake because they are used for retreats (shelter), hibernacula, foraging and dispersal, and provide additional prey population support functions. Refer to the final designation of critical habitat for additional information.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the Alameda whipsnake occurs within the Action Area.

Least Bell's Vireo

The least Bell's vireo occurs or has the potential to occur within the Action Area in Sacramento, San Joaquin, Santa Clara, Tulare, Kern, Inyo, Yolo and Stanislaus Counties. The CNDDDB (2018) lists 483 occurrences for the species. Least Bell's vireos are obligate riparian breeders, inhabiting structurally diverse woodlands along watercourses. They occur in a diversity of riparian habitat types including cottonwood-willow woodlands/forests, oaks woodlands, and mule fat scrub. (Service 1998d).

Threats to the least Bell's vireo include riparian habitat loss from agricultural, urban, and commercial developments, flood control and river channelization projects, livestock grazing and other activities, which have severely restricted the species' range and fragmented remaining habitat. Because of widespread riparian habitat losses, remaining breeding birds are segregated into small, disjunct and widely dispersed remnant populations, making them more vulnerable to extirpation than larger populations are (Franzreb 1989). When local habitats are lost and no nearby habitat is available for dispersal until damaged riparian habitat regenerates, vireos may be forced into habitats less suitable to their nesting and foraging requirements. This could result in increased mortality, reduced reproductive success, and declining population numbers (Franzreb 1989). Vireos also suffer from limited reproductive success as the result of nest parasitism by the brown-headed cowbird (*Molothrus ater*), which combined with habitat loss has resulted in a decline in the overall vireo population to about 300 breeding pairs.

The Draft Recovery Plan for the least Bell's vireo (Service 1998d) does not identify Recovery Units. However, it identifies population/metapopulation units needed for recovery. These include the San Joaquin Valley and the Sacramento Valley. The Action Area includes all occurrences and units. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Least Bell's Vireo (*Vireo bellii pusillus*) 5-year Review: Summary and Evaluation (Service 2006d). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

The Service designated critical habitat for the least Bell's vireo on February 2, 1994 (Service 1994). This rule identifies 38,000 acres within 10 critical habitat units in Los Angeles, Riverside, San Bernardino, San Diego, Santa Barbara, and Ventura Counties, California. No units are within the Action Area for the Sacramento Fish and Wildlife Office.

The PBFs of critical habitat for the least Bell's vireo are the riverine and floodplain habitats (particularly willow-dominated riparian woodland with dense understory vegetation maintained, in part, in a non-climax stage by periodic floods or other agents) and adjacent coastal sage scrub, chaparral, or other upland plant communities. Vireos meet their survival and reproductive needs (food, cover, nest sites, and nestling and fledgling protection) within the riparian zone in most areas. In some areas they also forage in adjacent upland habitats.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the least Bell's vireo occurs within the Action Area.

Tidewater Goby

The tidewater goby (*Eucyclogobius newberryi*), occurs within the Action Area in Sonoma, Marin, Alameda, Contra Costa, San Francisco and San Mateo Counties. The CNDDDB (2018) lists 127

occurrences. The geographic range of the tidewater goby is limited to the coast of California (Eschmeyer *et al.* 1983, p. 262; Swift *et al.* 1989, p. 12) where it inhabits discrete locations of brackish water along the California coast. Tidewater goby localities closely correspond to major stream drainages (Swift *et al.* 1989; Habel and Armstrong 1977) where they generally select habitat in the upper estuary, usually within the fresh-saltwater interface. Tidewater gobies range upstream a short distance into fresh water, and downstream into water of up to about 75 percent sea water (28 parts per thousand). The species is typically found in salinities of less than 12 parts per thousand (Swift *et al.* 1989). These conditions occur in two relatively distinct situations: 1) the upper edge of tidal bays, such as Tomales, Bolinas, and San Francisco Bays near the entrance of freshwater tributaries and 2) the coastal lagoons formed at the mouths of coastal rivers, streams, or seasonally wet canyons.

Threats to the tidewater goby include loss of wetland and associated habitat due to development along the coast. These include wetland draining and filling for industrial and residential development; dredging to develop navigation channels, harbors, and marinas; hydrologic changes such as water diversion and related changes in salinity, groundwater overdrafting, channelization, and sand bar breaching (Service 2005d).

The Recovery Plan for the Tidewater Goby (Service 2005d) identifies one Recovery Unit, the Greater Bay Unit, within the Sacramento Fish and Wildlife Office jurisdiction. The Action Area includes all occurrences and this recovery unit. For the most recent comprehensive assessment of the species' range-wide status, please refer to the 12 month Finding and Proposed Rule to Reclassify the Tidewater Goby from Endangered to Threatened (Service 2014a).

Critical Habitat

The Service designated critical habitat for the tidewater goby on November 20, 2000 (Service 2000), and a revised designation to the critical habitat was published on January 31, 2008 (Service 2008a) and again on February 6, 2013 (Service 2013b). This rule identifies 12,156 acres of within 44 critical habitat units in Del Norte, Humboldt, Mendocino, Sonoma, Marin, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties, California. There is approximately 1,728 acres of designated critical habitat for the tidewater goby within the jurisdictional boundary of the Sacramento Fish and Wildlife Office.

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the physical and biological features (PBFs) specific to the tidewater goby are:

PBF-1: Persistent, shallow (in the range of approximately 0.3 to 6.6 feet (0.1 to 2 meters)), still-to-slow-moving lagoons, estuaries, and coastal streams with salinity up to 12 parts per thousand, which provide adequate space for normal behavior and individual an population growth that contain one or more of the following:

- a. Substrates (e.g., sand, silt, mud) suitable for the construction of burrows for reproduction;
- b. Submerged and emergent aquatic vegetation, such as *Potamogeton pectinatus*, *Ruppia maritima*, *Typha latifolia*, and *Scirpus* spp., that provides protection from predators and high flow events; or
- c. Presence of a sandbar(s) across the mouth of a lagoon or estuary during the late spring, summer, and fall that closes or partially closes the lagoon or estuary, thereby providing relatively stable water levels and salinity.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the tidewater goby occurs within the Action Area.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*), occurs within the California Central Valley. The CNDDDB (2018) lists 271 occurrences for this species. The species' range extends from approximately Shasta County south to Fresno County, including the valley floor and lower foothills. The majority of VELB are documented below 500 feet (152 meters) in elevation. VELB habitat includes both riparian and non-riparian areas where elderberry shrubs are present. They occur only in association with its host plant, elderberry (*Sambucus* spp.).

The primary threat to VELB and its elderberry shrub host plant are the significant loss, degradation or modification of riparian and other natural habitats. The species is estimated to occupy only 16 to 21 percent of its historical range. The result is a rare, patchy distribution within the limited and fragmented riparian areas within the California Central Valley. Riparian habitat loss is associated with agriculture conversion, levee construction and maintenance and stream channelization, and the impacts associated with urbanization. Impacts to elderberry shrubs associated maintenance activities include pruning of elderberry shrub branches along levees, roadways, trails, and other areas to control visual obstructions, or for aesthetic reasons. Invasive nonnative plants may affect the species through competition for space and resources with its host plant (Service 2014c).

The recovery plan for VELB does not identify recovery units. However, the Action Area includes all known occurrences and habitat for the species. While there have been continued losses of VELB habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the range-wide status of the beetle, please refer to the Withdrawal of the Proposed Rule to Remove the Valley Elderberry Longhorn Beetle from the Federal List of Endangered and Threatened Wildlife (Service 2014c).

Critical Habitat

On August 8, 1980, the final rule determining critical habitat for the valley elderberry longhorn beetle was published in the Federal Register on August 8, 1980 (Service 1980). Within the Action Area, the rule designates approximately 515 acres within two critical habitat units in Sacramento County, California. These designated areas of critical habitat are the American River Parkway Zone, an area along the lower American River at Goethe and Ancil Hoffman Parks, and the Sacramento Zone, an area located approximately one-half-mile from the American River downstream from the American River Parkway Zone. These critical habitat areas support large numbers of mature elderberry shrubs with extensive evidence of beetle use.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the VELB occurs within the Action Area.

California Freshwater Shrimp

The California freshwater shrimp occurs or has the potential to occur within the Action Area in Marin, Napa, and Sonoma Counties. The CNDDDB (2018) lists 20 occurrences for the California freshwater shrimp. At the time of the most recent 5-year review, California freshwater shrimp were

found in 23 streams: Atascadero Creek, Big Austin Creek, Blucher Creek, Bud Creek, Cheda Creek, East Austin Creek, Ebabias Creek, Fallon Creek, Franz Creek, Garnett Creek, Green Valley Creek, Huichica Creek and an unnamed tributary to Huichica Creek, Jonive Creek, Keys Creek, Lagunitas Creek, Napa River, Olema Creek, Redwood Creek, Salmon Creek, Sonoma Creek, Stemple Creek, Walker Creek, and Yulupa Creek (Service 2011c). CNDDDB identifies one additional stream as having California freshwater shrimp: Hudspeth Creek. The California freshwater shrimp is found in low elevation (less than 116 meters, 380 feet), low gradient (generally less than 1 percent) perennial freshwater streams or intermittent streams with perennial pools where banks are structurally diverse with undercut banks, exposed roots, overhanging woody debris, or overhanging vegetation (Service 1998b).

Threats to the California freshwater shrimp and its habitat include agricultural activities, residential development, water pollution, water diversions, recreation activities (summer dams), chemicals, and channelization. Additional threats include gravel mining, water development, urban runoff, flood control, and bank protection (Service 2011c).

The Recovery Plan for the California Freshwater Shrimp (Service 1998b) does not have recovery units *per se*; however, it does identify four watersheds with known populations that require a watershed plan for down listing. These watersheds are the tributary streams in the lower Russian River drainage, coastal streams flowing directly into the Pacific Ocean, streams draining into Tomales Bay, and streams flowing into San Pablo Bay. The Action Area includes all occurrences. While there have been continued losses of California freshwater shrimp habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the range-wide status, please refer to the California freshwater shrimp (*Syncaris pacifica*) 5-Year Review: Summary and Evaluation (Service 2011c). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

Critical habitat has not been designated for the California freshwater shrimp.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the California freshwater shrimp occurs within the Action Area.

Bay Checkerspot Butterfly

The Bay checkerspot butterfly occurs or has the potential to occur within the Action Area in Santa Clara and San Mateo Counties. The CNDDDB (2018) lists 19 occurrences for the Bay checkerspot butterfly. Currently, the species is largely restricted to grasslands with host plants on serpentine-like soils in Santa Clara and San Mateo Counties. It also occurs in non-serpentine annual grassland occupied by its host plants on San Bruno Mountain in San Mateo County, where it was extirpated until recently reintroduced to serpentine grasslands in Edgewood Park and non-serpentine annual grasslands at San Bruno Mountain. The primary larval host plant for the butterfly is a small, annual, native plantain (*Plantago erecta*) (Service 1998c). The butterfly also frequently requires the presence of a secondary host plant, either purple owl's-clover (*Castilleja densiflora*) or exserted paintbrush (*Castilleja exserta*) (Singer 1972, p. 76; Murphy and Ehrlich 1980, p. 316; Weiss 1999, p. 1478) since owl's clover and the paintbrush remain edible longer than the plantain.

The primary threats to the Bay checkerspot butterfly are habitat degradation and loss caused by non-native plants displacing or reducing native food plants, and urban and suburban development (Service 1998c). Habitat loss has reduced the number and size of extant Bay checkerspot butterfly populations. Smaller populations are more vulnerable to extinction. Loss of serpentine of habitats or reduction of these habitats to non-viable sizes has increased the distance between populations and making genetic exchange and recolonization more difficult (Service 1998c). Invasion of non-native species into native grasslands is also a major cause of decline, choking out native food and host plant species. Trampling associated with increased human activity also threatens eggs, larvae and adult butterflies. Hikers, bicyclists, and off-road vehicles can crush larvae. These activities may also harm food plants, indirectly decreasing larval survival. Other noted threats include illegal collection, inappropriate grazing practices, pesticide use and road kill.

The Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (Service 1998c), which includes the Bay checkerspot butterfly, identifies five core areas: one on the San Francisco peninsula in San Mateo County (Edgewood County Park) and four in Santa Clara County (Coyote Ridge in Santa Clara County), as well as a number of satellite populations. The Action Area includes all occurrences and recovery areas. While there have been continued losses of Bay checkerspot butterfly habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the range-wide status, please refer to the Bay Checkerspot Butterfly (*Euphydryas editha bayensis*) 5-Year Review: Summary and Evaluation (Service 2009a). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

The Service designated critical habitat for the Bay checkerspot butterfly on February 29, 2001 (Service 2001b) and a revised designation to the critical habitat was published on August 26, 2008 (Service 2008b). The rule identifies 18,293 acres within 13 critical habitat units in San Mateo and Santa Clara Counties, California. All of these acres and units are within the Sacramento Fish and Wildlife Office Action Area.

Within these units that are considered to be essential for the conservation and recovery of the Bay checkerspot butterfly, the Service has determined the following physical and biological features:

PBF 1: The presence of annual or perennial grasslands with little to no overstory that provide north-south and east-west slopes with a tilt of more than 7 degrees for larval host plant survival during periods of atypical weather (for example, drought). Common grassland species include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), California oatgrass (*Danthonia californica*), Italian ryegrass (*Lolium multiflorum*), purple needlegrass (*Nassella pulchra*), and Idaho fescue (*Festuca idahoensis*); less abundant in these grasslands are annual and perennial forbs such as filaree (*Erodium botrys*), true clovers (*Trifolium* spp.), and dwarf plantain (*Plantago erecta*). These species, with the exception of the dwarf plantain, are not required by the Bay checkerspot butterfly, but merely are provided here as an example of species commonly found in California grasslands;

PBF 2: The presence of the primary larval host plant, dwarf plantain (*Plantago erecta*), and at least one of the secondary host plants, purple owl's-clover (*Castilleja densiflora*) or exerted paintbrush (*Castilleja exserta*), are required for reproduction, feeding, and larval development;

PBF 3: The presence of adult nectar sources for feeding. Common nectar sources include desert parsley (*Lomatium* spp.), California goldfields (*Lasthenia californica*), tidy-tips (*Layia platyglossa*), sea

muilla (*Muilla maritima*), scytheleaf onion (*Allium falcifolium*), flase babystars (*Linanthus androsaceus*), and intermediate fiddleneck (*Amsinckia intermedia*);

PBF 4: Soils derived from serpentinite ultramafic rock (Montara, Climara, Henneke, Hentine, and Obispo soil series) or similar soils (Inks, Candlestick, Los Gatos, Fagan, and Barnabe soil series) that provide areas with fewer aggressive, nonnative plant species for larval host plant and adult nectar plant survival and reproduction; and

PBF 5: The presence of stable holes and cracks in the soil, and surface rock outcrops that provide shelter for the larval stage of the Bay checkerspot butterfly during summer diapause.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the Bay checkerspot butterfly occurs within the Action Area.

Callippe Silverspot Butterfly

The callippe silverspot butterfly occurs or has the potential to occur within the Action Area in San Mateo, Solano, Sonoma and Alameda Counties. The CNDDDB (2018) lists 12 occurrences for the callippe silverspot butterfly. The species currently is known from isolated populations occurring in grasslands with its host plant in northern San Mateo County (San Bruno Mountain.), Solano County (Cordelia Hills), Sonoma County (Sears Point), Alameda County (hills near Pleasanton, watershed east of Calaveras Reservoir) (Terry, J, pers. comm., 2018). The habitat for the callippe silverspot butterfly is native grasslands and associated habitats in the San Francisco Bay area (Service 1997). These grasslands are associated with deep soils that have established grass cover and contain the larval host plant *Viola pedunculata* (Service 2009b).

The primary threats to the callippe silverspot butterfly include habitat loss and fragmentation resulting from urbanization throughout the greater San Francisco Bay area. As habitat has been lost and fragmented, the small populations have become increasingly isolated, eventually affecting dispersal and genetic exchange between populations (Service 1997). Invasion of non-native plants and shrubs is another significant threat to the callippe silverspot butterfly. Non-native species have displaced grassland habitats; invasive grasses and herbs displace callippe silverspot butterfly host plants and food plants, or make them difficult to access. Trampling by increased human activity also threatens this species. Hikers, bicyclists, and off-road vehicles can kill larvae. These activities may also harm food plant, indirectly decreasing larval survival (Service 2009b).

There is no recovery plan for this species. The Action Area includes all occurrences. While there have been continued losses of callippe silverspot butterfly habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the range-wide status, please refer to the Callippe Silverspot Butterfly (*Speyeria callippe callippe*) 5-Year Review: Summary and Evaluation (Service 2009b). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

No critical habitat has been designated for the callippe silverspot butterfly.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the callippe silverspot butterfly occurs within the Action Area.

Myrtle's Silverspot Butterfly

The Myrtle's silverspot butterfly occurs or has the potential to occur within the Action Area in Marin and Sonoma Counties. The CNDDDB (2018) lists 17 occurrences for the Myrtle's silverspot butterfly. The species currently is known to occur up to 3 miles inland in Marin and Sonoma Counties: from Point Reyes in Marin County and north to the mouth of Russian River in Jenner in Sonoma County (Terry, J., pers. comm. 2018). The Myrtle's silverspot butterfly occurs in association with coastal dunes, coastal scrub and coastal prairies that are protected from winds (Launer *et al.* 1992). One of the critical factors in the distribution of the Myrtle's silverspot butterfly is the presence of its host plant, the western dog violet (*Viola adunca*) (Service 2009c).

Development is the primary threat to the Myrtle's silverspot butterfly, and development of the remaining habitat for this species will remain a threat until sufficient habitat for the species is acquired and protected. Increased human activity is also threat; foot traffic, cyclists and off-road vehicles pose hazards to the larval stages of the butterfly by inadvertently trampling their host plant (Service 1992).

The Recovery Plan for the Myrtle's silverspot butterfly does not identify recovery units; however, it does state that for downlisting, habitat in northwestern Marin and southwestern Sonoma counties must be protected in perpetuity (Service 1998a). The Action Area includes these key recovery areas and all occurrences. While there have been continued losses of Myrtle's silverspot butterfly habitat throughout its range, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the range-wide status, please refer to the Myrtle's Silverspot Butterfly (*Speyeria zerene myrtleae*) 5-Year Review: Summary and Evaluation (Service 2009c). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

Critical habitat has not been designated for the Myrtle's silverspot butterfly.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that the Myrtle's silverspot butterfly occurs within the Action Area.

Vernal Pool Branchiopods

In California, primary vernal pool habitat forms a discontinuous ring around the margins of the California Central Valley. The majority of pools occur on the older alluvial terraces along the eastern margin of the valley, but vernal pool habitat also occurs on high terraces on the eastern sides of the inner Coast Ranges and an additional band through the valley center. Vernal pool complexes are typified by a range of aquatic habitats, although some locales have more pools of one type (e.g., small, shallow, and short-lived, or playa-type pools, etc.) than other areas (Holland 1998a). Several counties (Glenn, Colusa, and Yolo) have little potential habitat for the branchiopods because they lack substantial areas of hardpan soils and have little flat land that is not in agriculture. Tehama, Yuba, Solano, and Madera counties contain the highest-density areas of vernal pools, while

Sacramento, Merced, and Fresno counties have many areas with high-density pools. Of the 20 Central Valley counties, Yuba, Placer, Sacramento, and Madera counties have the highest average densities (Holland 1978). These areas of high-density habitat likely are especially important to the population dynamics of vernal pool branchiopods such as the vernal pool fairy. Up to 85 percent of vernal pools may lack large vernal pool branchiopods (Helm 1998). Holland (1998) estimated that extant vernal pool landscapes throughout the Central Valley had fallen below 1,000,000 acres, or roughly one quarter of the valley's estimated original vernal pool habitat.

In California's Central Coast Ranges, vernal pool habitats are more thinly distributed than in the Central Valley, with only 42,488 acres of vernal pool habitat occurring out of a total of 9,574,099 acres in the region (Holland 2003). Habitat patches are smaller and more isolated; however, loss of vernal pool habitat in this area also appears to be accelerating. Holland (2003) recorded a 2-3 percent annual loss rate between 1994 and 2000, and almost a 12 percent loss between 2000 and 2001, with the loss often due to agricultural conversion (to hay or vineyards).

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp occurs or has the potential to occur within the Action Area where its vernal pool habitat occurs. The CNDDDB (2018) lists 766 occurrences for the vernal pool fairy shrimp. In California, the range of the species extends from disjunct locations in Riverside County and the Coast Ranges, north through Central Valley grasslands to Tehama County (Service 2007a). The vernal pool fairy shrimp is endemic to California where it exists only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands in California (Helm 1998).

The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005a) identifies 45 core recovery areas in 13 vernal pool regions for the vernal pool fairy shrimp: Carrizo Region (4 core areas), Central Coast Region (2 core areas), Klamath Mountain Region (3 core areas), Lake-Napa Region (1 core area), Livermore Region (1 core area), Northeast Sacramento (4 core areas), Northwest Sacramento (3 core areas), San Joaquin Region (2 core areas), Santa Barbara Region (2 core areas), Solano-Colusa Region (3 core areas), Southeast Sacramento (4 core areas), Southern Sierra Foothills (6 core areas), and Western Riverside Region (3 core areas). The vernal pool fairy shrimp is presumed to occur in at least one pool in each of these core areas (Service 2005a). The Action Area includes all of these 45 core areas and all occurrences. While there have been continued losses of vernal pool fairy shrimp habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) 5-Year Review: Summary and Evaluation (Service 2007a). No change in the species' listing status was recommended in this species' 5-year review.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp occurs or has the potential to occur within the Action Area within its patchy distribution across the California Central Valley, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties. The CNDDDB (2018) lists 324 occurrences for the vernal pool tadpole shrimp. The vernal pool tadpole shrimp occurs only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands in California (Helm 1998).

The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005d) identifies 24 core recovery areas found within seven vernal pool regions for this species: Central Coast Region (1 core area), Northeast Sacramento Region (5 core areas), Northwest Sacramento Region (2 core areas), San Joaquin Region (2 core areas), Solano-Colusa Region (5 core areas), Southeast Sacramento Region (4 core areas) and Southern Sierra Foothills Region (5 core areas). The Action Area includes all of these 24 core areas. While there have been continued losses of vernal pool tadpole shrimp habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Vernal Pool Tadpole Shrimp (*Lepidurus packardii*) 5-Year Review: Summary and Evaluation (Service 2007b). No change in the species' listing status was recommended in this species' 5-year review.

Conservancy Fairy Shrimp

The conservancy fairy shrimp occurs or has the potential to occur within the Action Area in Butte, Glenn, Tehama, Merced, Placer, Solano, Stanislaus, Yolo Counties, and one disjunct population on the Central Coast of Ventura County (Service 2012b). The CNDDDB (2018) lists 43 occurrences for the conservancy fairy shrimp. The majority of sites inhabited by this species are relatively large and turbid vernal pools called playa pools (Helm 1998, Eriksen and Belk 1999, Vollmar 2002, Service 2005a). Playa pools typically remain inundated much longer than most vernal pools, often well into the summer, even though they normally have maximum depths comparable to vernal pools (Vollmar 2002).

The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005e) identifies eight core recovery areas found within five vernal pool regions for the conservancy fairy shrimp: Vina Plains (Northeast Sacramento Region), Caswell and Grasslands Ecological Area (San Joaquin Region), Ventura County (Santa Barbara Region), Jepson Prairie, Sacramento National Wildlife Refuge and Collinsville (Solano-Colusa Region), and Madera (Southern Sierra Foothills Region). The Action Area includes all occurrences and core recovery areas. While there have been continued losses of conservancy fairy shrimp habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Conservancy Fairy Shrimp (*Branchinecta conservatio*) 5-year Review: Summary and Evaluation (Service 2012b). No change in the species' listing status was recommended in this species' 5-year review.

Longhorn Fairy Shrimp

The longhorn fairy shrimp occurs or has the potential to occur within the Action Area in Alameda, Contra Costa, Fresno, Merced and San Luis Obispo Counties (Service 2012a). The CNDDDB (2018) lists 20 occurrences for this species. The longhorn fairy shrimp is known only from a few localities, and these sites contain very different types of vernal pool habitats. Longhorn fairy shrimp in the Livermore Vernal Pool Region in Contra Costa and Alameda Counties live in small, clear, sandstone outcrop vernal pools that are sometimes no larger than 3.3 feet (1 m) in diameter, have a pH near neutral, and very low alkalinity and conductivity. Water temperatures in these vernal pools have been measured between 50 and 64 degrees Fahrenheit (Helm 1998). In the San Joaquin and Carrizo Vernal Pool Regions, the longhorn fairy shrimp occur in clear to turbid, grassland pools that may be as large as 203.4 feet (61.7 m) in diameter. Water temperatures in these grassland vernal pools are also warmer, between 50 to 82 degrees Fahrenheit (Helm 1998, Eriksen and Belk 1999).

The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005e) identifies five core recovery areas found within three vernal pool regions for the longhorn fairy shrimp: North Carrizo Plain and South Carrizo Plain (Carrizo Region), Altamont Hills (Livermore Region), and Grasslands Ecological Area (San Joaquin Region). The Action Area includes all occurrences and core areas. While there have been continued losses of longhorn fairy shrimp habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Longhorn Fairy Shrimp (*Branchinecta longiantenna*) 5-year Review: Summary and Evaluation (Service 2012a). No change in the species' listing status was recommended in this species' 5-year review.

Threats to Vernal Pool Branchiopods

Habitat loss and fragmentation is the greatest threat to the survival and recovery of vernal pool species. Habitat loss and fragmentation generally is a result of urbanization, agricultural conversion, and mining. Habitat loss occurs in the form of habitat alteration and degradation resulting from changes to natural hydrology; invasive species; incompatible grazing regimes, including insufficient grazing for prolonged periods; infrastructure projects such as roads, water storage and conveyance and utilities; recreational activities such as off-highway vehicles and hiking; erosion; and contamination. This habitat loss and fragmentation contributes to the isolation, fragmentation and functionality of vernal pool habitats. Direct loss of habitat generally represents irreversible damage to vernal pools; it disrupts the physical processes conducive to functional vernal pool ecosystems. The more severe the alteration and destruction, the more difficult it is to recover such areas in the future due to disruption of soil formations, hydrology, seed banks, and other components of a functional vernal pool ecosystem.

Critical Habitat

The Service designated critical habitat collectively for four vernal pool branchiopods and 11 vernal pool plants in 34 counties in California and one county in southern Oregon on August 6, 2003 (Service 2003b) and a revised designation of critical habitat of approximately 858,846 acres was published on August 11, 2005 (Service 2005a).

The PBFs of critical habitat for the four vernal pool branchiopods are the habitat components that provide:

PBF 1: Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools, and providing for dispersal and promoting hydroperiods of adequate length in the pools;

PBF 2: Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of:

- 18 days for vernal pool fairy shrimp;
- 23 days for longhorn fairy shrimp;
- 19 days for conservancy fairy shrimp;
- 41 days for vernal pool tadpole shrimp;

in all but the driest years. Thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the

development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands;

PBF 3: Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and

PBF 4: Structure within the pools consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.

On February 10, 2006, the Service published a final rule providing species-specific unit descriptions and maps identifying the critical habitat for each individual species. The rule identified the following units and acres within the Action Area for these four vernal pool branchiopods species.

- 597,821 acres within 32 critical habitat units for the vernal pool fairy shrimp in Jackson County, Oregon, and Alameda, Amador, Contra Costa, Fresno, Kings, Mariposa, Monterey, Napa, Placer, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Stanislaus, Tehama, Tulare, Ventura, and Yuba counties, California.
- 13,557 acres within three critical habitat units for the longhorn fairy shrimp in Alameda, Contra Costa, Merced, and San Luis Obispo counties, California.
- 161,786 acres within six critical habitat units for the conservancy fairy shrimp in Butte, Colusa, Mariposa, Merced, Solano, Stanislaus, Tehama, and Ventura Counties, California.
- 228,785 acres within 16 critical habitat units for the vernal pool tadpole shrimp in Alameda, Amador, Butte, Colusa, Fresno, Kings, Madera, Mariposa, Merced, Sacramento, Shasta, Solano, Stanislaus, Tehama, Tulare, Yolo, and Yuba Counties, California.

Based on the documented presence of these four vernal pool branchiopod species in the Action Area, and the biology and ecology of these species, the Service has determined that vernal pool fairy shrimp, vernal pool tadpole shrimp, conservancy fairy shrimp and longhorn fairy shrimp occur within the Action Area.

Sacramento Orcutt Grass

The Sacramento Orcutt grass occurs or has the potential to occur within the Action Area in Sacramento County. The CNDDDB (2018) lists 12 occurrences for the species. Sacramento Orcutt grass is an annual grass that occurs in vernal pools on high terrace sites in a narrow zone of remnant depositional stream terraces at the base of the Sierra Nevada foothills (Stone *et al.* 1988).

The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005e), which includes the Sacramento Orcutt grass, identifies three core areas for the species' recovery: Cosumnes/Rancho Seco, Mather and Phoenix Field and Park, all within the Southeast Sacramento vernal pool region. The Action Area includes all occurrences and core areas. While there have been continued losses of Sacramento Orcutt grass habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of

jeopardy for the species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the Sacramento Orcutt Grass (*Orcuttia viscida*) 5-Year Review: Summary and Evaluation (Service 2008c). No change in the species' listing status was recommended in this species' 5-year review.

Critical Habitat

The Service designated critical habitat collectively for four vernal pool branchiopods and 11 vernal pool plants in 34 counties in California and one county in southern Oregon on August 6, 2003 (Service 2003b) and a revised designation of critical habitat of approximately 858,846 acres was published on August 11, 2005 (Service 2005a).

The PBFs of critical habitat for the Sacramento Orcutt grass are habitat components that provide:

PBF 1: Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools and providing for dispersal and promoting hydroperiods of adequate length in the pools;

PBF 2: Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species typically exclude both native and nonnative upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands.

On February 10, 2006, the Service (2006a) published a final rule providing species-specific unit descriptions and maps identifying the critical habitat for each individual species. The rule designated 33,273 acres for the Sacramento Orcutt grass within three critical habitat units in Amador and Sacramento Counties.

Threats

Habitat loss and fragmentation is the largest threat to the survival and recovery of the vernal pool species. Habitat loss and fragmentation generally is a result of urbanization, agricultural conversion, and mining. Habitat loss also occurs in the form of habitat alteration and degradation resulting from changes to natural hydrology; invasive species; incompatible grazing regimes, including insufficient grazing for prolonged periods; infrastructure projects such as roads, water storage and conveyance and utilities; recreational activities such as off-highway vehicles and hiking; erosion; and contamination. This habitat loss and fragmentation contributes to the isolation, fragmentation and functionality of vernal pool habitats. Direct loss of habitat generally represents irreversible damage to vernal pools; it disrupts the physical processes conducive to functional vernal pool ecosystems. The more severe the alteration and destruction, the more difficult it is to recover such areas in the future due to disruption of soil formations, hydrology, seed banks, and other components of a functional vernal pool ecosystem. An additional threat to vernal pool plants is the decline of essential pollinators due to habitat fragmentation and the loss of the upland habitat that supports pollinator species. Habitat loss and degradation interferes with reproduction and dispersal of pollinators. It is likely that many of these pollinators require the uplands surrounding vernal pools for completion of their life cycle. For insect pollinated plants, the reduction of available habitat for

pollinators could decrease pollinator populations, which could reduce reproductive success of the plants.

Based on occurrence records, the presence of suitable habitat, and the biology and ecology of the species, the Service has determined that Sacramento Orcutt grass occurs within the Action Area.

Effects of the Proposed Action

The federally-listed species addressed in this programmatic consultation may be directly or indirectly harmed (e.g., killed or injured) as a result of implementing FEMA-funded projects. The effects to listed species addressed in this programmatic biological opinion are project-specific and widely variable. The likelihood that a proposed project will adversely affect covered species or their critical habitats depends on a variety of factors, including, but not limited to, the conditions present in the individual project action area, the probability of species occurrence, timing of the activity, and the quality and quantity of the habitat within the project footprint and its vicinity. For proposed projects covered under the programmatic biological opinion, we anticipate that implementation of general avoidance and minimization measures and species-specific conservation measures, as proposed, will reduce adverse effects, in some instances to levels that are insignificant, discountable, or wholly beneficial.

Activities that are likely to cause direct or indirect harm to covered species and their habitats include grading and earthmoving; road construction; excavation; maneuvering vehicles and heavy equipment on and off roads; discharge of contaminants into soil and water; production of noise, vibration, and dust; vegetation management; prescribed or accidental fire; placement and removal of cofferdams and other temporary water diversions in creeks and rivers; discharge of fill and sediments in water; and placement of riprap and water control structures. Some animal species may occur in close proximity to disaster-affected areas to be indirectly affected by project activities that extend beyond the damaged features themselves, which may include access routes, staging areas, borrow sites, and downstream effects in watercourses. Indirect effects from the covered activities can affect a species ability to breed, feed, disperse, and find shelter. Such indirect effects include the removal of cover and/or habitat, which in turn make the species more vulnerable to predation as they need to travel further to find suitable areas to breed, feed and/or find shelter. Disturbing or displacing species or host plants can reduce the likelihood of breeding, feeding, or finding shelter. Invasive non-native species may be introduced which can result in increased interspecific competition and displacement, and introductions of pathogens can lead to decreased fitness of species and make them more vulnerable to diseases.

Projects funded by FEMA under the Disaster, Mitigation, and Preparedness Programs are limited to repair and replacement of existing facilities and natural areas, rather than newer or expanded construction. Also, many of the projects are in previously disturbed areas. Many of the effects of the proposed projects funded by FEMA will be temporary and localized; conditions are expected to return to baseline levels or become better over time periods ranging from minutes (noise) to a few years (recovery of vegetation). Other actions, while seemingly minor when implemented by themselves, may have cumulative, long-term effects over time. For example, the repair of multiple erosion sites along an earthen canal or creek with riprap will have long-term, cumulative effects both upstream and downstream of each individual project site by hardening the embankment, thereby having an effect on the system's water velocity, transport volume, and other parameters, which may include water quality.

Effects to all covered Species

The following effects are applicable to both aquatic and terrestrial covered species.

Loss and Disturbance of Habitat

All of the covered species may be directly or indirectly affected by temporary disturbance to, or permanent loss of, suitable habitats as a result of proposed projects. Examples of activities that may temporarily or permanently disturb or remove aquatic or terrestrial habitats can be found in the Description of the Proposed Programmatic Actions section of this programmatic biological opinion.

Temporary and permanent habitat disturbances can adversely affect covered species by reducing the availability of key habitat components, which species need for breeding, feeding, sheltering, and dispersing. Habitat loss and disturbance may reduce prey availability and foraging habitat, remove or damage host-plant species, reduce or remove shade cover, or cause incremental degradation or temperature increases to in-water habitats. Additionally, loss of habitat can cause an increase in both interspecific and intraspecific competition leading to displacement, which ultimately decrease an individual's fitness through reduced survival and reproductive success due to physical and physiological constraints. Construction-related habitat disturbances may cause mortality or non-lethal harm such as injury to surviving individuals by being crushed by equipment, maintenance materials, or worker foot traffic.

Although permanent loss or alteration of habitat may occur as part of a Subapplicant's proposed project, this will occur infrequently, and most project footprints are small (many less than one acre), which will affect only small areas. For projects such as fuel reduction, erosion, and sedimentation control, these adverse effects may occur in the short term, but may ultimately result in beneficial effects to plants, wildlife, and covered species.

Implementation of the proposed conservation measures will avoid or reduce the extent and severity of adverse effects. For example, requirements to conduct work outside of the sensitive periods, for breeding, nesting, migration and dispersal periods for covered species, will reduce the effects of such activities which include human disturbance and vibration and noise of construction equipment. Restoring areas to pre-project conditions will enable species to move back into areas after project completion. Providing environmental awareness training to workers and having biological monitors onsite during all construction activities will reduce or eliminate encounters with individual species. Also, clearly delineating work areas and avoidance areas using appropriate construction fencing, seasonal limitations for breeding areas, and appropriate buffers around, for instance, vernal pools. For listed butterflies, appropriate buffers around host plants and hilltop breeding areas as well as seasonal limitations for breeding areas will also reduce or eliminate direct effects. This is also the case with species that use small mammal burrows as refugia, such as California tiger salamanders and California red-legged frogs. The *Conservation Measures* section of this opinion provides a full description of these general and species-specific measures.

Riparian Habitat Removal or Degradation

Listed species inhabiting riparian and aquatic habitats, including California red-legged frog, giant garter snake, California freshwater shrimp, valley elderberry longhorn beetle, and least Bell's vireo, may be directly or indirectly affected by riparian habitat removal and/or degradation by activities such as the following.

- Vegetation management
- Debris removal
- Repairing, realigning, or otherwise modifying roads, trails, utilities, and rail lines
- Repairing, replacing or installing culverts
- Repairing, stabilizing, or armoring embankments
- Creating, widening, clearing, or dredging a waterway
- Constructing or modifying a water crossing
- Constructing or modifying other flood control structures

Habitat fragmentation occurs when areas of connected habitat are disjoined by the removal or reduction of habitat. Therefore, the removal or reduction of riparian habitat has the consequence of fragmenting riparian habitats which have the added consequences of isolation and edge effects. Isolation effects can negatively impact a species ability to find suitable mates thereby reducing its reproductive success. If populations are isolated for long periods of time, this can lead to inbreeding depressions which can make the population more vulnerable to stochastic events. Edge effects generally have a negative impact on both the biotic and abiotic environments. Edge effect negatively impact species through increased risk through the introduction of invasive competitors or pathogens and an increased risk of predation. Effects to the abiotic environment can also negatively impact species by increasing water and ambient temperatures leading to physiological changes that could make the habitat unsuitable for species at all life stages.

California red-legged frog and California tiger salamander riparian habitat can become isolated and fragmented due to the proposed covered activities. The fragmentation and isolation of a subpopulation can lead to a decline in dispersal between subpopulations, jeopardizing the metapopulation. The isolated populations are then vulnerable to local extinction due to stochastic environmental and human-induced events. In addition to fragmentation, the removal of riparian cover can also have negative effects on reproductive success of both the California red-legged frog and the California tiger salamander by allowing more solar radiation to heat pools and slow moving streams. Since the California red-legged frog and the California tiger salamander egg masses can tolerate a maximum water temperature of 70 °F and 66 °F, respectively, incremental increases to water temperatures will reduce reproductive success of both species.

The valley elderberry longhorn beetle occurs throughout the Central Valley in metapopulations and is dependent on a contiguous riparian habitat making it susceptible to habitat fragmentation. The valley elderberry longhorn beetle has a limited dispersal ability adding to their vulnerability of fragmented habitats limiting their opportunity to successfully colonize unoccupied habitat. As a consequence, isolated subpopulations are more vulnerable to stochastic events that can reduce or eliminate isolated populations. Loss of elderberry shrubs associated with riparian habitat will reduce available habitat for the valley elderberry longhorn beetle and may result in take if occupied shrubs are damaged or removed (Service 2017c).

The long-term or permanent removal of riparian vegetation may reduce in-stream habitat quality, riparian habitat complexity, and erosion and sedimentation in cleared riparian areas. Adverse effects may occur to California freshwater shrimp, which depend on complex riparian habitat that includes fine root systems, root wads and overhanging vegetation and woody debris. Loss of riparian vegetation adversely affects the ability of shrimp to disperse and affects turbidity and water temperatures in the creeks and streams.

For the least Bell's vireo, the permanent removal of riparian vegetation could result in reduced quality, quantity, and complexity of habitat within and adjacent to project areas, which can reduce

the suitability of least Bell's vireo nesting areas. Across the landscape, tree and understory removal within suitable foraging, dispersal, roosting, or nesting habitat could indirectly affect least Bell's vireo if tree species composition, structural diversity, or habitat density is significantly or permanently altered. Actions that remove or degrade the quality of riparian habitats may adversely affect their reproductive success by increasing their vulnerability of predation to cowbird parasitism and predation by scrub-jays, hawks, raccoons, and coyotes.

Implementing the conservation measure requiring revegetation of stream and riverbanks with native species when proposed projects remove riparian vegetation during construction activities will minimize these effects to covered species. Removed vegetation will be replaced with in-kind species at a 3:1 ratio with an 80 percent planting survival five years after planting. Conservation measures to clearly delineate and minimize the project footprint will minimize adverse effects to riparian habitats and associated covered species. Requiring Service-approved biological monitors will minimize direct injury and harm to listed species by identifying their presence and allowing them to move out of harm's way. The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Hazardous Materials Spills

Spills of hazardous materials may directly or indirectly affect all of the covered species. Chemical contamination of soil or water sources could occur from equipment leaks (e.g., diesel fuel, oil, hydraulic fluids, and antifreeze), refueling spills, or an accidental spill during project implementation. Accidental spills of hazardous materials can degrade water quality or upland habitat to a degree where species are adversely affected or killed by chemicals interfering with physiological pathways. For example, some hazardous chemicals have been shown to mimic estrogen in vertebrates, which has been hypothesized as a leading mechanism in amphibian decline (Jennings 1996).

The implementation of proposed conservation measures will significantly reduce these hazards. Subapplicants will prepare a Spill Prevention and Pollution Control Plan to minimize the risk of spilled hazardous materials and other construction debris from entering soils and waterways. Equipment will be inspected daily for fuel leaks, any fuel leaks discovered will be cleaned up immediately, wet cement and uncured concrete will not be allowed to enter waterways, stockpiled soils will be covered to prevent erosion, and all staging and hazardous material storage areas will be placed in upland areas that are paved, graveled, or otherwise non-erodible and away from water bodies or sensitive habitat. For proposed projects involving work over water, measures will be taken to ensure that construction debris is contained and does not fall into the water. Implementing these measures will minimize the effects of project-related disturbance on covered species and their habitat. The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Invasive Species and Pathogens

The introduction of pathogens, invasive plant and animal species could adversely affect any of the covered species. California red-legged frogs and California tiger salamanders are particularly vulnerable to introduced pathogens. Invasive species and pathogens are often introduced to uninvaded sites through construction soil and debris transported on construction equipment. Invasive species and pathogens also may be transferred via construction materials or on the clothing or boots of those working at the site. During in-water work, invasive species and pathogens may be introduced to a water body through ballast or bilge water discharge if vessels are inadequately cleaned prior to transfer between invaded and uninvaded sites. Pathogens may be introduced

through nursery plants used in revegetation and restoration.

Although not all non-native species have negative effects on the covered species, those that outcompete covered species are considered undesirable for their continued persistence. Therefore, introductions of invasive species can increase interspecific competition between listed species and non-native, invasive species. Invasive mosquitofish that are commonly stocked to help combat mosquito larvae have been shown to prefer fairy shrimp species over mosquito larvae (Leyse et al., 2004). Therefore, the introduction of mosquitofish into vernal pool complexes could lead to increased predation of vernal pool fairy shrimp, conservancy fairy shrimp, and longhorn fairy shrimp.

Invasive species can directly injure or kill covered species, or indirectly harm covered species by reducing prey abundance or detrimentally affect aquatic and riparian vegetation. Invasive plant species may also out-compete and crowd out covered plant species, as well as the host plants for listed butterflies.

Chytrid fungi are diverse, abundant, and widespread in aquatic ecosystems. They are known to infect a diverse assemblage of hosts across the tree of life. Although evidence is lacking for their effects on California red-legged frogs and California tiger salamander, some observations have indicated that both species tend to shed their skin at a much higher rate when infected in laboratory settings, which requires the use of additional energy (Service 2016 & 2017b). This allocation of resources to fend off chytrid infection could lead to decreased fitness if infected in the wild. The accidental introduction of chytrid fungi into an area could have significant adverse effects to the California red-legged frog and California tiger salamander. The introduction of non-native species into an ecosystem has the added possibility of introducing novel pathogens that could negatively affect species.

Implementing the proposed conservation measures will significantly reduce the introduction or spread of invasive species and pathogens. Subapplicants will properly clean construction equipment, clothing, waders and boots prior to moving between work sites, particularly if the prior work site is known or suspected to contain invasive species or pathogens. Subapplicants will take all precautions to prevent the introduction of amphibian disease pathogens if California red-legged frogs or California tiger salamanders must be handled or relocated. All persons entering the action area to handle amphibians after working in other aquatic habitats will disinfect all equipment and clothing. The Subapplicants will follow the guidelines in the California Department of Fish and Wildlife's (CDFW's) California Aquatic Invasive Species Management Plan to prevent the spread of invasive aquatic plant and animal species (CDFW 2008). The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Beneficial Effects

Beneficial effects include relocating facilities away from sensitive habitats, restoring native vegetation, removing invasive species, improving water quality and hydrology, and vegetation management. Stabilizing eroding banks, reducing sedimentation and turbidity, and replacing or removing structures that form partial or complete barriers with structures that enhance movement corridors or habitat connectivity also provide long-term beneficial effects for covered species. Existing structures may be modified or replaced in ways that provide shade and cover, reduce refugia for predators, replace hardened shorelines with living shoreline structures, improve hydrologic function of stream channels, or increase porosity of previously impervious surfaces. For

example, replacing an undersized, hanging culvert with an open bottom culvert may improve wildlife passage and allow better movement of substrate through the culvert. Wildfire risk-reduction activities may provide a beneficial effect to covered species by reducing the risk of large-scale catastrophic wildfires. Although the above mentioned scenarios can provide beneficial effects to covered species, it is important to note that these benefits can take months or years to be fully realized.

Effects to Aquatic Species

The following effects are primarily applicable to covered aquatic species, which include California red-legged frog, California tiger salamander, giant garter snake, California freshwater shrimp, tidewater goby and vernal pool species.

Erosion, Turbidity and Sedimentation

Increased erosion, turbidity, and sedimentation may affect aquatic species, particularly California red-legged frog and California tiger salamander eggs and larvae, California freshwater shrimp and vernal pool species. Effects include reduced visibility of prey or forage items, respiratory stress, temperature changes, and in severe cases, suffocation and damage to gills, lungs, or other organs. Heavy equipment use during in-water work activities such as installing temporary diversions or dewatering, may cause increased sedimentation. Construction-generated dust may be deposited into nearby waters and vegetation, and terrestrial or riparian vegetation removal and fuel reduction activities may increase erosion and sedimentation during storm runoff events. These activities can lead to the smothering of eggs thereby interfering with the species ability to complete its life cycle.

California freshwater shrimp may be adversely affected by in-stream work that causes high levels of siltation downstream. Although shrimp are usually able to survive in poor water quality conditions, excessive siltation could alter the quality of the habitat to the extent that use by individuals of the species is precluded. Siltation also could fill pools used by shrimp during summer low flows, reducing the extent or quality of shrimp habitat near the project area. Likewise, California red-legged frog and California tiger salamander eggs may be smothered by excessive silt and larvae may have difficulty locating food in turbid waters.

For most covered projects, implementing the proposed conservation measures and best management practices will likely reduce adverse effects to covered species, their prey, and their habitats within vernal pools and other aquatic habitat. These measures include restricting work during seasonal work windows, restricting the entry of heavy equipment into waterbodies, and establishing upland staging areas for equipment and materials. Installing silt fences, sediment curtains, and hay bales will reduce effects from erosion, turbidity, and sedimentation; the dewatering of work areas will minimize the amount and duration of suspended sediment. The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Underwater Noise, Vibration and Sound Pressure

Pile driving, in-water drilling, cutting, or excavation can have short-term adverse effects on covered aquatic species such as the tidewater goby, California red-legged frog, and giant garter snake, by increasing in-water noise and vibration. For example, pile driving in or adjacent to water causes high-intensity sound, which acts as a pressure wave that can cause barotrauma to tidewater gobies. California red-legged frogs, California tiger salamanders and giant garter snakes may be more

susceptible to injury and mortality from predation, desiccation and vehicular or foot traffic when project related noise and disturbance causes them to move away from sheltered habitat areas within a construction area.

Implementing the proposed conservation measures will minimize the effects of noise, vibration, and sound pressure. These include the use of work windows to avoid times that species such as the giant garter snake and California red-legged frog are most active, and using biological monitors to determine if animals are in the work area prior to ground disturbing activities. The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Streambed, Bank and Shoreline Modification

Any replacement of natural or armored banks that provide refugia for California red-legged frogs or giant garter snakes with banks that provide no such refugia (e.g., concrete crib walls or sacked concrete) will result in permanent habitat and permanent adverse effects to the hydrology and habitat quality of the stream or estuary. These activities will result in the removal of emergent and riparian vegetation along banks or in the channel or wetland, resulting, for example, in the loss of cover needed for giant garter snake basking, foraging, or shelter. Removal of burrows along streambanks that giant garter snakes and California red-legged frogs could use as refugia may result in increased mortality due to predation. Work in streams that causes unusually high levels of siltation downstream can also adversely affect California freshwater shrimp.

Implementing the proposed conservation measures will minimize adverse effects to species and habitats caused by these project activities. These measures include avoiding placement of roads, staging areas, and other facilities adjacent to aquatic ecosystems as much as possible, and returning contours of the aquatic substrate environments, vegetation, and flows to pre-construction conditions or better after the completion of work. Implementing best management practices for erosion control and reducing the area to be disturbed to the minimum necessary should decrease the amount of sediment that is washed downstream as a result of project activities. Designing projects to minimize the creation of new impervious surfaces and using bioengineering and living shorelines techniques may also avoid or minimize adverse effects, where applicable. The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Permanent Loss or Alteration of Vernal Pool Habitat

Vernal pool habitats support several covered species including four vernal pool branchiopods, California tiger salamanders and Sacramento Orcutt grass. Vernal pool habitats occupy areas with specific soil, geology and microtopography, making them highly susceptible to degradation from ground-disturbing activities. Many vernal pool areas contain hardpan soils that, if disturbed, will no longer hold water appropriately. Vernal pools also rely on runoff from surrounding areas during winter rains to refill. Regrading these areas may affect the flow of water and alter the amount of water entering the vernal pool. These activities, as well as effects from erosion, dust, and construction activities may temporarily or permanently alter vernal pool habitat, making such areas less suitable for the covered species occupying the habitat.

Vernal pool species are especially vulnerable to alterations in the existing hydrology of vernal pool habitats, because the timing, water depth, and inundation period determines which vernal-pool plants and branchiopods are able to reproduce and persist in a given vernal pool. For example,

indirect alterations to the hydrology of vernal pool habitats can result in too little soil moisture for the germination of plant seeds or hatching of vernal pool branchiopod eggs. Indirect alterations to the hydrology of vernal pool habitats may also cause vernal pools to dry too fast, or cause vernal pool water temperatures to increase too soon for a vernal pool species to complete its lifecycle and reproduce.

This programmatic biological opinion does not cover proposed projects that involve placement of fill material in, or excavation of, any vernal pools (wet or dry) as this will require a separate section 7 consultation. However, grading, excavation and filling outside of a vernal pools may have indirect effects on vernal swales and vernal complexes by altering the natural hydrology either upstream or downstream. This can cause unseasonal drying or flooding that can negatively affect species that occupy vernal pool habitats, which can lead to species unable to complete their life cycle. Upland habitat and swales around a vernal pool and within a vernal pool complex are essential to the hydrological and biological integrity of the vernal pool and complex. Typically, if any portion of a vernal pool is affected, then the entire vernal pool is considered affected. Where the reach of these indirect effects cannot be determined definitively, the Service considers most activities in areas within 250 feet of a vernal pool to be indirectly affected.

In addition to the proposed general conservation measures, implementing the proposed species-specific conservation measures will minimize adverse effects. These proposed conservation measures include pre-construction surveys, construction monitoring by a Service-approved biologist, establishing construction work windows and activity buffers, and identifying and flagging sensitive areas. Mortality-related effects will be minimized by requiring work within 250 feet of vernal pool habitat be avoided to the maximum extent possible and, if it does occur, to happen only in the dry season and to have no permanent adverse effects to hydrology of the pools or the pool complex. The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Effects from Dewatering, and Capture and Relocation of Aquatic Species

Proposed projects may involve dewatering and capture and relocation in waters occupied by covered species. Projects involving in-water work may require dewatering to properly install structures. In general, gravity conveyance via cofferdams and pipe systems is preferred when diversion of live-stream flows is necessary. However, in some cases pumps may be needed. If a pump is used, Subapplicants will screen the pump using an appropriate screen size for the target species to prevent entrainment, refer to species-specific conservation measures for appropriate screen sizes.

Dewatering, capture, and relocation of a covered species may reduce the magnitude of take and other effects when conducting in-water work. In such cases, implementing the proposed conservation measures will minimize the short-term adverse effects of such actions. Screening pump intakes as proposed in the species-specific conservation measures will reduce the probability that California red-legged frog tadpoles get caught in the inflow. Intakes will be completely screened with wire mesh no larger than indicated in the species-specific conservation measures and the intake will be placed within a perforated bucket or other method to attenuate suction to prevent species from entering the pump system. Temporary dewatering structures will be left in place for the minimum amount of time necessary for construction to allow covered aquatic species to return to the habitat.

Capture and relocation may cause mortality of a small number of individuals. Although the mortality rate associated with capture and relocation is typically low, relocated individuals are subject to stress and injury or death from the handling associated with relocation.

Temporary dewatering of creeks, ponds, or wetlands may harm or kill giant garter snake adults or young if they are not able to move on their own into nearby suitable habitat. Giant garter snakes that leave a construction area may move away from shelter and be more susceptible to injury and mortality from predation and vehicular or foot traffic. Displaced snakes may experience increased competition from animals in adjacent areas. Temporary dewatering of creeks, ponds, or wetlands may harm or kill California red-legged frog adults, larvae and eggs if they are not translocated to suitable habitat. Tadpoles may be injured or killed if entrained by pump or water diversion intakes. Chytrid fungi may be spread to California red-legged frogs and California tiger salamanders during capture and relocation if done without proper handling techniques and practices. Dewatering may strand, kill or injure California freshwater shrimp. They are small, inconspicuous and can take cover in areas that are difficult for a biologist to fully inspect. Shrimp may also be entrained by water pump systems and be injured or die. Injury and mortality may also occur to California freshwater shrimp during capture and relocation due to their fragile and delicate nature.

The short-term adverse effects of relocation will be minimized by implementing the proposed conservation measures. Only Service-approved biologists, using the most recent Service guidelines for relocation methods, will conduct capture and relocation. The Service-approved biologist will take precautions to prevent the introduction of amphibian diseases such as chytrid fungus 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 California tiger salamanders will also be handled and assessed according to the Restraint and Handling of Live Amphibians (USGS National Wildlife Health Center 2001). The Conservation Measures section of this programmatic biological opinion provides a full description of these general and species-specific measures.

Effects to Terrestrial Species

The following effects are primarily applicable to covered terrestrial species, which includes California red-legged frog, California tiger salamander, giant garter snake, Alameda whipsnake, Bay checkerspot butterfly, callippe silverspot butterfly, Myrtle's silverspot butterfly, and least Bell's vireo. These effects are also applicable to terrestrial habitats utilized by covered amphibians.

Habitat Disturbances, Noise, and Vibration

Noise and vibration associated with construction work may adversely affect many of the covered species. The movement and operation of heavy equipment during Subapplicants' proposed project activities, such as vibratory pile driving, impact pile driving, drilling, cutting, or excavation can have indirect effects on covered species by increasing ambient noise and vibration. Noise and vibration may affect covered species' breeding, foraging, and dispersal behavior. Noise and vibration from project activities may adversely affect covered birds, resulting in nest abandonment, fleeing, and temporary cessation of feeding or courtship behaviors. Additionally, this could impact future population sizes and connectivity of metapopulations. However, in many cases, these effects will be temporary in nature and likely limited to the construction period.

Work activities, including noise and vibration, may cause all terrestrial species to leave the work area. This disturbance may increase the likelihood for covered species vulnerability to predation or desiccation. Alameda whipsnakes and giant garter snakes may be harmed as a result of noise and

vibration associated with construction work; individuals displaced from protective cover are subject to predation and accidental death or injury from vehicular or foot traffic as they move across the landscape to avoid the area. Displaced snakes also may experience increased competition from animals in adjacent areas. Nesting birds, such as the least Bell's vireo may be flushed from nesting areas, abandoning nests and young in response to significant noise disturbance. Eggs and young are more vulnerable to predation when adults are flushed from nests. Construction-related noise can also adversely affect covered butterfly species, by startling them away from a safe area thus making them more vulnerable to collisions with vehicles and equipment and predation by other species.

Projects that require lighting could result in direct and indirect effects on the covered species. Direct effects to covered bird species will be primarily associated with changes in behavior. Lights may cause disruption, such as disorientation, in local, seasonal, or long-distance dispersal or migration events. These effects may be temporary or permanent, and may alter breeding or foraging behaviors, or affect the ability of species to find or return to breeding territories. Lighting structures provide raptor roosting sites which can lead to indirect effects to the giant garter snake by making them more vulnerable to predation when dispersing or basking.

The potential for disturbance and displacement of California red-legged frogs, California tiger salamanders and other covered species will be minimized by implementing Conservation Measures that require onsite biological monitoring, worker education programs, and successful capture and relocation of individuals. The likelihood of disturbance and displacement will be further reduced by avoidance, when feasible, of California red-legged frog and central California tiger salamander aquatic and upland habitat, as proposed. Conservation measures that minimize the area disturbed by project-related activities will reduce the potential for fleeing and abandonment as a result of the action, as will the requirement to work outside of the nesting season.

Barriers to Migration and Movement

Barriers to migration and movement may be temporary (during construction) or permanent and could result in partial or localized blockage of covered species migration or movement. Effects to covered species migration or movement could differ depending on the covered species, timing, and size of the project and the nature of the activity. Such barriers could result from activities such as the conversion of land to unsuitable habitat; the loss of suitable habitat associated with vegetation management; or the repair, replacement, or construction of new highways, walls, or other infrastructure. The California tiger salamander is dependent on barrier-free landscapes for successful migration and dispersal. Therefore, these types of new barriers will reduce connectivity of the metapopulation, isolating subpopulations making them more vulnerable to stochastic events and less likely to be recolonized if extirpated.

Most proposed projects are either associated with existing infrastructure, expected to be small in scale, and/or localized; therefore, these effects are not expected to significantly change the baseline conditions present in the Action Areas. Instead, the effects of barriers to covered species migration and movement may be incrementally altered. In some instances, these alterations may improve the existing conditions and, in others, may decrease the ability for species to freely move between habitats. In general, partial or complete barriers may directly affect a species' breeding, foraging, and dispersal behaviors. Barriers may restrict movement, alter or restrict access to key habitats, or result in entrainment, injury, or mortality. Barriers may adversely affect species' dispersal behaviors, which are important to continue genetic mixing in a population. Loss or impairment of this function may result in population isolation or in population sinks or extirpation.

Implementation of proposed conservation measures will reduce the footprint associated with the work area, access road and staging areas within certain habitats, and areas commonly used as wildlife movement corridors.

Trampling, Crushing or Entrapment

Activities involving vegetation clearing, earth moving, pipeline installation, and other construction may adversely affect covered species through trampling, crushing or entrapment within natural and artificial structures. Natural structures may include mammal burrows, rubble piles, rock outcrops and root wads. Artificial structures include trenches, pipes, and construction equipment.

Direct effects associated with entrapment include injury and mortality. Excavation, movement or depositing of materials above natural structures may entrap covered species resulting in harm, injury, or mortality. Covered species such as California red-legged frogs, California tiger salamanders or Alameda whipsnakes may fall into an excavated trench and subsequently be buried or physically removed. These same covered species may occupy a pipe or construction equipment and be subject to take through direct handling and removal by construction personnel or biologist, movement of construction equipment or materials, and burial of construction material or pipe. Some of the effects associated entrapment may be temporary, such as physical handling and movement or falling into a trench, while other effects such as burial or movement of construction equipment and material may be permanent and lethal.

Direct effects on all covered species as a result of a proposed project includes injury or mortality from being crushed by equipment, maintenance materials, or worker foot traffic. Equipment, vehicles, and personnel working in open, upland grassland habitats may injure, or kill all life stages of covered butterfly species. Chrysalides, larvae, adults, and their larval host plants may be crushed or buried, and adults may be injured or killed by collisions with construction equipment. Species that take refuge in burrows such as California red-legged frog and California tiger salamander, and rocks and crevices such as the Alameda whipsnake, are highly vulnerable to crushing in their refugia or when they leave their refugia in response to disturbance.

These effects will be reduced by the proposed conservation measures, including **minimizing** and clearly demarcating the boundaries of activity areas, pre-construction surveys, and the presence of a Service-approved biologist during construction activities who will have the authority to halt work activities until the animal leaves the area on its own. Construction-related disturbance to butterfly host plants and breeding adults will be avoided and **minimized** through pre-construction surveys, biological monitors, and appropriate buffers around host plants and hilltop breeding areas as well as implementing seasonal limitations for work in breeding areas. Adverse effects to Alameda whipsnake will be **minimized** by avoiding rock outcroppings and scrub habitats, limiting the timing of activities to the summer and early fall to avoid disturbance to breeding and young, and removing vegetation by hand in areas with shrub vegetation.

Inadvertent entrapment will be avoided by covering all excavated, steep-walled trenches and holes greater than 6 inches at the end of each workday, or providing escape ramps. Relocating listed species out of harm's way, as proposed, may further **minimize** injury or mortality. The potential for uninformed workers to disturb, injure, or kill covered species will be greatly reduced by proposed education of workers as to the presence and protected status of species and the measures that will be implemented to protect it during work activities.

Critical Habitat

As described above, the Action Area encompasses the entire SFWO's jurisdiction and all critical habitat units within the SFWO's jurisdiction for the California red-legged frog, California tiger salamander (Central and Sonoma DPSs), Alameda whipsnake, tidewater goby, valley elderberry longhorn beetle, Bay checkerspot butterfly, vernal pool fairy shrimp, vernal pool tadpole fairy shrimp, conservancy fairy shrimp, longhorn fairy shrimp, and Sacramento Orcutt grass. The Service anticipates that projects funded by FEMA could negatively affect some of the critical habitat units and PBFs for these species within the Action Area.

California Red-Legged Frog

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1 (aquatic breeding habitat), PBF 2 (non-breeding aquatic habitat), PBF 3 (upland habitat), and PBF 4 (dispersal habitat) of the California red-legged frog critical habitat within the Action Area. However, these activities will likely result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. The Action Area contains aquatic breeding and non-breeding habitat (PBFs 1 and 2) in the form of ponds, creeks, and streams. This habitat could be affected by construction activities through erosion from project activities such as culvert replacement, though following conservation measures will minimize these effects. However, constructing flood control structures such as levees could channelize the applicable waterway permanently affecting the PBFs making them less suitable for the California red-legged frog. Some permanent activities are proposed such as constructing new facilities or relocating existing facilities outside of disaster prone areas. These activities will permanently affect upland and dispersal habitat (PBFs 3 and 4) by installing structures on high quality habitat which will remove upland areas for the California red-legged frog to hide and will create barriers to movement to and from aquatic areas. However, the footprint of the project will confine these effects to a small area. When implemented with both the general and species-specific conservation measures, these proposed activities will not prevent critical habitat from providing essential conservation values for the California red-legged frog.

California Tiger Salamander (Central California and Sonoma DPSs)

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1 (aquatic breeding habitat), PBF 2 (upland habitat), and PBF 3 (dispersal habitat) of the California tiger salamander critical habitat within the Action Area. However, these activities will likely result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. Activities with a larger effect are those that will construct new facilities such as developing demonstration projects. These projects have the potential to fill aquatic breeding habitat (PBF 1), excavate and fill burrow systems (PBF 2), and construct barriers that prevent movement to and from breeding sites (PBF 3). When implemented with both the general and species-specific conservation measures, these activities will not prevent critical habitat from providing essential conservation values for the California tiger salamander.

Alameda Whipsnake

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1 (scrub/shrub community), PBF 2 (woodland/grassland community), and PBF 3 (rock outcrops) of the Alameda whipsnake critical habitat within the Action Area. However, these activities will likely result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. Activities such as realigning roads around disaster areas could affect all three PBFs by permanently removing them and creating a paved road. As most of the activities are water related, the number of projects affecting Alameda whipsnake critical habitat will be small. When

implemented with both the general and species-specific conservation measures, these activities will not prevent critical habitat from providing essential conservation values for the Alameda whipsnake.

Tidewater Goby

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1a (substrate), PBF 1b (aquatic vegetation), PBF 1c (sandbars) of the tidewater goby critical habitat within the Action Area. However, these activities will likely result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. As the specific PBFs are flexible depending on the water level, repairing coastal features such as coastal flood-control structures could affect the PBFs by shrinking the amount of available habitat that fall within the PBFs should the repair extend outside of the original footprint. When implemented with both the general and species-specific conservation measures, these activities will not prevent critical habitat from providing essential conservation values for the tidewater goby.

Valley Elderberry Longhorn Beetle

The designated critical habitat for the valley elderberry longhorn beetle is limited to a small geographical area along the American River in Sacramento County, and the adverse effects from activities on critical habitat will be minimal. Activities associated with the proposed action could negatively affect critical habitat of the valley elderberry longhorn beetle within the Action Area. Given the location and size of the valley elderberry longhorn beetle critical habitat, the Service does not anticipate effects to critical habitat by Subapplicants. However, if activities occur in critical habitat they will only result in minor effects to habitat, and these activities, when implemented with both the general and species-specific conservation measures, will not prevent critical habitat from providing essential conservation values for the valley elderberry longhorn beetle.

Bay Checkerspot Butterfly

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1 (grass land community), PBF 2 (host plant), PBF 3 (nectar source), PBF 4 (soil type), and PBF 5 (shelter) of the Bay checkerspot butterfly critical habitat within the Action Area. However, these activities will likely only result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. The repair of roads that run through critical habitat after a disaster could pose a risk to all PBFs. Depending on the timing of repairs, PBF 5 could be most affected during the summer months of the Bay checkerspot butterfly summer diapause. However, the projects footprint will confine these effects to a small area. When implemented with both the general and species-specific conservation measures, these activities will not prevent critical habitat from providing essential conservation values for the Bay checkerspot butterfly.

Vernal Pool Branchiopods

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1 (topographic features), PBF 2 (depressional features), PBF 3 (food sources), and PBF 4 (shelter) of the vernal pool branchiopods critical habitat within the Action Area. However, these activities will likely only result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. Activities associated with the proposed action could negatively impact all four PBFs if activities are located adjacent to vernal pool branchiopod critical habitat. The habitat could be affected by construction activities that divert extra water to or from the vernal pool critical habitat. Altering the topography of adjacent sites could negatively impact PBF 2 by altering the frequency and duration of filling. Additionally, this change could affect prey species (PBF 3) and vernal pool plants that provide shelter (PBF 4). However, project footprints will confine these effects to a small area. When implemented with both the general and species-specific conservation measures, these activities will not prevent critical habitat from providing essential conservation

values for the vernal pool branchiopods.

Sacramento Orcutt Grass

The Service anticipates that the activities associated with the proposed action could negatively affect PBF 1 (topographic features) and PBF 2 (depressional features) of the Sacramento Orcutt grass critical habitat within the Action Area. However, these activities will likely only result in minor effects to habitat as most projects will restore the area to pre-disaster conditions. Similar to affect to vernal pool branchiopod critical habitat. Sacramento Orcutt grass will be affected by project activities adjacent to critical habitat, which will affect both PBF 1 and PBF 2. However, project footprints will confine these effects to a small area. When implemented with both the general and species-specific conservation measures, these activities will not prevent critical habitat from providing essential conservation values for the Sacramento Orcutt grass.

Most of the covered activities will only result in minor effects limited to small areas. These activities are not likely to diminish the quality of PBFs in a unit for any of the covered species critical habitat. While disturbance within critical habitat may prevent some covered species from using portions of the critical habitat for essential life function whether temporarily or permanently, they will still be able to complete their essential ecological and biological functions in the remaining areas of critical habitat. Therefore, all critical habitat units will retain their PBFs and the PBFs within each critical habitat unit for each covered species will still remain functional. Consequently, the designated critical habitat for all covered species will still be able to perform its intended functions and conservation role.

In conclusion, the Service determines that the majority of activities associated with any proposed projects will result in only minor effects to PBFs, and with implementation of the conservation measures, will not prevent critical habitat from providing essential conservation values. The restoration of native vegetation, removing invasive species, improving water quality and hydrology, stabilizing eroding banks, reducing sedimentation, replacing structures that form partial or complete barriers to movement, and vegetation management to reduce wildfire risk will have negligible or beneficial effects to critical habitat. This determination is further based on the fact that projects funded by FEMA primarily will occur in previously disturbed areas, and the project footprint of most individual projects will be small in size and impact. The Service anticipates that habitat loss and degradation at individual project sites will be minimal and implementation of conservation measures will further minimize effects.

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 programmatic 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. The following actions may affect the species covered in this programmatic biological opinion by directly or indirectly harming individuals or by adversely affecting designated or proposed critical habitats.

An undetermined number of future land use conversions and routine land management practices frequently are not reviewed for environmental compliance under the federal permitting process. These activities may alter the habitat or increase incidental take of federally-listed species and are cumulative to the proposed programmatic actions. However, due to the large area covered under this programmatic biological opinion, the Service is unable to provide specific information to determine cumulative effects.

Conclusion

After reviewing the current status of the 16 animal and one plant species covered by this programmatic biological opinion, the species' status and environmental baseline for the Action Area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that FEMA's Disaster, Mitigation, and Preparedness Program in California, as proposed, is not likely to jeopardize the continued existence of the following species:

- California red-legged frog (*Rana draytonii*)
- California tiger salamander (*Ambystoma californiense*)
 - Central California DPS
 - Sonoma DPS
- Giant garter snake (*Thamnophis gigas*)
- Alameda whipsnake (*Masticophis lateralis euryxanthus*)
- Least bell's vireo (*Vireo bellii pusillus*)
- Tidewater goby (*Eucyclogobius newberryi*)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
- California freshwater shrimp (*Syncaris pacifica*)
- Bay checkerspot butterfly (*Euphydryas editha bayensis*)
- Callippe silverspot butterfly (*Speyeria callippe callippe*)
- Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*)
- Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Vernal pool tadpole shrimp (*Lepidurus packardii*)
- Conservancy fairy shrimp (*Branchinecta conservatio*)
- Longhorn fairy shrimp (*Branchinecta longiantenna*)
- Sacramento Orcutt grass (*Orcuttia viscida*)

The Service reached this conclusion because the 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) FEMA, in coordination with the Service, has proposed an extensive suite of general and species-specific conservation measures to be implemented for each project that are directed towards the protection of the habitat and, therefore, the long-term protection of individual species; (2) most individual project areas will have small footprints (less than one acre), therefore, not all populations or habitats will be affected by the proposed actions; and (3) FEMA will initiate individual section 7 consultations on all actions involving species and projects that do not specifically qualify for coverage under this programmatic biological opinion, as described in the programmatic biological assessment.

Critical habitat is designated for 13 species covered by this programmatic biological opinion. After reviewing the current status of designated critical habitat for these species, the environmental baseline for the Action Area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that FEMA's Disaster, Mitigation, and Preparedness Program in California, as proposed, is not likely to destroy or adversely modify designated critical habitat for the following species:

- California red-legged frog (*Rana draytonii*)
- California tiger salamander (*Ambystoma californiense*)
 - Central California DPS

- Sonoma DPS
 - Alameda whipsnake (*Masticophis lateralis euryxanthus*)
 - Least bell's vireo (*Vireo bellii pusillus*)
 - Tidewater goby (*Eucyclogobius newberryi*)
 - Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
 - Bay checkerspot butterfly (*Euphydryas editha bayensis*)
 - Vernal pool fairy shrimp (*Branchinecta lynchi*)
 - Vernal pool tadpole shrimp (*Lepidurus packardii*)
 - Conservancy fairy shrimp (*Branchinecta conservatio*)
 - Longhorn fairy shrimp (*Branchinecta longiantenna*)
 - Sacramento Orcutt grass (*Orcuttia viscida*)

The Service reached this conclusion because the project-related effects to the designated critical habitat for these 13 species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding the function of the critical habitat to serve its intended conservation role for the species based on the following: (1) FEMA, in coordination with the Service, has proposed an extensive suite of general and species-specific conservation measures that will be implemented for each project; (2) the majority of the effects of the projects are temporary and not persistent; (3) most of the projects restore structures such as roads, bridges, or other pre-existing facilities that are not in themselves physical and biological features essential to species' conservation; and (4) the effects to critical habitat for these 13 species are small and discrete, relative to the entire area designated, and are not expected to appreciably diminish the value of the critical habitat or prevent it from sustaining its role in the conservation of these species.

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 which 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 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)].

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally-listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

The Service is providing mechanisms to quantify when we consider take of the 16 covered animal species to be exceeded as a result of implementing the proposed project. We will use the following detections of injured or dead individuals per project site, total per year and total for the 5-year duration of this programmatic biological opinion. The detection of injured or dead individuals may indicate that species' utilization of habitat within the Action Area has changed over the lifetime of the project. By setting these thresholds, we have set an incidental take limit that is measureable, irrefutable and indicates that the species are being affected at a level where avoidance and minimization measures and project implementation need to be evaluated and possibly modified.

California Red-legged Frog

The Service is authorizing take incidental to the proposed action as the injury or fatality of no more than three juvenile or adult California red-legged frogs per site per year, no more than 30 juveniles or adult California red-legged frogs total for all sites per year, and no more than 150 juvenile or adult California red-legged frogs for the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of California red-legged frogs will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. death or injury of more than three juvenile or adult California red-legged frogs per site per year;
2. death or injury of more than 30 juveniles or adults total for all sites per year; or
3. death or injury of more than 150 juveniles or adults, as detected during the 5-year duration of the programmatic biological opinion by the FEMA Subapplicants, biological monitors, or other personnel.

Central California Tiger Salamander

The Service is authorizing take incidental to the proposed action as the injury or fatality of no more than three juvenile or adult central California tiger salamanders per site per year, no more than 30 juvenile or adult central California tiger salamanders total for all sites per year, and no more than 150 juvenile or adult central California tiger salamanders for the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of central California tiger salamanders will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. death or injury of more than three juvenile or adult central California tiger salamanders per site per year;
2. death or injury of more than 30 juvenile or adult central California tiger salamanders total for all sites per year; or
3. death or injury of more than 150 juvenile or adult central California tiger salamanders during the 5-year duration of the programmatic biological opinion, as detected by the FEMA Subapplicants, biological monitors, or other personnel.

Sonoma California Tiger Salamander

The Service is authorizing take incidental to the proposed action as the injury or fatality of no more than one juvenile or adult Sonoma California tiger salamander per site per year, no more than 15 juvenile or adult Sonoma California tiger salamanders total for all sites per year, and no more than 75 juvenile or adult Sonoma California tiger salamanders for the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of Sonoma California tiger salamanders will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. death or injury of more than one juvenile or adult Sonoma California tiger salamander per site per year;
2. death or injury of more than 15 juveniles or adult Sonoma California tiger salamanders total for all sites per year; or
3. death or injury of more than 75 juvenile or adult Sonoma California tiger salamanders during the 5-year duration of the programmatic biological opinion, as detected by the FEMA Subapplicants, biological monitors, or other personnel.

Giant Garter Snake

The Service is authorizing take incidental to the proposed action as the injury or fatality of no more than three juvenile or adult giant garter snakes per site per year, no more than 30 juvenile or adult giant garter snakes total for all sites per year, and no more than 150 juvenile or adult giant garter snakes for the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of giant garter snakes will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. death or injury of more than three juvenile or adult giant garter snake per site per year;
2. death or injury of more than 15 juvenile or adult giant garter snakes total for all sites per year; or
3. death or injury of more than 75 juvenile or adult giant garter snakes during the 5-year duration of the programmatic biological opinion, as detected by the FEMA Subapplicants, biological monitors, or other personnel.

Least Bell's Vireo

The Service anticipates that incidental take of the least Bell's vireo associated with FEMA's proposed action will be difficult to detect or quantify because the species will be difficult, if not impossible, to detect at any given project site. Providing a meaningful number for incidental take is difficult because a surveyor can only count what they see. Least Bell's vireo are small, secretive, and occur in habitats that make detection difficult, thereby making them nearly impossible to locate during pre-activity survey efforts. Under such conditions, finding a dead or injured individual vireo is unlikely within a project activity area, or mortality may be masked by seasonal fluctuations in numbers and migration. In addition, in most cases there have been no prior formal surveys in areas where projects are likely to occur. There is a risk of harm, injury and mortality as a result of the proposed activities and the permanent and temporary loss or degradation of suitable habitat; however, proper implementation of general and species-specific conservation measures should be effective in preventing incidental take due to harm, injury, or mortality. If a single individual is killed or injured, there is no means of equating one dead or injured animal (assuming one was found) to a number of dead or injured animals not observed.

Since we cannot estimate the number of individual least Bell's vireo that will be incidentally taken for the reasons listed above, the Service is providing a mechanism (acres) to quantify when we will consider take to be exceeded as a result of the proposed project. Since we expect take to result from the proposed project's effects to habitat, the quantification of habitat becomes a direct surrogate for the species that will be taken. Therefore, the Service anticipates that all least Bell's vireo inhabiting individual project footprints within the Action Area will be subject to incidental take in the form of non-lethal harm in terms of habitat only. No other forms of take are authorized. The Service anticipates and is authorizing the take of not more than one acre of actual habitat at any given project site that is less than 20 acres or no more than five percent of habitat at a particular site that is 20 acres or greater. This five percent at a particular site cannot represent more than five percent of the entire range of a covered species, for the five-year term of the programmatic biological opinion.

Accordingly, the Service concludes that the incidental take of least Bell's vireo will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. more than 1 acre of actual habitat at any given project site that is less than 20 acres is taken;
2. more than 5 percent of habitat at a particular site that is 20 acres or greater is taken; or
3. if this 5 percent at a particular site represents more than 5 percent of the entire range of a covered species is taken, for the 5-year term of the programmatic biological opinion.

Valley Elderberry Longhorn Beetle

The Service anticipates incidental take of the valley elderberry longhorn beetle will be difficult to detect or quantify. The cryptic nature of this species and their relatively small body size make finding a dead specimen unlikely. The species' occurrences within its habitat make them difficult to detect. Due to the difficulty in quantifying the number of dead or injured individual beetles that will be taken as a result of the proposed action, the Service is quantifying take incidental to the proposed action as the number of elderberry shrubs with stems one inch or greater in diameter at ground level (VELB habitat) that may become unsuitable for valley elderberry long horn beetles due to direct and indirect effects as a result of the proposed project. Therefore, the Service anticipates that all valley elderberry longhorn beetles inhabiting elderberry shrubs containing stems 1-inch or greater in diameter at ground level within

individual project action areas will be harmed or killed as a result of the proposed action. The Service is not further quantifying take (injury or fatality) of actual individual beetles or their larvae incidental to the proposed action.

Since we cannot estimate the number of individual valley elderberry longhorn beetles that will be incidentally taken for the reasons listed above, the Service is providing a mechanism (acres) to quantify when we will consider take to be exceeded as a result of the proposed project. Since we expect take to result from the proposed project's effects to habitat, the quantification of habitat becomes a direct surrogate for the species that will be taken. Therefore, the Service anticipates that all valley elderberry longhorn beetles inhabiting individual project footprints within the Action Area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates and is authorizing the take of not more than one acre of actual habitat at any given project site that is less than 20 acres or no more than five percent of habitat at a particular site that is 20 acres or greater. This five percent at a particular site cannot represent more than five percent of the entire range of a covered species, for the five-year term of the programmatic biological opinion.

Accordingly, the Service concludes that the incidental take of valley elderberry longhorn beetle will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. more than 1 acre of actual habitat at any given project site that is less than 20 acres is taken;
2. more than 5 percent of habitat at a particular site that is 20 acres or greater is taken; or
3. if this 5 percent at a particular site represents more than 5 percent of the entire range of a covered species is taken, for the 5-year term of the programmatic biological opinion.

California Freshwater Shrimp

The Service is authorizing take incidental to the proposed action as the injury or fatality of no more than two individual California freshwater shrimp if less than 20 are captured or no more than 5 percent of total individuals captured if more than 20 shrimp are captured per year, for the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of California freshwater shrimp will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. death or injury of more than two individual California freshwater shrimp per site if less than 20 are captured; or
2. death or injury of more than 5 percent of total individuals captured per site if more than 20 shrimp are captured per year, for the 5-year duration of the programmatic, as detected by the FEMA Subapplicants, biological monitors, or other personnel.

Tidewater Goby

The Service anticipates that take of the tidewater goby may occur as a result of the proposed projects in and around tidewater goby habitat, but it will be difficult to detect due to the species population dynamics, life history, and ecology. The exact number of individuals taken will be difficult to quantify because tidewater goby population sizes fluctuate greatly seasonally and year-to-year and the number of occupied localities and locations varies with seasonal and stochastic events. The Service is authorizing take incidental to the proposed action in the form of capture and

relocation and take incidental to the proposed project actions in the form of death or injury of up to five percent of individuals captured and relocated per site per year, 10 percent of the estimated population as a result of project activities per site per year, and up to five percent of the estimated populations as a result of all projects per year and for the 5-year duration of the programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of the tidewater goby will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. death or injury of up to 5 percent captured and relocated individuals per site per year;
2. death or injury of up to 10 percent of the estimated population as a result of project activities per site per year; and
3. death or injury of up to 5 percent of the estimated populations as a result of all projects per year and for the 5-year duration of the programmatic biological opinion.

Bay Checkerspot Butterfly, Myrtle's Blue Butterfly, Callippe Silverspot Butterfly

The Service anticipates that incidental take of the Bay checkerspot butterfly, Myrtle's silverspot butterfly and Callippe silverspot butterfly (three butterfly species) will be difficult to detect because most take will likely occur to larvae and chrysalis pupae that are on host plants, lying on the ground or underneath a plant. The finding of a damaged or crushed individual larva or chrysalis is unlikely because of its relatively small size. Adults may be killed by mechanized equipment while flying through the project area; loss of individuals of these three butterfly species also may be difficult to quantify due to their small size. However, while small, these adults are more likely to be detected than larvae or chrysalises. The Service anticipates and is authorizing a maximum of two adults of each of these three butterfly species per site per year and no more than 30 adults of each of these three butterfly species total for all sites for the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take (injury or fatality) of the Bay checkerspot butterfly, Myrtle's silverspot butterfly and Callippe silverspot butterfly will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. Death or injury of more than two individual adults of each of these three butterfly species per site per year or
2. Death or injury of more than 30 individual adults of each of these three butterfly species, for the 5-year duration of this programmatic biological opinion, as detected by the FEMA Subapplicants, biological monitors, or other personnel.

Alameda Whipsnake

The Service anticipates and is authorizing take incidental to the proposed action as the injury or fatality of no more than one juvenile or adult Alameda whipsnake per year and no more than five juvenile or adult Alameda whipsnakes during the 5-year duration of this programmatic biological opinion.

Accordingly, the Service concludes that the incidental take of Alameda whipsnake will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. more than five dead or injured juvenile or adult individual Alameda whipsnakes total for all sites per year; or
2. more than 25 dead or injured juvenile or adult individual Alameda whipsnakes total for all sites during the 5-year duration of the programmatic biological opinion, as detected by the FEMA Subapplicants, biological monitors, or other personnel.

Vernal Pool Branchiopods

It is not meaningful to provide numbers for incidental take of individual conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and longhorn fairy shrimp (collectively, vernal pool branchiopods) associated with this action because a surveyor only can count what they can see and there is much that they cannot see under the water and within the soil. Even in locations actually occupied by the species, it is possible for surveyors to miss adults, juveniles and eggs, particularly given the opportunistic and precipitation-driven life history of these species and the large size of the Action Area. All of these factors result in even the most experienced vernal pool branchiopod biologist being unable to show that any estimated take occurred or did not occur at the site. If a single individual vernal pool branchiopod has been killed or injured, there is no means of equating one dead or injured branchiopod (assuming one was found) to a number of dead or injured branchiopods not observed. Furthermore, the likelihood of detecting an injured or dead vernal pool branchiopod is extremely low due to their very small size and cryptic life history. Therefore, the Service is not quantifying take incidental to the proposed action as the injury or fatality in terms of individual animals. Incidental take for this species is provided only in terms of habitat, as described above.

Since we cannot estimate the number of individual vernal pool branchiopods that will be incidentally taken for the reasons listed above, the Service is providing a mechanism (acres) to quantify when we will consider take to be exceeded as a result of the proposed project. Since we expect take to result from the proposed project's effects to habitat, the quantification of habitat becomes a direct surrogate for the species that will be taken. Therefore, the Service anticipates that all vernal pool branchiopods inhabiting individual project footprints within the Action Area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates and is authorizing the take of not more than 1 acre of actual habitat at any given project site that is less than 20 acres or no more than five percent of habitat at a particular site that is 20 acres or greater. This five percent at a particular site cannot represent more than five percent of the entire range of a covered species, for the five-year term of the programmatic biological opinion.

Accordingly, the Service concludes that the incidental take of vernal pool branchiopods will be considered exceeded if one or more of the following conditions are met. Under these circumstances, as provided in 50 CFR §402.16, reinitiation of formal consultation will be required.

1. more than 1 acre of actual habitat at any given project site that is less than 20 acres is taken;
2. more than 5 percent of habitat at a particular site that is 20 acres or greater is taken; or
3. if this 5 percent at a particular site represents more than 5 percent of the entire range of a covered species is taken, for the 5-year term of the programmatic biological opinion.

Upon implementation of the following reasonable and prudent measures, incidental take of these 17 animal species associated with FEMA's Disaster, Mitigation, and Preparedness Program in California, will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this programmatic biological 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 covered by this programmatic biological opinion, or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service has determined the following reasonable and prudent measure is necessary and appropriate to **minimize** incidental take of these 16 species:

1. FEMA and their Subapplicants shall fully implement and adhere to all general avoidance and **minimization** measures and species-specific conservation measures, as described in the programmatic biological assessment and restated here in the Description of the Proposed Programmatic Actions section of this programmatic biological opinion. Further, this reasonable and prudent measure shall 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, the 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 shall require that all personnel and Subapplicants associated with this project are made aware of the general avoidance and **minimization** measures and species-specific conservation measures and their responsibility to implement them fully.
2. FEMA shall submit an annual report to the Service by March 15 summarizing all projects completed during the previous calendar year. These annual reports shall include a tabular summary of those projects and for each project:
 - a) Subapplicant and project name;
 - b) Project location with map or GIS shape file;
 - c) Covered species impacted;
 - d) Estimated acres of covered species' habitat affected (acres, linear feet, etc.), as stated in the ESA Review Form;
 - e) Any other pertinent information that allows the Service to evaluate the causes and extent of habitat effects and any incidental taking that may have occurred that was not authorized in the Incidental Take Statement of this programmatic biological opinion.
 - f) The annual report will also include a summary of acres of habitat taken and individuals injured or killed from all previous years.
 - g) FEMA shall require that the Subapplicant to provide a copy of the project report to the Service and FEMA with the following project-specific details on its respective projects within 45 days of project construction completion:

- i. Date the project was initiated and completed;
 - ii. Number of observed instances of injury or mortality of any covered species;
 - iii. Number of observations of live, uninjured individuals of any covered species;
 - iv. Pertinent information concerning the success of the project in meeting the conservation measures; and
 - v. An explanation of failure to meet such measures, if any.
3. FEMA Region IX shall attend an annual coordination meeting with the Service by May 15 each year to discuss the annual monitoring report and any adaptive management measures needed to minimize impacts.
4. FEMA or its Subapplicants shall immediately contact the Service's SFWO at (916) 414-6631 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 or its Subapplicants shall contact the SFWO at the earliest possible opportunity the next working day. When injured or killed individuals of the listed species are found, FEMA or its Subapplicants shall follow the steps outlined in the Salvage and Disposition of Individuals section below.
5. For those components of the action that will require the capture and relocation of any listed species, FEMA or its Subapplicant shall immediately SFWO at (916) 414-6631 to report the action. If capture and relocation need to occur after normal working hours, FEMA or its Subapplicant shall contact the SFWO at the earliest possible opportunity the next working day.
6. FEMA or its Subapplicants shall immediately contact the Service's SFWO at (916) 414-6631 to report any unauthorized take of federally-listed species occurs onsite, or if more than one (1) acre of habitat is adversely affected at a particular site as a result of implementation of the FEMA-funded action.

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 the Service provides instructions regarding the disposition of the dead specimen. The Service contact persons are Kellie Berry or Gerry Cobian at the SFWO at (916) 414-6631.

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 action:

1. Sightings of any listed and sensitive species encountered during FEMA-funded activities should be reported to the California Natural Diversity DataBase (CNDDB), California

Department of Fish and Wildlife.

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 FEMA's Disaster, Mitigation, and Preparedness Programs in California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal agency involvement or control over the action has been retained or is authorized by law and:

- (a) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) 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;
- (c) 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
- (d) 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 Kellie Berry, Sacramento Valley Division Chief (kellie_berry@fws.gov) or Gerry Cobian, Fish and Wildlife Biologist (gerald_cobian@fws.gov) at the letterhead address or telephone (916) 414-6631.

Sincerely,



Jennifer M. Norris, Ph.D.
Field Supervisor

ec:

Ms. Nancy Haley, Chief, California North Section, U.S. Army Corps of Engineers
Mr. William Guthrie, Chief, California Delta Section, U.S. Army Corps of Engineers
Mr. Paul Maniccia, Chief, California South Section, U.S. Army Corps of Engineers

LITERATURE CITED

- Backlin, A.R., J.Q. Richmond, E.A. Gallegos, C.K. Chistensen, and R.N. Fisher. 2017. An extirpated lineage of a threatened frog species resurfaces in southern California. *Oryx*: 1–5.
- Barry, S. 1992. Letter to Marvin L. Plenert, Regional Director, U.S. Fish and Wildlife Service, Portland, Oregon, regarding proposed listing.
- _____. 2002. Dobbins and Cottage/Deadwood Watersheds, Plumas National Forest, Herpetological Surveys, 2001-2002. Department of Zoology, University of California, Davis
- Barry, S.J. and G.M. Fellers. 2013. History and status of the California red-legged frog (*Rana draytonii*) in the Sierra Nevada, California, USA. *Herpetological Conservation and Biology* 8(2): 456-502.
- Bulger, J.B., N.J. Scott Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. *Biological Conservation* 110(2003): 85–95.
- Bury, R.B. and J.A. Whelan. 1984. Ecology and management of the bullfrog. Fish and Wildlife Resource Publication 155.
- California Department of Fish and Game (CDFG). 1998. California Wildlife Habitat Relationships. Wildlife and Habitat Data Analysis Branch. California Department of Fish and Game, State of California. http://www.dfg.ca.gov/whdab/htmlwildlife_habitats.html. Sacramento, California.
- California Department of Fish and Wildlife (CDFW). 2017. California Natural Diversity Database. RAREFIND. Natural Heritage Division, Sacramento, California.
- California Department of Fish and Wildlife (CDFW). 2018. California Natural Diversity Database. RAREFIND. Natural Heritage Division, Sacramento, California.
- Cook, D.G, P.C. Trenham, and D. Stokes. 2005. Sonoma County California tiger salamander metapopulation, preserve requirements, and exotic predator study. Prepared for U. S. Fish and Wildlife Service, Sacramento, California. FWS Agreement No. 114203J110.
- Davidson, E.W., M. Parris, J.O. Collins, J.E. Longcore, A.P. Pessier, and J. Brunner. 2003. Pathogenicity and transmission of *Chytridiomycosis* in tiger salamanders (*Ambystoma tigrinum*). *Copeia* 2003(3): 601-607.
- Dodd, C.K. 2013a. Frogs of the United States and Canada. Volume 1. John Hopkins University Press, Baltimore, Maryland.
- _____. 2013b. Frogs of the United States and Canada. Volume 2. John Hopkins University Press, Baltimore, Maryland.
- Emlen, S.T. 1977. “Double clutching” and its possible significance in the bullfrog. *Copeia* 1977(4): 749-751.

- Eriksen, C. and D. Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Inc.; Eureka, California. 196 pp.
- Eschmeyer, W.N., E.S. Herald, and H. Hamann. 1983. A field guide to Pacific coast fishes of North America. Houghton Mifflin Co., Boston, xxi + 336 pp.
- Evans Mack, D., W.P. Ritchie, S.K. Nelson, E. Kuo-Harrison, P. Harrison and T.E. Hamer. 2003. Methods for surveying Marbled Murrelets in forests: a revised protocol for land management and research. Pacific Seabird Group unpublished document available at: <http://www.pacificseabirdgroup.org>.
- Fellers, G. 2005. *Rana draytonii*, Baird and Girard, 1852b California red-legged frog. Pages 552-554 in M. Lannoo (editor). Amphibian declines the conservation status of United States species. University of California Press. Berkeley, California.
- Fellers, G.M., and P.M. Kleeman. 2007. California Red-Legged Frog (*Rana draytonii*) Movement and Habitat Use: Implications for Conservation. *Journal of Herpetology* 41: 276-286.
- Fellers, G.M., R.A. Cole, D.M. Reintz, and P.M. Kleeman. 2011. Amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) in coastal and montane California, USA Anurans. *Herpetological Conservation and Biology* 6(3): 383-394.
- Fellers, G.M., P.M. Fleeman, D.A.W. Miller, and B.J. Halstead. 2017. Population Trends, Survival, and Sampling Methodologies for a Population of *Rana draytonii*. *Journal of Herpetology* 51(4): 567-573.
- Fisher, R.N. and H.B. Shaffer. The decline of amphibians in California's Great Central Valley. *Conservation Biology* 10(5): 1387-1397.
- Fitzpatrick, B. M. and H. B. Shaffer. 2004. Environmental-Dependent Admixture Dynamics in a Tiger Salamander Hybrid Zone. *Evolution* 58(6): 1282-1293.
- Franzreb, K.E. 1989. Ecology and conservation of the endangered least Bell's vireo. U.S. Fish and Wildlife Service, Biol. Rep 89(1). 17 pp.
- Gordon, R. and J. Bennett. Electronic mail communication from Rebecca Gordon and Jesse Bennett, Service, Carlsbad FWO, to Valerie Hentges, Service, Sacramento FWO, dated October 12, 2017.
- Habel, J.S. and G.A. Armstrong. 1977. Assessment and atlas of shoreline erosion along the California coast. California Department of Navigation and Ocean Development, vii + 277 pp.
- Halstead, B.J. and P.M. Kleeman. 2017. Frogs on the Beach: Ecology of California red-legged frogs (*Rana draytonii*) in Coastal Dune Drainages. *Herpetological Conservation and Biology* 12: 127-140.
- Halstead, B.J., S.M. Skalos, G.D. Wylie, and M.L. Casazza. 2015. Terrestrial Ecology of Semi-Aquatic Giant Gartersnakes (*Thamnophis gigas*). *Herpetological Conservation and Biology* 10(2):633-644.

- Hayes, M.P. and M.R. Tennant. 1985. Diet and feeding behavior of the California red-legged frog *Rana aurora draytonii* (Ranidae). *The Southwestern Naturalist* 30(4):601-605.
- Helm, B. 1998. Biogeography of eight large branchiopods endemic to California. Pages 124-139. *In Ecology, conservation, and management of vernal pool ecosystems – proceedings from a 1996 conference*, C. W. Witham, E.T. Bauder, D. Belk, W.R. Ferren, Jr., and R. Ornduff, eds. California Native Plant Society, Sacramento, California. 285 pp.
- Holland, R. F. 1978. The geographic and edaphic distribution of vernal pools in the Great Central Valley, California. California Native Plant Society, special publication number 4.
- Holland, R. F. 1998. Great Valley vernal pool distribution, photorevised 1996. Pages 71-75 *in*: C. W. Witham, E. T. Bauder, D. Belk, W. R. Ferren Jr. and R. Ornduff, editors. *Ecology, conservation, and management of vernal pool ecosystems--Proceedings from a 1996 Conference*. California Native Plant Society, Sacramento, California.
- Holland, R. F. 2003. Distribution of vernal pool habitats in five counties of California's southern coast ranges. Report to U.S. Fish and Wildlife Service. Ventura, California. 23 pages.
- Hunt, L. 1993. Letter to Marvin L. Plenert, Regional Director, U.S. Fish and Wildlife Service, Portland, Oregon, regarding proposed listing.
- Jennings, M.R. 1996. Status of amphibian. Pp 921-944. *In Sierra Nevada ecosystem project: Final report to Congress, vol. II: Assessments and scientific basis or management options*. Wildland Resources Center Report No. 37 ISBN 1-887673-01-6.
- Jennings, M.R. 1993. Letter to Peter C. Sorensen, U.S. Fish and Wildlife Service, Sacramento, California.
- Jennings, M.R. and M.P. Hayes. 1985. Pre-1900 overharvest of California red-legged frogs (*Rana aurora draytonii*): The inducement for bullfrog (*Rana catesbeiana*) introduction. *Herpetological Review* 31(1): 94-103.
- _____. 1990. Final report of the status of the California red-legged frog (*Rana aurora draytonii*) in the Pescadero Marsh Natural Preserve. Final report prepared for the California Department of Parks and Recreation, Sacramento, California through Agreement (4-823-9018). Department of Herpetology, California Academy of Sciences, Golden Gate Park, San Francisco, California. 30 pages.
- _____. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Rancho Cordova, California.
- Jennings, M.R., M.P. Hayes, and D.C. Holland. 1992. A petition to the U.S. Fish and Wildlife Service to place the California red-legged frog (*Rana aurora draytonii*) and the western pond turtle (*Clemmys marmorata*) on the List of Endangered and Threatened Wildlife and Plants. 21 pages.
- Kruse, K.C. and M.G. Francis. 1977. A predation deterrent in larvae of the bullfrog, *Rana catesbeiana*. *Transactions of the American Fisheries Society* 106(3): 248-252.
- Launer, A., D. Murphy, J.M. Hoekstra, and H.R. Sparrow. 1992. The endangered Myrtle's silverspot

- butterfly: present status and initial conservation planning. *Journal of Research on the Lepidoptera* 31(1-2):132-146.
- Leyse, K. E., S. P. Lawler, and T. Strange. 2004. Effects of an alien fish, *Gambusia affinis*, on an endemic California fairy shrimp, *Linderiella occidentalis*: implications for conservation of diversity in fishless waters. *Biological Conservation* 118:57-65.
- Lips, K.R., F. Brem, R. Brenes, J.D. Reeve, R.A. Alford, J. Voyles, C. Carey, L. Livo, A.P. Pessier and J.P. Collins. 2006. Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. *Proceedings of the National Academy of Sciences of the United States of America* 103(9): 3165-3170.
- Loredo, I., D. VanVuren and M. L. Morrison. 1996. Habitat Use and Migration Behavior of the California Tiger Salamander. *Journal of Herpetology* 30(2): 282-285.
- Mabe, J. 2017. Phone conversation from Jeff Mabe, U.S. Forest Service, Eldorado National Forest, to Ian Vogel, Service, Sacramento FWO, dated June 6, 2017.
- Mayer, K. E., and W. F. Laudenslayer, Jr. 1988. *A Guide to Wildlife Habitats of California*. California Department of Fish and Game. Sacramento, California. 166 pages.
- Moyle, P.B. 1976. Fish introductions in California: a history and impact of native fishes. *Biological Conservation* 9(1): 101-118.
- Murphy, D.D. and P.R. Ehrlich. 1980. Two California checkerspot butterfly subspecies; one new, one on the verge of extinction. *Journal of Lepidopterists' Society* 34: 316-320.
- Weiss, S.B. 1999. Cars, cows, and checkerspots butterflies: nitrogen deposition and management of nutrient-poor grasslands for a threatened species. *Conservation Biology* 13(6): 1476-1486.
- Peralta-García, A., B.D. Hollingsworth, J.Q. Richmond, J.H. Valdez-Villavicentio, G. Ruiz-Campos, R. N. Fisher, P. Cruz-Hernandez, P. Galina-Tessaró. 2016. Status of the California red-legged frog (*Rana draytonii*) in the state of Baja California, México. *Herpetological Conservation and Biology* 11(1): 168-180.
- Padgett-Flohr, G. 2008. Pathogenicity of *Batrachochytrium dendrobatidis* in two threatened California amphibians: *Rana draytonii* and *Ambystoma californiense*. *Herpetological Conservation and Biology* 3(2): 182-191.
- Padgett-Flohr, G.E. and R.L. Hopkins, II. 2010. Landscape epidemiology of *Batrachochytrium dendrobatidis* in central California. *Ecography* 33: 688-697.
- Pittman, B.T. 2005. Observations of upland habitat use by California tiger salamanders based on burrow excavations. *Transactions of the Western Section of the Wildlife Society* 41: 26-30.
- Richmond, J.O., A.R. Backlin, P.J. Tatarian, B.G. Solvesky, R.N. Fisher. 2014. Population declines lead to replicate patterns of internal range structure at the tips of the distribution of the California red-legged frog (*Rana draytonii*). *Biological Conservation* 172: 128-137.
- Riley, S. P. D., H. B. Shaffer, S. R. Voss, and B. M. Fitzpatrick. 2003. Hybridization Between a Rare,

- Native Tiger Salamander (*Ambystoma californiense*) and its Introduced Congener. Biological Applications 13(5): 1263-1275.
- Sawyer, J. O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society. Sacramento, California.
- Seymour, R. and M. Westphal. 1994. Distribution of California tiger salamanders in the eastern San Joaquin Valley: Results of the 1994 survey. Prepared for Coyote Creek Riparian Station. Prepared for U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office.
- Shaffer, H.B., G.M. Fellers, S.R. Voss, C. Oliver, and G.B. Pauley. 2010. Species boundaries, phylogeography, and conservation genetics of the red-legged frog (*Rana aurora/draytonii*) complex. Molecular Ecology 13: 2667-2677.
- Shaffer, H.B., J. Johnson, and I. Wang. 2013. Conservation genetics of California tiger salamanders. Prepared for Dan Strait, CVP Conservation Program Manager, Bureau of Reclamation, Sacramento, California. Final report. Bureau of Reclamation grant agreement no. R10AP20598.
- Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. Status Report: the California Tiger Salamander (*Ambystoma californiense*). Final report for the California Department of Fish and Game. 36 pages plus figures and tables.
- Singer, M.C. 1972. Complex components of habitat suitability within a butterfly colony. Science 176(4030): 75-77.
- Stebbins, R.C. 2003. A field guide to western reptiles and amphibians. Houghton Mifflin. Boston, Massachusetts
- Stone, R. D., W. B. Davilla, D. W. Taylor, G. L. Clifton, and J. C. Stebbins. 1988. Status survey of the grass tribe Orcuttieae and *Chamaesyce hooveri* (Euphorbiaceae) in the Central Valley of California. 2 volumes. U.S. Fish and Wildlife Service Technical Report, Sacramento, California. 124 pages
- Storer, T. I. 1925. A synopsis of the Amphibia of California. University of California Publications in Zoology 27: 1-342.
- _____. 1933. Frogs and their commercial use. California Department of Fish and Game 19(3): 203-213.
- Swaim, K. E. 1994. Aspects of the ecology of the Alameda whipsnake *Masticophis lateralis eryxanthus*. Master's Thesis, California State University, Hayward. 140 pp.
- Swift, C.C., J. L. Nelson, C. Maslow, and T. Stein. 1989. Biology and distribution of the tidewater goby, *Eucyclogobius newberryi* (Pisces: Gobiidae) of California. Natural History Museum of Los Angeles County, No. 404. P. 12
- Tatarian, T.J. and G. Tatarian. 2008. California red-legged frog telemetry study; Hughes Pond, Plumas National Forest. Annual Report, Option Year 3 to: U. S. Fish and Wildlife Service, 2800 Cottage Way, Sacramento, CA and U.S. Forest Service, Plumas National Forest, 875

Mitchell Avenue, Oroville, CA.

- _____. 2010. Chytrid Infection of *Rana draytonii* in the Sierra Nevada, California, USA. *Herpetological Review* 41(3): 325-327.
- Tatarian, P.J. 2008. Movement patterns of California red-legged frogs (*Rana draytonii*) in an inland California environment. *Herpetological Conservation and Biology* 3(2): 155-169.
- Terry, J. 2018. Electronic mail communication from Joseph Terry, Sacramento FWO to Catrina Martin, Sacramento FWO, dated August 2, 2018.
- Twedt, B. 1993. A comparative ecology of *Rana aurora* Baird and Girard and *Rana catesbeiana* Shaw at Freshwater Lagoon, Humboldt County, California. Master of Science thesis. Humboldt State University, Arcata, California. 53 pages plus appendix.
- U.S. Fish and Wildlife Service. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. *Federal Register* 45: 52803-52807.
- _____. 1992. Endangered and threatened wildlife and plants; six plants and Myrtle's silverspot butterfly from coastal dunes in northern and central California determined to be endangered.
- _____. 1994. Endangered and threatened wildlife and plants; designation of critical habitat for the least bell's vireo. *Federal Register* 59: 4845-4867.
- _____. 1996. Endangered and threatened wildlife and plants; determination of threatened status for the California red-legged frog. *Federal Register* 61: 25813-25833.
- _____. 1997. Determination of Endangered Status for the Callippe Silverspot Butterfly and the Behren's Silverspot Butterfly and Threatened Status for the Alameda whipsnake. *Federal Register* Vol. 62, No. 234. (pg. 64306). Dated December 5, 1997
- _____. 1998a. Recovery Plan for Seven Coastal Plants and the Myrtle's Silverspot Butterfly. Portland, Oregon.
- _____. 1998b. California Freshwater Shrimp (*Syncaris pacifica* Holmes) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 94 pp.
- _____. 1998c. Recovery Plan for serpentine soil species of the San Francisco Bay Area. Portland, OR. 330 pp.
- _____. 1998d. Draft recovery plan for the least Bell's vireo. U.S. Fish and Wildlife Service, Portland, OR. 139 pp.
- _____. 2000. Endangered and threatened wildlife and plants; designation of critical habitat for the tidewater goby. *Federal Register* 65: 69693-69717.
- _____. 2001a. Endangered and threatened wildlife and plants; final determination of critical habitat for the California red-legged frog. *Federal Register* 66: 14626-14758.
- _____. 2001b. Endangered and threatened wildlife and plants; final determination of critical habitat

- for the Bay checkerspot butterfly (*Euphydryas editha bayensis*). Federal Register 66: 21450-24189.
- _____. 2002s. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). Portland, Oregon. 173 pages.
- _____. 2002b. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. Region 1, Portland, OR. xvi + 306 pp.
- _____. 2003a. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Sonoma County Distinct Population Segment of the California Tiger Salamander; Final Rule, Federal Register 68: 13497.
- _____. 2003b. Endangered and threatened wildlife and plants; final designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants in California and Southern Oregon. Federal Register 68: 46684-46867.
- _____. 2003c. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. Sacramento Field Office, Sacramento, California.
- _____. 2004. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Tiger Salamander; and Special Rule Exemption for Existing Routine Ranching Activities; Final Rule. Federal Register 69:47212-47248.
- _____. 2005a. Endangered and threatened wildlife and plants; final designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants in California and Southern Oregon. Federal Register 70: 46924-46999.
- _____. 2005b. Endangered and threatened wildlife and plants; designation of critical habitat for the California tiger salamander, central population. Federal Register 70: 49380-49458.
- _____. 2005c. Endangered and threatened wildlife and plants; designation of critical habitat for the Sonoma county distinct population segment of the California tiger salamander. Federal Register 70: 74138-74163.
- _____. 2005d. Recovery Plan for the Tidewater Goby (*Encyclogobius newberryi*). U.S. Fish and Wildlife Service, Portland, Oregon. vi + 199 pp.
- _____. 2005d. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. xxvi + 606 pages.
- _____. 2006a. Endangered and threatened wildlife and plants; final designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants in California and Southern Oregon. Federal Register 71: 7118-7316.
- _____. 2006b. Endangered and threatened wildlife and plants; designation of critical habitat for the California red-legged frog, and special rule exemption associated with final listing for existing routine ranching activities. Federal Register 71: 19244-19346.
- _____. 2006c. Endangered and threatened wildlife and plants; designation of critical habitat for the

- Alameda whipsnake. Federal Register 71: 58176-58231.
- _____. 2006d. Least Bell's Vireo (*Vireo bellii pusillus*) 5-year Review: Summary and Evaluation. Carlsbad, California.
- _____. 2006e. Estimating the effects of auditory and visual disturbance to northern spotted owls and marbled murrelets in the northwestern California. Available at http://www.fws.gov/arcata/es/birds/NSO/ns_owl.html
- _____. 2007a. Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2007b. Vernal Pool Tadpole Shrimp (*Lepidurus packardii*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2008a. Endangered and threatened wildlife and plants; revised designation of critical habitat for the tidewater goby (*Encyclogobius newberryi*). Federal Register 73: 5920-6006.
- _____. 2008b. Endangered and threatened wildlife and plants; designation of critical habitat for the Bay checkerspot butterfly (*Euphydryas editha bayensis*). Federal Register 73: 50406-50452.
- _____. 2008c. Sacramento Orcutt Grass (*Orcuttia viscida*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2009. Bay Checkerspot Butterfly (*Euphydryas editha bayensis*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2009a. Callippe Silverspot Butterfly (*Speyeria callippe callippe*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2009b. Myrtle's Silverspot Butterfly (*Speyeria zerene myrtleae*) 5-Year Review: Summary and Evaluation. Sacramento, California.
- _____. 2010. Endangered and threatened wildlife and plants; revised designation of critical habitat for California red-legged frog; final rule. Federal Register 75: 12815-12959.
- _____. 2011a. Endangered and threatened wildlife and plants; revised designation of critical habitat for the Sonoma county distinct population segment of California tiger salamander. Federal Register 76: 54346-54372.
- _____. 2011b. Endangered and threatened wildlife and plants; revised designation of critical habitat for the marbled murrelet. Federal Register 76: 61599-61621.
- _____. 2011c. California freshwater shrimp (*Syncaris pacifica*) 5-Year Review: Summary and Evaluation. Sacramento, California
- _____. 2011d. Tidewater goby (*Encyclogobius newberryi*) 5-Year Review: Summary and Evaluation. Ventura, California
- _____. 2011e. Alameda Whipsnake (*Masticophis lateralis euryxanthus*) 5-year Review: Summary and

- Evaluation. Sacramento, California.
- _____. 2011f. California Freshwater shrimp (*Syncaris pacifica*) 5 year review: Summary and Evaluation. Sacramento, California.
- _____. 2012a, Longhorn Fairy Shrimp (*Branchinecta longiantenna*) 5-year Review: Summary and Evaluation. Sacramento, California.
- _____. 2012b. Conservancy Fairy Shrimp (*Branchinecta conservatio*) 5-year Review: Summary and Evaluation. Sacramento, California.
- _____. 2012b. Endangered and threatened wildlife and plants; designation of revised critical habitat for the northern spotted owl. Federal Register 77: 71876-72068.
- _____. 2013b. Endangered and threatened wildlife and plants; designation of critical habitat for tidewater goby. Federal Register 78: 8746-8819.
- _____. 2014a. California Tiger Salamander Central California distinct Population Segment (*Ambystoma californiense*) 5-Year Review: Summary and Evaluation. Sacramento Fish and Wildlife Office, Sacramento, California. 63 pp.
<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D01T>.
- _____. 2014a. 12 month Finding and Proposed Rule to Reclassify the Tidewater Goby from Endangered to Threatened (Fed. Reg. 2014).
- _____. 2014c. Withdrawal of the Proposed Rule to Remove the Valley Elderberry Longhorn Beetle from the Federal List of Endangered and Threatened Wildlife.
- _____. 2016. Recovery Plan for the Santa Rosa Plain: *Blennosperma bakeri* (Sonoma sunshine); *Lasthenia burkei* (Burke's goldfields); *Limnanthes vinculans* (Sebastopol meadowfoam); California Tiger Salamander Sonoma County Distinct Population Segment (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. vi + 128 pp.
- _____. 2017a. Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. vii + 71 pp.
- _____. 2017b. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*). Sacramento, California.
- _____. 2017c. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). Sacramento, California.
- Vollmar, J.E. 2002. Chapter 2: Landscape Setting. In J.E. Vollmar (editor). Wildlife and Rare Plant Ecology of Eastern Merced County's Vernal Pool Grasslands. Vollmar Consulting, Berkeley, California.
- Wright, A.H. and A.A. Wright. 1949. Handbook of frogs and toads in the United States and Canada. Comstock Publishing, Ithaca, New York.

Wylie, G. D. and M. Amarello. 2007. Surveys for the current distribution and abundance of giant garter snakes (*Thamnophis gigas*) in the southern San Joaquin Valley. Prepared for the Bureau of Reclamation by the U.S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California.

**PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL EMERGENCY MANAGEMENT AGENCY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES**

WHEREAS, the mission of the Federal Emergency Management Agency (FEMA) of the U.S. Department of Homeland Security is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards; and

WHEREAS, FEMA makes assistance available to States, Territories, Commonwealths, local governments, Federally recognized Indian Tribes (Tribes), nonprofit organizations, institutions of higher education, individuals, and other eligible entities through programs set forth in Appendix A (Programs), pursuant to the Homeland Security Act of 2002, Pub. L. No. 107-296 (2002) (codified as amended at 6 U.S.C. § 101 *et seq.*); the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Pub. L. No. 93-288 (1974) (codified as amended at 42 U.S.C. § 5121 *et seq.*) (Stafford Act); the Disaster Recovery Reform Act of October 5, 2018 amending the Stafford Act, Pub. L. No. 115-254; the National Flood Insurance Act of 1968, Pub. L. No. 90-448 (1968) (codified as amended at 42 U.S.C. § 4001 *et seq.*); the Post-Katrina Emergency Management Reform Act of 2006, Pub. L. No. 109-295 (2006) (as amended); implementing regulations contained in Title 44 of the Code of Federal Regulations (CFR), Executive Order 13407, Public Alert and Warning System, (2006), and such other acts, executive orders, implementing regulations as are enacted from time to time; and

WHEREAS, FEMA has determined that implementing its Programs may result in Undertakings [as defined by 54 U.S.C. § 300320 and 36 CFR § 800.16(y)] that may affect properties listed in or eligible for listing in the National Register of Historic Places (National Register) pursuant to 36 CFR Part 60 (historic properties), and FEMA has consulted with the California State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act (NHPA), Pub. L. No. 89-665 (1966) (codified as amended at 54 U.S.C. § 306108), and the regulations implementing Section 106 of the NHPA (Section 106) at 36 CFR Part 800; and

WHEREAS, FEMA, the Advisory Council on Historic Preservation (ACHP), and the National Conference of State Historic Preservation Officers (NCSHPO) have determined that FEMA's Section 106 requirements can be more effectively and efficiently implemented and delays to the delivery of FEMA assistance minimized if a programmatic approach is used to stipulate roles and responsibilities, exempt certain Undertakings from Section 106 review, establish protocols for consultation, facilitate identification and evaluation of historic properties, and streamline the assessment and resolution of adverse effects; and

WHEREAS, FEMA has developed a Prototype Programmatic Agreement (FEMA Prototype Agreement) pursuant to 36 CFR § 800.14(b)(4) in consultation with the ACHP and NCSHPO to serve as a basis for negotiation of a State-specific Programmatic Agreement (Agreement) with the SHPO, State Emergency Management Agency, and/or participating Tribe(s); and

WHEREAS, on October 30, 2014, FEMA, SHPO, and the California Governor's Office of Emergency Services (Cal OES) executed an Agreement that conforms to the FEMA Prototype Agreement with a duration of five (5) years that will expire on October 30, 2019 (2014 Agreement); and

WHEREAS, this Agreement conforms to the FEMA Prototype Agreement as designated by the ACHP on December 17, 2013, and therefore does not require the participation or signature of the ACHP; and

WHEREAS, in order to implement its Programs, FEMA will provide assistance to State of California or Tribes [Recipient(s)] that may provide monies and other assistance to eligible Subrecipients, and as such, FEMA has invited Cal OES, one Recipient responsible for administering funds provided under these Programs to execute this Agreement as an Invited Signatory; and

WHEREAS, FEMA also may directly perform its own Undertakings pursuant to this Agreement; and

WHEREAS, in anticipation or in the immediate aftermath of an event, impacted communities and the State California, and/or affected Tribes, may conduct critical preparedness, response and recovery activities to safeguard public health and safety and/or to restore vital community services and functions before, during, and or following an event. Some of these activities may become Undertakings requiring Section 106 review subject to the terms of this Agreement, and FEMA shall coordinate the appropriate review as warranted; and

WHEREAS, FEMA has determined that its Programs may result in Undertakings with the potential to affect historic properties having religious and cultural significance to Tribes, including sites that may contain human remains and/or associated cultural items; and

WHEREAS, FEMA recognizes that Tribes may have sites of religious and cultural significance on or off Tribal lands [as defined in 36 CFR § 800.16(x)], and in meeting its Federal trust responsibility, FEMA has engaged in government-to-government consultation with all Tribes in California, and all Tribes in neighboring states that have sites of religious and cultural significance within California, and pursuant to 36 CFR § 800.2(c)(2)(ii)(E) has invited participating Tribes to enter into an agreement that specifies how FEMA and Tribes will carry out Section 106 responsibilities, including the confidentiality of information; and

WHEREAS, none of these Tribes indicated an interest in entering into the State-specific 2014 Agreement; and

WHEREAS, February 25, 2016, FEMA and the Middletown Rancheria of Pomo Indians of California (MTR) executed an Agreement that stipulates how FEMA's Section 106 and 110 NHPA requirements will be implemented in the delivery of FEMA assistance on MTR Tribal lands; and

WHEREAS, notwithstanding the aforementioned invitations to enter into a State-specific agreement, FEMA has made a draft of this Agreement available to federally recognized resident tribes and federally recognized nonresident tribes that trace their heritage to California, and has solicited comments and input; and

WHEREAS, certain Tribes have assumed the responsibilities of the SHPO in their Tribal lands through appointment of a Tribal Historic Preservation Officer (THPO) in accordance with Section 101 of the NIIPA, and FEMA shall consult with the THPO in lieu of the SHPO for Undertakings occurring on or affecting their Tribal lands; and

WHEREAS, FEMA may invite Tribes that have sites of religious and cultural significance to enter into the terms of this Agreement as invited signatories or concurring parties in accordance with 36 CFR § 800.14(f), and nothing in this Agreement prevents a Tribe from entering into a separate Programmatic Agreement or other agreement with FEMA for administration of FEMA Programs; and

WHEREAS, the terms of this Agreement shall not apply to Undertakings on or affecting Tribal lands without prior execution of the Agreement by the affected Tribe(s); and

WHEREAS, FEMA recognizes that members of the public may have interests in the effects of its Undertakings on historic properties and the Agreement, therefore, in an effort to take into account the views of the public FEMA and Cal OES have made a draft of this Agreement available on their websites and have solicited public comments and input; and

WHEREAS, for the review of specific Undertakings under this Agreement, FEMA may invite other agencies, organizations, and individuals to participate as consulting parties; and

NOW, THEREFORE, FEMA, Cal OES, and the SHPO (Signatories) agree that FEMA Programs in the State of California shall be administered in accordance with the following Stipulations to satisfy FEMA's Section 106 and Section 110(k) responsibilities for all resulting Undertakings, and effectively integrate historic preservation compliance considerations into the delivery of FEMA assistance. FEMA will not authorize implementation of an individual Undertaking until Section 106 review is completed pursuant to this Agreement.

STIPULATIONS

To the extent of its legal authority, and in coordination with other Signatories, FEMA shall ensure that the following measures are implemented:

I. GENERAL

A. Applicability

1. The execution of this Agreement supersedes the terms of the previous Programmatic Agreement in the State of California executed on October 30, 2014.
2. For FEMA Undertakings that also are within the jurisdiction of the Federal Communications Commission (FCC) and within the scope of its Section 106 Programmatic Agreements for communication facilities, FEMA defers Section 106 review in accordance with the ACHP Program Comment, as amended on September 24, 2015 (<http://www.ach.gov/docs/pc-wireless-communication.pdf>). The approval of funding for the FEMA Undertaking shall be conditioned upon the compliance of the Subrecipient with FCC's applicable Section 106 review, including any required consultation with Tribes. FEMA shall notify the SHPO/THPO when it applies the ACHP Program Comment to an Undertaking. FEMA remains responsible for any FEMA Undertakings it determines are outside the jurisdiction of FCC.
3. In the event of a Stafford Act major disaster or emergency declaration (Declaration), State, Tribal and local governments may lack the capability to perform or to contract for emergency work, and instead request that the work be accomplished by a Federal agency. Through a mission assignment (MA), FEMA may direct appropriate Federal agencies to perform the work. This Agreement shall apply to such Federal assistance undertaken by or funded by FEMA pursuant to Titles IV and V of the Stafford Act and 44 CFR Part 206.
4. FEMA may utilize this Agreement to fulfill its Section 106 responsibilities and those of other Federal agencies that designate FEMA as the lead Federal agency pursuant to 36 CFR § 800.2(a)(2) with appropriate notification to the other Signatories and the ACHP regarding Undertakings that fall within the scope of this Agreement. When FEMA is not designated as the lead Federal agency, all Federal agencies, including FEMA, remain individually responsible for their compliance with Section 106. This provision does not prevent FEMA from recognizing another Federal agency as lead Federal agency for specific Undertakings as appropriate. This provision is in furtherance of the Memorandum Of Understanding (MOU) executed in September of 2019, in accordance with the Unified Federal Review (UFR) requirements pursuant to the Sandy Recovery Improvement Act of 2013 (SRIA) aimed at streamlining the environmental and historic preservation compliance review process related to disaster recovery operations.
5. If another Federal program or Federal agency has concluded Section 106 consultation review and approved an Undertaking within the past two (2) years, FEMA has no further requirement for Section 106 review regarding that Undertaking provided that FEMA:

- a. confirms that the scope and effect [as defined by 36 CFR § 800.16(i)] of its Undertaking are the same as that of the Undertaking reviewed by the previous agency, and;
- b. determines that the previous agency complied with Section 106 appropriately, and; adopts the findings and determinations of the previous agency.

FEMA shall document these findings in its project file in order to confirm that the requirements of Section 106 have been satisfied. Should FEMA, in consultation with SHPO and participating Tribe(s), determine that the previous Section 106 review was insufficient or involved interagency disagreements about eligibility, effect, and/or treatment measures, FEMA shall conduct additional Section 106 consultation in accordance with the terms of this Agreement.

6. With the written concurrence of the Signatories, other Federal agencies providing financial assistance for the same type of activities covered under the terms of this Agreement as outlined in Appendix A may satisfy their Section 106 responsibilities for such activities by accepting and complying in writing with the terms of this Agreement.
 - a. Other Federal Agencies may include States and units of local government who have assumed environmental responsibilities of the U.S. Department of Housing and Urban Development and, acting as the Responsible Entity pursuant to 24 CFR Part 58, are responsible for environmental review, decision-making and action.
 - b. In such situations, the other Federal Agency shall notify the Signatories in writing of its intent to use this Agreement to achieve compliance with its Section 106 requirements, and consult with the Signatories regarding its Section 106 compliance responsibilities. Resumes of staff who meet the Secretary of the Interior's Professional Qualification Standard(s) and will review Second Tier projects in accordance with Appendix B of this Agreement shall be provided to FEMA and the SHPO/THPO.
7. FEMA has determined that the following types of activities have limited or no potential to affect historic properties and FEMA has no further Section 106 responsibilities with regards to them, pursuant to 36 CFR § 800.3(a)(1):
 - a. Pursuant to 44 CFR § 206.110(m), assistance to individuals and households provided under 44 CFR Part 206, Subpart D and Section 408 of the Stafford Act, including funding for owner-occupied home repair, content replacement, personal property, transportation and healthcare expenses, is exempt from the provisions of Section 106. For ground disturbing activities, and construction related to 44 CFR §§ 206.117(b)(1)(ii) (temporary housing), 206.117(b)(3) (replacement housing), 206.117(b)(4) (permanent housing construction), 206.117(c)(1)(vi) (repair or replacement of privately-owned access routes), and repair of multi-family housing units, FEMA shall conduct Section 106 review.

- b. Administrative actions such as personnel actions, travel, procurement of services, supplies (including vehicles and equipment) for the support of day-to-day and emergency operational activities, and the temporary storage of goods provided storage occurs within existing facilities or on previously disturbed soils.
- c. Granting of variances, and actions to enforce Federal, Tribal, State, or local codes, standards or regulations.
- d. Monitoring, data gathering, and reporting in support of emergency and disaster planning, response and recovery, and hazard activities.
- e. Research and development of hazard warning systems, hazard mitigation plans, codes and standards, and education/public awareness programs.
- f. Assistance provided for planning, studies, design and engineering costs that involve no commitment of resources other than staffing and associated funding.
- g. Assistance provided for training, management and administration, exercises, and mobile/portable equipment purchases; with the exception of potential ground-disturbing activities and modification of existing structures.
- h. Community Disaster Loans for funding to perform governmental functions for any eligible jurisdiction in a designated disaster area that has suffered a substantial loss of tax and other revenue pursuant to Section 417 of the Stafford Act.
- i. Funding the administrative action of acquisition or lease of existing facilities where planned uses conform to past use or local land use requirements.
- j. Funding the administrative action of acquiring properties in acquisition projects, including the real estate transaction.
- k. Labor, equipment and materials used to provide security in the Declaration area, including lease, rental, purchase or repair of equipment or vehicles and payment for staff and contract labor.
- l. Application of pesticides to reduce adverse public health effects, including aerial and truck-mounted spraying.
- m. Unemployment assistance pursuant to Section 410 of the Stafford Act.
- n. Distribution of food coupons pursuant to Section 412 of the Stafford Act.
- o. Legal services pursuant to Section 415 of the Stafford Act.
- p. Crisis counseling pursuant to Section 416 of the Stafford Act.

8. Any FEMA Programs authorized by the United States Congress in the future may be included in this Agreement in accordance with Stipulation IV.A., Amendments. Any change in the FEMA name, Programs, or organizational structure shall not affect this Agreement.

B. Roles and Responsibilities of the Signatories

1. FEMA:

- a. FEMA shall use Federal, Tribal, State, Subrecipient, or contractor staff whose qualifications meet the Secretary of the Interior's (Secretary's) Professional Qualifications Standards (Professional Qualifications) set forth in the Federal Register at 48 Fed. Reg. 44716-01 (September 29, 1983), as amended (Qualified), in applying Second Tier II Programmatic Allowances listed in Appendix B, completing identification and evaluation of historic properties and in making determinations of effects. FEMA shall review any National Register eligibility determination and make its own findings of effect resulting from the performance of these activities prior to submitting such determinations to the SHPO and participating Tribe(s).
 - i. FEMA acknowledges that Tribes possess special expertise in assessing the National Register eligibility of properties with religious and cultural significance to them. Tribal leaders, and as appropriate, their representatives, shall decide who meets qualifications/standards as defined by their Tribes for review of Undertakings affecting properties with religious and cultural significance to them.
- b. In accordance with 36 CFR § 800.2(c)(4), FEMA may authorize the Recipient(s), or a Subrecipient through the Recipient(s), to initiate the Section 106 process with the SHPO and other consulting parties, assist in identifying other consulting parties with a demonstrated interest in the Undertaking, and prepare any necessary analyses and documentation, but FEMA shall remain responsible for determinations of National Register eligibility and findings of effect recommended by the authorized party. FEMA shall follow the process set forth in Stipulation I.B.1.a., FEMA Roles and Responsibilities, and notify the SHPO in writing when a Recipient or Subrecipient has been authorized to initiate consultation on FEMA's behalf. FEMA alone shall conduct all Section 106 consultation with Tribe(s).
- c. Prior to authorizing the release of funds for individual Undertakings requiring grant conditions pursuant to this Agreement, FEMA shall inform the Recipient(s) of all stipulations and conditions and ensure that they are understood so they can be adequately conveyed to the Subrecipient. FEMA shall work in partnership with the Recipient(s) to provide Subrecipients with guidance on in-kind repair pursuant to *The Secretary of the Interior's Standards for the Treatment of Historic Properties 2017 (Secretary's Standards)*, 36 CFR Part 68, or the most updated version, and techniques to avoid or minimize adverse effects to historic properties.

- d. FEMA shall provide the other Signatories and the ACIIP with an annual report for the previous calendar year by March 1 of each year that this Agreement is in effect. This annual report will summarize the actions taken to implement the terms of this Agreement, statistics on Undertakings reviewed, and recommend any actions or revisions to be considered, including updates to the appendices.
- e. FEMA shall confer annually and as necessary with the other Signatories within sixty (60) days after issuance of the annual report, to review the report and/or discuss issues and concerns in greater detail. This review shall occur in person or by telephone as determined by FEMA.
- f. FEMA shall notify the SHPO and affected Tribe(s), as soon as practicable, following a Declaration to provide specific points of contact and other pertinent information about the Declaration.
- g. FEMA may convene an initial scoping meeting with the Signatories and other interested parties as soon as practicable after each Declaration to address Declaration-specific issues and procedures.
- h. FEMA shall ensure that all documentation resulting from Undertakings reviewed pursuant to this Agreement is consistent with applicable SHPO and Tribal guidelines and the confidentiality provisions of 54 U.S.C. § 307103 and 36 CFR § 800.11(c).

2. SHPO:

- a. The SHPO shall review FEMA's determination of the Areas of Potential Effects (APE), National Register eligibility determinations, and FEMA's effect findings, and respond within timeframes required by this Agreement.
- b. The SHPO maintains and administers the California Historical Resources Information System (CHRIS), which is an inventory of known historical resources in the State of California. This inventory is archived and made available through regional Information Centers (IC's) located throughout the state.
 - i. Upon request, the appropriate IC(s) shall provide FEMA with all requested information, unless otherwise precluded by confidentiality restrictions, such as tribal objections. In the case of an Emergency Undertaking (Stipulation II.B.), the information shall be provided on an expedited basis at no charge. For all other Undertakings, the information shall be provided to FEMA or Cal OES (on behalf of FEMA) in accordance with normal CHRIS operating procedures. In both cases, access to and use and sharing of CHRIS inventory information shall be governed by FEMA's active CHRIS Access and Use Agreement. Alternatively, FEMA or Cal OES may enter into access agreements with specific ICs that specify terms of inventory information provision.

- ii. If, as a result of a disaster, an IC(s) is closed or rendered inoperable, FEMA or Cal OES may request records for the affected area(s) directly from the SHPO. The SHPO will make every effort to provide all available information on a timely basis, although note that SHPO information may not include all information held by the IC.
 - c. The SHPO shall identify staff or consultants to assist FEMA staff with their Section 106 responsibilities, and identify, in coordination with FEMA, those activities within the Section 106 review process that the SHPO may perform for specific Undertakings as agreed in writing with FEMA.
 - d. As requested, SHPO staff shall be reasonably available as a resource and for consultation through site visits, written requests, telephone conversations or electronic media. In those instances where consultation with the SHPO has occurred, FEMA shall provide a written summary via e-mail or regular mail to the SHPO, including any decisions that were reached.
 - e. The SHPO may delegate some or all of its responsibilities under this Agreement to one or more Liaisons to serve as a dedicated point of contact for consultation with FEMA. The SHPO shall confer with FEMA about the selection of any Liaisons, the scope of responsibilities delegated and related implementing procedures. The SHPO shall formally document these decisions for concurrence by FEMA. Liaisons are not required to be members of the SHPO staff.
 - f. The SHPO shall participate in an initial scoping meeting for a Declaration.
 - g. The SHPO may assist local jurisdictions and/or the Recipient(s) in the State of California with advance planning efforts to consider historic properties in the context of homeland security considerations, including disaster preparedness, response, recovery, and mitigation programs for which FEMA funding may be requested.
 - h. The SHPO shall coordinate with FEMA, to identify consulting parties, including any communities, organizations, or individuals that may have an interest in a specific Undertaking and its effects on historic properties.
 - i. The SHPO shall participate in annual reviews convened by FEMA to review the effectiveness of this Agreement in accordance with Stipulation I.B.1.e.
3. Recipient(s):
- a. The Recipient(s) shall ensure that their Subrecipients understand and acknowledge conditions and potential requirements that may be placed upon Undertakings as a result of Section 106 consultation and the provisions of this Agreement.

- b. The Recipient(s) shall participate in an initial scoping meeting for a Declaration.
- c. The Recipient(s) shall ensure that their Subrecipients understand that failure to comply with any project-specific conditions that have been placed on their grants could jeopardize FEMA funding.
- d. The Recipient(s) shall notify FEMA as soon as possible of any proposed change to the approved scope of work. The Recipient(s) shall direct their Subrecipients not to implement the changes to the proposed scope of work until any additional review required by this Agreement is complete.
- e. The Recipient(s) shall ensure that its Subrecipients are made aware that in the event of an unexpected discovery involving an Undertaking that has affected a previously unidentified historic property or human remains, or affected a known historic property in an unanticipated manner, the Subrecipient will comply with Stipulation III.B., Unexpected Discoveries, Previously Unidentified Properties, or Unexpected Effects.
- f. The Recipient(s) shall ensure that in its subgrant agreements, any scope of work involving ground disturbance, and resultant contracts to execute said work, provide for the protection of and notification protocols for unexpected discoveries or unexpected effects to historic properties and human remains.
- g. If an Invited Signatory Tribe assumes the role of Recipient for projects on Tribal lands, the Tribe shall assume the same responsibilities as outlined in Stipulation I.B.3. of this Agreement, Roles and Responsibilities of the Signatories.

C. Tribal Consultation

1. For FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. In determining who the affected Tribe(s) may be, FEMA will first establish that it is a type of Undertaking with potential to affect historic properties with religious and cultural significance and may consult with the SHPO, Tribe(s), Native American Heritage Commission (NAHC), and access applicable tools to identify geographic tribal interests.
2. To the extent permitted by Section 304 of the NHPA, Section 9(a) of the Archeological Resources Protection Act (ARPA) (16 U.S.C. § 470aa – 470mm), and any other applicable laws, FEMA shall ensure it withholds information protected by such laws from public disclosure.
3. FEMA shall invite affected Tribe(s) to participate in the initial scoping meeting within their geographic area of interest for each Declaration.

D. Public Participation

1. FEMA recognizes that the views of the public are essential to informed decision making throughout the Section 106 consultation process. FEMA shall notify the public of proposed Undertakings in a manner that reflects the nature, complexity, significance of historic properties likely affected by the Undertaking, the likely public interest given FEMA's specific involvement, and any confidentiality concerns of Tribe(s), private individuals and businesses.
2. FEMA may consult with the Recipient(s), Subrecipient, SHPO, participating Tribe(s), and other consulting parties to determine if there are individuals or organizations with a demonstrated interest in historic properties that should be included as a consulting party for the Undertaking in accordance with 36 CFR § 800.2(c)(5). If such parties are identified or identify themselves to FEMA, FEMA shall provide them with information regarding the Undertaking and its effects on historic properties, consistent with the confidentiality provisions of 36 CFR § 800.11(c).
3. In accordance with the outreach strategy developed for an Undertaking in consultation with the SHPO and participating Tribe(s), for involving the public, FEMA shall identify the appropriate stages for seeking public input during the Section 106 consultation process. FEMA shall consider all views provided by the public regarding an Undertaking.
4. FEMA may also provide public notices and the opportunity for public comment or participation in an Undertaking through the public participation process of the National Environmental Policy Act (NEPA) and FEMA's implementing policies set forth in DHS Directive No. 023-01, *Implementation of the National Environmental Policy Act* (Oct. 31, 2014); DHS Instruction No. 023-01-001-01, *Implementation of the National Environmental Policy Act* (Nov. 6, 2014); FEMA Directive No. 108-1, *Environmental Planning and Historic Preservation Responsibilities and Program Requirements* (Aug. 22, 2016); FEMA Instruction No. 108-1-1, *Instruction on Implementation of the Environmental Planning and Historic Preservation Responsibilities and Program Requirements* (Aug. 22, 2016); and/or Executive Orders 11988 Floodplain Management and 11990 Protection of Wetlands relating to floodplains and wetlands as set out in 44 CFR Part 9, and Executive Order 12898, Environmental Justice, provided such notices specifically reference Section 106 as a basis for public involvement.
5. Should a member of the public object in writing to implementation of the Agreement's terms, FEMA will notify the other Signatories in writing and take the objection into consideration. FEMA shall consult with the objecting party and, if that party so requests, the other Signatories, for not more than thirty (30) days. In reaching its decision regarding the objection, FEMA shall take into consideration all comments from these parties. Within fifteen (15) days after closure of this consultation period, FEMA shall provide the other parties with its final decision in writing.

E. Timeframes and Communications

1. All time designations shall be in calendar days unless otherwise stipulated. If any Signatory does not object to FEMA's finding or determination related to an Undertaking within an agreed-upon timeframe, FEMA may proceed to the next step in the consultation process as described in Stipulation II., Project Review.
2. Due to the varied nature of Undertakings, the individual response times to FEMA's requests for comment/concurrence will vary. These response times are contingent upon FEMA ensuring that its findings and determinations are made by Qualified staff and supported by documentation as required by 36 CFR § 800.11(d) and 36 CFR § 800.11(e), and consistent with FEMA guidance.
 - a. For Emergency Undertakings as outlined in Stipulation II.B., Expedited Review of Emergency Undertakings, the SHPO shall respond to any FEMA request for comments within three (3) days after receipt, unless FEMA determines the nature of the emergency action warrants a shorter time period.
 - b. For Undertakings associated with the Individual Assistance (IA) program the response time for each request for concurrence shall be fifteen (15) days, and for Undertakings associated with the Public Assistance (PA) program, the response time for each request for concurrence shall be fifteen (15) days for submittals related to an open declared-disaster operation, and thirty (30) days thereafter, or in accordance with temporary timelines established by FEMA on a Declaration-by-Declaration basis.
 - c. For the Hazard Mitigation Grant Program (HMGP) and all non-disaster programs, the response time for each request for concurrence shall be a maximum of thirty (30) days.
3. The consulting parties may send and accept official notices, comments, requests for further information and documentation, and other communications required by this Agreement by e-mail. As appropriate, if it will facilitate completion of reviews, hard copies may be requested.

II. PROJECT REVIEW

A. Programmatic Allowances

1. If FEMA determines an Undertaking conforms to one or more of the Programmatic Allowances (Allowances) in Appendix B of this Agreement, FEMA shall complete the Section 106 review process by documenting this determination in the project file, without SHPO review or notification.
2. If the Undertaking involves a National Historic Landmark (NHL), FEMA shall notify the SHPO, participating Tribe(s), the NPS NHL Program Manager of the NPS Pacific

West Regional Office, and Cal OES that the Undertaking conforms to one or more Allowances. FEMA shall provide information about the proposed scope of work for the Undertaking and the Allowance(s) enabling FEMA's determination.

3. If FEMA determines any portion of an Undertaking's scope of work does not conform to one or more Allowances listed in Appendix B, FEMA shall conduct expedited or standard Section 106 review, as appropriate, for the entire Undertaking in accordance with Stipulation II.B., Expedited Review for Emergency Undertakings, or Stipulation II.C., Standard Project Review.
4. Allowances may be revised and new Allowances may be added to this Agreement in accordance with Stipulation IV.A.3., Amendments.

B. Expedited Review for Emergency Undertakings

1. Determine Expedited Review

- a. As part of the Declaration process, FEMA shall define the time interval during which the disaster-causing incident occurs [the incident period, as defined in 44 CFR § 206.32(f)]. FEMA may approve direct Federal assistance and/or funding for emergency work [as defined in 44 CFR § 206.201(b)] that occurs during the incident period, including work already completed, in response to an immediate threat to human health and safety or property. Pursuant to 36 CFR § 800.12(d), FEMA may conduct expedited review of emergency Undertakings for thirty (30) days from the date that a disaster or emergency has been formally declared by the President.
- b. Should FEMA determine that it is necessary to extend the expedited review period for emergency Undertakings beyond the initial thirty (30) days, FEMA shall, in 30-day increments, as needed, notify in writing the ACHP, SHPO, Cal OES, and participating Tribe(s).

2. Conduct Expedited Reviews

- a. If the emergency Undertaking is an immediate rescue and salvage operation conducted in response to an event to preserve life and property, FEMA has no Section 106 consultation responsibilities in accordance with 36 CFR § 800.12(d);
or
- b. If the emergency Undertaking meets one or more of the Allowances in Appendix B of this Agreement, FEMA shall complete the Section 106 review process pursuant to Stipulation II.A.1., Programmatic Allowances.
- c. If FEMA determines that the emergency Undertaking would adversely affect a historic property during this expedited review period:

- i. To the extent practicable, FEMA will propose treatment measures (avoidance, minimization, and mitigation) that would resolve adverse effects during implementation, and request the comments of the SHPO, Cal OES, Subrecipient, and participating Tribe(s) within three (3) days of receipt of this information unless FEMA determines the nature of the emergency warrants a shorter time period.
- ii. FEMA may provide this information through written requests, telephone conversations, meetings, or electronic media. In all cases, FEMA shall clarify that an "expedited review" is being requested for the Undertaking.
- iii. FEMA shall take into account any timely comments provided by the SHPO, Subrecipient, and/or participating Tribe(s) in making a decision on how to proceed.
- iv. Should the SHPO, Subrecipient, and/or participating Tribe(s) not comment within three (3) days, FEMA shall complete Section 106 consultation for the Undertaking based on the available information.
- v. FEMA shall notify the SHPO, Subrecipient, and participating Tribe(s) of the final decision, indicating how any comments received were considered in reaching that decision.

C. **Standard Project Review:** For Undertakings not exempt from further Section 106 review, FEMA shall ensure that the following standard project review steps are implemented. In the interest of streamlining, FEMA may combine some or all of these steps during consultation in accordance with 36 CFR § 800.3(g).

1. Consulting Parties: FEMA shall consider all written requests of individuals and organizations to participate as consulting parties, and consult with the SHPO and participating Tribe(s) to identify any other parties that meet the criteria to be consulting parties and invite them to participate in the Section 106 process. FEMA may invite others to participate as consulting parties as the Section 106 consultation proceeds. FEMA shall invite any individual or organization that will assume a specific role or responsibility outlined in a Memorandum of Agreement or Programmatic Agreement to participate as an invited signatory to the Agreement.

2. Area of Potential Effects:

a. For standing structures not adjacent to or located within the boundaries of a National Register listed or eligible district, Qualified staff may define the APE, as defined at 36 CFR § 800.16(d), as the individual structure when the proposed Undertaking is limited to its repair or rehabilitation [as defined in 36 CFR § 68.2(b)].

- b. For all other Undertakings, Qualified staff shall determine the APE in consultation with the SHPO and participating Tribe(s). FEMA may consider information provided by other parties, such as local governments and the public, when establishing the APE.
3. Identification and Evaluation: Qualified staff shall determine, in consultation with the SHPO and participating Tribe(s) if the APE contains historic properties, including properties of religious and cultural significance. This may include the review of documentation provided by the Recipient(s) or Subrecipient in coordination with the SHPO.
 - a. Level of Effort: FEMA shall make a reasonable and good faith effort to identify historic properties in accordance with 36 CFR § 800.4(b)(1). FEMA may consult with the SHPO to determine the level of effort and methodology necessary to identify and evaluate a variety of historic property types. For properties of religious and cultural significance to affected Tribe(s), FEMA shall consult with the affected Tribe(s) to determine geographical areas containing them that may be affected by an Undertaking and determine the necessary level of effort to identify and evaluate or avoid any such historic properties.
 - b. National Historic Landmarks: When FEMA identifies an Undertaking with the potential to affect an NHL, FEMA shall contact the NPS NHL Program Manager of the Pacific West Regional Office (Pacific West Region, 333 Bush Street, Suite 500, San Francisco, CA 94104-2828) in addition to the SHPO, participating Tribe(s), and other consulting parties. The purpose of this notification is to ensure early coordination for the Undertaking, which FEMA later may determine adversely affects the NIIL as outlined in Stipulation II.C.6.
 - c. Determinations of Eligibility: FEMA shall review or determine National Register eligibility based on identification and evaluation efforts, and consult with the SHPO, participating Tribe(s), and other consulting parties regarding these determinations. Should the SHPO, participating Tribe(s), or another consulting party disagree with the determination of eligibility, FEMA shall either:
 - i. Elect to consult further with the objecting party until the objection is resolved;
 - ii. Treat the property as eligible for the National Register; or
 - iii. Obtain a determination of eligibility from the Keeper of the National Register (Keeper) in accordance with 36 CFR § 63.2(d)-(e) and 36 CFR § 800.4(c)(2).
4. Findings of No Historic Properties Affected: FEMA shall make a finding of "no historic properties affected" under the following circumstances:
 - a. If no historic properties are present in the APE;

- b. The Undertaking is designed to avoid effects to historic properties, including National Register listed or eligible properties of religious and cultural significance to participating Tribe(s); or
 - c. The Undertaking does not affect the character-defining features of a historic property.
 - d. FEMA shall notify the SHPO, participating Tribes(s), and any other consulting parties of this finding and provide supporting documentation in accordance with 36 CFR § 800.11(d). Unless the SHPO or participating Tribe(s) objects to the finding within the applicable timeframe outlined in Stipulation I.E., Timeframes and Communications, the Section 106 review of the Undertaking will have concluded.
 - e. If the SHPO or participating Tribe(s) objects to a finding of “no historic properties affected,” FEMA shall consult with the objecting party to resolve the disagreement.
 - i. If the objection is resolved, FEMA either may proceed with the Undertaking in accordance with the resolution or reconsider effects on the historic property by applying the criteria of adverse effect pursuant to Stipulation II.C.5., Application of the Criteria of Adverse Effect, below.
 - ii. If FEMA is unable to resolve the disagreement, it will forward the finding and supporting documentation to the ACHP and request that the ACHP review FEMA’s finding in accordance with 36 CFR § 800.4(d)(1)(iv)(A) through 36 CFR § 800.4(d)(1)(iv)(C). FEMA shall consider the ACHP’s recommendation in making its final determination. If FEMA’s final determination is to reaffirm its “no historic properties affected” finding, the Section 106 review of the Undertaking will have concluded. Otherwise, FEMA will proceed to Stipulation II.C.5., below.
5. Application of the Criteria of Adverse Effect: If FEMA finds an Undertaking may affect historic properties in the APE, including those of religious and cultural significance to affected Tribe(s), FEMA shall apply the criteria of adverse effect to historic properties within the APE(s), taking into account the views of the consulting parties and the public concerning effects in accordance with 36 CFR § 800.5(a).
- a. If FEMA determines that an Undertaking does not meet the adverse effect criteria, FEMA shall propose a finding of “no adverse effect” in accordance with 36 CFR § 800.5(b).
 - i. FEMA shall notify the SHPO, participating Tribe(s), and all other consulting parties of its finding and provide supporting documentation pursuant to 36 CFR §800.11(e).

- ii. Unless a consulting party objects within the applicable timeframe outlined in Stipulation I.E., Timeframes and Communications, FEMA will proceed with its "no adverse effect" determination and conclude the Section 106 review.
 - iii. If a consulting party objects to a finding of "no adverse effect," FEMA will consult with the objecting party to resolve the disagreement.
 - 1) If the objection is resolved, FEMA shall proceed with the Undertaking in accordance with the resolution, or;
 - 2) If the objection cannot be resolved, FEMA shall request that the ACHP review the findings in accordance with 36 CFR § 800.5(c)(3)(i)-(ii), and submit the required supporting documentation. FEMA shall consider the ACHP's comments in making its final determination.
- b. If FEMA finds the Undertaking may adversely affect historic properties, FEMA shall request through the Recipient(s) that the Subrecipient revise the scope of work to substantially conform to the *Secretary's Standards* for standing structures, or avoid or minimize adverse effects for National Register listed or eligible archaeological properties.
- i. If the Subrecipient modifies the scope of work to avoid the adverse effect, FEMA shall notify the SHPO, participating Tribe(s), and all other consulting parties, and provide supporting documentation, including the necessary conditions. Unless a consulting party makes a timely objection in accordance with the applicable timeframe outlined in Stipulation I.E., Timeframes and Communications, FEMA shall proceed with its "no adverse effect" determination, including any conditions, and conclude the Section 106 review.
 - ii. If an Undertaking is not modified to avoid the adverse effect(s), FEMA shall initiate consultation to resolve the adverse effect(s) in accordance with Stipulation II.C.6., Resolution of Adverse Effects.
6. Resolution of Adverse Effects: If FEMA determines that an Undertaking may adversely affect a historic property, it shall resolve the effects of the Undertaking in consultation with the SHPO, Recipient(s), Subrecipient, participating Tribe(s), the ACHP, if participating, and other consulting parties, by one of the following methods depending upon the severity of the adverse effect(s) as well as the determination of the historic property's significance on a local, state or national level. When FEMA determines an Undertaking will adversely affect an NHL, FEMA shall notify and invite the Secretary and the ACHP to participate in consultation in accordance with 36 CFR § 800.10. When the ACHP participates in consultation related to an NHL, the ACHP shall report the outcome of the consultation to the Secretary and the FEMA Administrator.

- a. Abbreviated Consultation Process: FEMA will propose in writing to the consulting parties to resolve the adverse effects of the Undertaking through the application of one or more Treatment Measures outlined in Appendix C as negotiated with the SHPO, participating Tribes, and other consulting parties. The use of these Treatment Measures shall not require the execution of a Memorandum of Agreement (MOA) or Programmatic Agreement.
 - i. In consultation with the SHPO, participating Tribe(s), and other consulting parties, FEMA shall propose in writing the implementation of a specific Treatment Measure, or combination of Treatment Measures, with the intent of expediting the resolution of adverse effects, and provide documentation as required by 36 CFR § 800.11(c), subject to the confidentiality provisions of 36 CFR § 800.11(c). Unless a consulting party or the ACHP objects within thirty (30) days of receipt of FEMA's proposal, FEMA shall proceed with the implementation of the Treatment Measure(s) and will conclude the Section 106 review.
 - ii. If any of the consulting parties or the ACHP objects within the thirty (30) review-and-comment period to the resolution of adverse effects through the application of the Abbreviated Consultation Process, FEMA shall resolve the adverse effect(s) using procedures outlined below in Stipulation II.C.6.b., MOA, or Stipulation II.C.6.c., Programmatic Agreement.
 - iii. Because funding and implementation details of Treatment Measures for specific Undertakings may vary by program, FEMA shall provide written notice to the consulting parties within sixty (60) days of the completion of the Treatment Measure(s). This written notice will serve as confirmation that the Treatment Measure(s) for a specific Undertaking have been implemented. FEMA also shall include information pertaining to the completion of Treatment Measures in the annual report pursuant to Stipulation I.B.1.d., FEMA Roles and Responsibilities.
- b. Memorandum of Agreement: FEMA shall provide the ACHP with an adverse effect notice in accordance with 36 CFR § 800.6(a)(1) if it has not already provided such under the Abbreviated Consultation Process of this Agreement, if a consulting party or the ACHP objects in accordance with Stipulation II.C.6.a.ii., or if FEMA in consultation with the SHPO, participating Tribe(s), and other consulting parties has determined that an MOA would be more appropriate to resolve the adverse effect(s). In consultation with the SHPO, participating Tribe(s), and other consulting parties, including the ACHP (if participating), FEMA shall develop an MOA in accordance with 36 CFR § 800.6(c) to agree upon treatment measures to avoid, minimize, and/or mitigate adverse effects on historic properties. The MOA may also include treatment measures that serve an equal or greater public benefit in promoting the preservation of historic properties in lieu of more traditional treatment measures.

- c. Programmatic Agreement: Should the execution of an MOA be inappropriate given the similar nature of effects on historic properties, the inability to determine effects prior to approval of an Undertaking, or where other circumstances warrant, FEMA shall consult with the SHPO, participating Tribe(s), the ACHP, if participating, and any other consulting parties to develop a Programmatic Agreement in accordance with 36 CFR § 800.14(b), and identify programmatic conditions or treatment measures to govern the resolution of potential or anticipated adverse effects from certain complex project situations for an Undertaking or for multiple but similar Undertakings by a single Subrecipient.
7. Objections: Should any Signatory or consulting party object within the timeframes established by this Agreement to any plans, specifications, or actions taken pursuant to resolving an adverse effect, FEMA shall consult further with the objecting party to seek resolution. If FEMA determines the objection cannot be resolved, FEMA shall address the objection in accordance with Stipulation IV.B., Dispute Resolution.

III. OTHER CONSIDERATIONS

- A. Changes to an Approved Scope of Work: The Recipient(s) shall notify FEMA and shall require a Subrecipient to notify it immediately when a Subrecipient proposes changes to an approved scope of work for an Undertaking.
 1. If FEMA determines the change meets a Programmatic Allowance or has no effect on the property, FEMA shall approve the change.
 2. If the change can be modified to meet an Allowance, or conform to any applicable *Secretary's Standards*, FEMA shall conclude its Section 106 review responsibilities.
 3. If FEMA determines that the change does not meet an Allowance, FEMA shall initiate consultation pursuant to Stipulation II.C., Standard Project Review.
- B. Unexpected Discoveries, Previously Unidentified Properties, or Unexpected Effects:
 1. Upon notification by a Subrecipient of an unexpected discovery, or if it appears that an Undertaking has affected a previously unidentified property or affected a known historic property in an unanticipated manner, in accordance with Stipulation I.B.3.e., Recipient(s) Roles and Responsibilities, the Recipient(s) shall immediately notify FEMA and require the Subrecipient to:
 - a. Stop construction activities in the vicinity of the discovery.
 - b. Take all reasonable measures to avoid or minimize harm to the property until FEMA has completed consultation with the SHPO, participating Tribe(s), and any other consulting parties. Upon notification by the Recipient of a discovery, FEMA shall immediately notify the SHPO, participating Tribe(s), and other consulting parties that may have an interest in the discovery, previously unidentified property

or unexpected effects, and consult to evaluate the discovery for National Register eligibility and/or the effects of the Undertaking on historic properties.

- c. If human remains are discovered, ensure that there shall be no further excavation or disturbance of any nearby area that may also contain human remains, and notify the county coroner/medical examiner immediately in accordance with Section 7050.5 of the California Health and Safety Code. Discoveries of human remains on Federal or Tribal lands shall be subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. § 3001-3013, 18 U.S.C. § 1170) and the Archeological Resources Protection Act (ARPA) (16 U.S.C. 470aa-470mm; Public Law 96-95 as amended), and state codes, as applicable.
- d. Assist FEMA in completing the following actions, as required:
 - i. FEMA shall consult with the SHPO, participating Tribe(s), and other consulting parties in accordance with the consultation process outlined in Stipulation II., Project Review, to develop a mutually-agreeable action plan with timeframes to identify the discovery or previously unidentified property, take into account the effects of the Undertaking, resolve adverse effects if necessary, and ensure compliance with applicable Federal, State, and local statutes.
 - ii. FEMA shall coordinate with the Recipient(s) and the Subrecipient regarding any needed modification to the scope of work for the Undertaking necessary to implement recommendations of the consultation and facilitate proceeding with the Undertaking.
 - iii. In cases where discovered human remains are determined to be Native American, FEMA shall consult with the appropriate Tribal representatives and the SHPO. In addition, FEMA shall follow the guidelines outlined in the ACHP's *Policy Statement Regarding the Treatment of Burial Sites, Human Remains, and Funerary Objects (2007)* and any State-specific policies that may be in force.

C. Curation

1. In cases where archaeological survey and testing are conducted on private land, any recovered collections remain the property of the land owner. In such instances, FEMA and the Recipient(s), in coordination with the SHPO and affected Tribe(s), shall encourage land owners to donate the collection(s) to an appropriate public or Tribal entity. In cases where the property owner wishes to transfer ownership of the collection(s) to a public or Tribal entity, and in the case of artifacts recovered from public lands, FEMA and the Recipient(s) shall ensure that recovered artifacts and related documentation are curated in a suitable repository as agreed to by FEMA, the SHPO, and affected Tribe(s), following applicable State or Tribal guidelines.
2. When an Undertaking will adversely affect an archaeological resource listed in or eligible for the National Register, FEMA may treat the adverse effect by providing for

the recovery of significant information through archaeological data recovery. FEMA shall consult with the SHPO, participating Tribe(s), and other consulting parties to prepare a research design (data recovery plan), including a specific plan for curation. This plan will incorporate any relevant curation provisions contained in the *California Guidelines for the Curation of Archeological Collections (May 7, 1993)*, ACHP's *Recommended Approach for Consultation on Recovery of Significant Information from Archaeological Sites* published in the Federal Register [64 Federal Register 27085-27087 (May 18, 1999)], or other provisions agreed to by the consulting parties. No excavation should be initiated before FEMA acceptance and approval of the curation plan.

- a. As stipulated in the curation plan, artifacts, as well as field and laboratory records sufficient to document the collection, shall be curated at a facility, preferably in-state, that meets the standards of, and in accordance with the provisions of 36 CFR Part 79, *Curation of Federally Owned and Administered Archaeological Collections*, and applicable State or Tribal requirements.

D. Review of Undertakings Initiated Before Initiation or Completion of Section 106 Review

1. In accordance with Section 110(k) of the NHPA, FEMA shall not grant assistance to a Subrecipient who, with intent to avoid the requirements of this Agreement or Section 106 of the NHPA, has intentionally significantly and adversely affected a historic property to which the assistance would relate, or having legal power to prevent it, allowed an adverse effect to occur. However, if after consultation with the SHPO, Recipient, appropriate Tribes(s), and ACHP, FEMA determines that extraordinary circumstances justify granting assistance despite the adverse effect created or permitted by the Subrecipient, FEMA shall complete consultation for the Undertaking pursuant to the terms of this Agreement.
2. FEMA shall specifically advise the Recipient(s) and shall require that the Recipient(s) advise its Subrecipients in writing that they may jeopardize Federal funding if work is performed without all required local, State, and Federal licenses, permits, and/or approvals, including the completion of the Section 106 process. FEMA also shall document this requirement in its Record of Environmental Consideration, as applicable, as well as all project approval documents specifying the project scope and limits, and containing all conditions and caveats.
3. In circumstances where FEMA determines a Subrecipient has initiated an Undertaking without willful intent to avoid the requirements of this Agreement or Section 106 of NHPA, FEMA shall proceed as follows:
 - a. Determine if the Undertaking is of a type for which FEMA has no further Section 106 responsibilities, namely:
 - i. An Undertaking listed in Stipulation I.A.7.; or

- ii. An immediate rescue and salvage operation in accordance with 36 CFR § 800.12(d); or
 - iii. A Programmatic Allowance as described under Stipulation II.A.
- b. In any such cases listed in Stipulation III.D.3.a., above, FEMA shall document this determination in the project files, and consider the Undertaking Section 106 compliant.
 - c. If FEMA determines the Undertaking would have required Section 106 review, FEMA shall coordinate with the SHPO and appropriate Tribe(s) to determine if consultation is feasible.
 - i. If after coordination with the SHPO and appropriate Tribes, FEMA determines that consultation is feasible, FEMA shall review the Undertaking in accordance with Stipulation II.C., Standard Project Review.
 - ii. If after coordination with the SHPO and appropriate Tribe(s), FEMA determines that review is infeasible, FEMA shall document the outcome of the Section 106 review process, inform the Federal Preservation Officer of the outcome, and the applicable FEMA Program shall take the outcome into account before making a decision whether to fund the Undertaking. FEMA shall provide written notification of its funding decision to the SHPO, the Recipient, appropriate Tribe(s), and the ACHP.
4. FEMA shall ensure that all Undertakings considered for after-the-fact review in accordance with this Stipulation are included in the annual report.

IV. IMPLEMENTATION OF AGREEMENT

A. Amendments

1. If any Signatory determines that an amendment to the terms of this Agreement must be made, FEMA shall notify the Signatories of the proposed amendment in writing and consult for no more than thirty (30) days to seek amendment of the Agreement.
2. An amendment to this Agreement, exclusive of the Appendices, shall be effective only when it has been signed by all the Signatories. An amendment shall be effective for Undertakings occurring on or affecting historic properties on Tribal lands only when the Tribe has signed the Agreement and its amendment.
3. Appendix A (FEMA Programs), Appendix B (Programmatic Allowances), and Appendix C (Treatment Measures) may be amended at the request of FEMA or another Signatory in the following manner:

- a. FEMA, on its own behalf or on behalf of another Signatory, shall notify the Signatories of the intent to modify the current Appendix or Appendices and shall provide a draft of the updated Appendix or Appendices to all Signatory parties.
- b. If no other Signatory objects in writing within thirty (30) days of receipt of FEMA's proposed modification, FEMA shall date and sign the amended Appendix and provide a copy of the amended Appendix to the other Signatories. Such an amendment shall go into effect on the date FEMA transmits the amendment to the other Signatories.

B. Dispute Resolution

1. Should any Signatory object in writing to the terms of this Agreement, FEMA shall consult with the objecting party for not more than thirty (30) days to resolve the objection.
2. If the objection is resolved within thirty (30) days, FEMA shall proceed in accordance with the resolution.
3. If FEMA determines within thirty (30) days that the objection cannot be resolved, FEMA shall forward to the ACHP all documentation relevant to the objection, including FEMA's proposed resolution. Within thirty (30) days of receipt, the ACHP will:
 - a. Concur in FEMA's proposed resolution; or
 - b. Provide FEMA with recommendations, which FEMA shall take into account in reaching a final decision regarding the objection; or
 - c. Notify FEMA that the objection will be referred for comment in accordance with 36 CFR § 800.7(a)(4), and proceed to do so.
4. FEMA shall take into account any ACHP recommendations or comments, and any comments from the other Signatories, in reaching a final decision regarding the objection. FEMA shall provide in writing to the ACHP and Signatories a summary of its final decision before authorizing any disputed action to proceed. The Signatories shall continue to implement all other terms of this Agreement that are not subject to objection.
5. Should the ACHP not respond within thirty (30) days, FEMA may assume the ACHP has no comment and proceed with its proposed resolution to the objection after providing the ACHP and Signatories a written summary of its final decision.

C. Severability and Termination

1. In the event any provision of this Agreement is deemed by a Federal court to be contrary to, or in violation of, any applicable existing law or regulation of the United States of America, only the conflicting provision(s) shall be deemed null and void, and the remaining provisions of the Agreement shall remain in effect.
2. FEMA, the SHPO, Cal OES, or the ACHP may terminate this Agreement by providing thirty (30) days written notice to the other Signatories, provided that the Signatories consult during this period to seek amendments or other actions that would prevent termination. If this Agreement is terminated, FEMA shall comply with Section 106 through other applicable means pursuant to 36 CFR Part 800. Upon such determination, FEMA shall provide all other Signatories and the ACHP with written notice of the termination of this Agreement.
3. A participating Tribe may notify the other Signatories that it is fully withdrawing from participation in the Agreement. Following such a withdrawal, FEMA shall review Undertakings that may affect historic properties of religious and cultural significance to the Tribe, and Undertakings that occur on the Tribal lands of the relevant Tribe, in accordance with 36 CFR §§ 800.3 through 800.7, 36 CFR § 800.8(c), or an applicable alternative under 36 CFR § 800.14. Withdrawal from this Agreement by a Tribe does not terminate the Agreement. At any time that this Agreement remains in effect, a Tribe that has withdrawn from the Agreement may notify FEMA, the Recipient(s), and the SHPO in writing that it has rescinded its notice withdrawing from participation in the Agreement.
4. This Agreement may be terminated by the implementation of a subsequent Agreement, pursuant to 36 CFR § 800.14(b), that explicitly terminates or supersedes this Agreement, or by FEMA's implementation of Alternate Procedures, pursuant to 36 CFR § 800.14(a).

D. Duration and Extension

1. This Agreement shall remain in effect from the date of execution for a period not to exceed seven (7) years unless otherwise extended pursuant to Stipulation IV.D.2. below, or terminated pursuant to Stipulation IV.C.2. or IV.C.4., Severability and Termination. The Agreement shall remain in effect for Declarations made prior to expiration of the Agreement in order to minimize delays in delivery of FEMA assistance.
2. The Signatories may collectively agree to extend this Agreement to cover additional calendar years, or portions thereof, through an amendment per Stipulation IV.A., provided that the original Agreement has not expired.

E. Execution and Implementation


1. This Agreement may be executed in counterparts, with a separate page for each Signatory, and shall become effective on the date of the final signatures of FEMA and the SHPO.

2. The Agreement shall go into effect regarding Undertakings occurring, or affecting historic properties, on Tribal lands when the relevant Tribe has signed the Agreement.
3. FEMA shall ensure that each Signatory is provided with a complete copy of the Agreement, including an original set of signatures.
4. Execution and implementation of this Agreement evidence that FEMA has afforded the ACHP a reasonable opportunity to comment on FEMA's administration of all referenced Programs, and that FEMA has satisfied its Section 106 responsibilities for all individual Undertakings of its referenced Programs.

**PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL EMERGENCY MANAGEMENT AGENCY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES**

SIGNATORY PARTIES

FEDERAL EMERGENCY MANAGEMENT AGENCY

By: 
Robert Fenton, Regional Administrator, Region IX

Date: OCT 24 2019

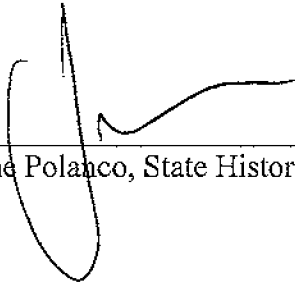
By: 
Alessandro Amaglio, Environmental Officer, Region IX

Date: 10/23/19

**PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL EMERGENCY MANAGEMENT AGENCY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES**

SIGNATORY PARTIES

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

By:  _____
Julianne Polanco, State Historic Preservation Officer

Date: 29 Oct 2019

**PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL EMERGENCY MANAGEMENT AGENCY,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES**

SIGNATORY PARTIES

CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES

By: 

Mark Ghilarducci, Director

Date: 10-29-19

Appendix A

FEMA Program Summaries

This Appendix may be amended in accordance with Stipulation IV.A., Amendments.

Disaster Programs

The following programs are authorized under Titles IV and V of the Stafford Act.

Advance of Nonfederal Share

The Stafford Act and its implementing regulations authorize FEMA to advance or loan to a state, tribal government, local government, or applicant the portion of PA for which the state or tribal government is responsible pursuant to the cost-sharing provisions of the Stafford Act.

Community Disaster Loan Program

The Stafford Act authorizes FEMA to make community disaster loans to help local governments that have incurred significant revenue losses due to a presidentially declared major disaster if necessary for a local government to perform its governmental functions

Fire Management Assistance Grant Program (FMAG)

The FMAG is available to State, Tribal, and local governments for the mitigation, management, and control of fires on publicly or privately-owned lands.

Hazard Mitigation Grant Program (HMGP)

The HMGP provides grants to States, Territories, Tribes, local governments, and private nonprofit organizations to implement long-term hazard mitigation measures after a Declaration.

Individual Assistance Programs (IA)

The Stafford Act authorizes a wide variety of direct and financial assistance to individual and households affected by a Declaration, and FEMA has implemented these authorities under the umbrella of its Individual Assistance Program, which include crisis counseling (Section 416); disaster legal services (Section 415); unemployment assistance (Section 410); food coupons (Section 412); case management (Section 426); and funeral services, minor home repairs, and temporary housing assistance (Section 408). It should be noted that other Federal agencies provide disaster assistance programs, services, and activities to individuals as well, including the U.S. Small Business Administration, U.S. Department of Agriculture, and U.S. Department of Labor, but these other assistance programs are not subject to the terms of this Agreement.

Public Assistance Program (PA)

The Stafford Act authorizes federal assistance for state, territorial, tribal, and local governments and certain private non-profit entities to respond to emergencies and to respond to and recover from major disasters. FEMA has administratively combined these authorities under the umbrella of its Public Assistance Program. The Public Assistance Program provides a broad range of assistance. First, it provides direct services and financial assistance for emergency assistance,

such as emergency evacuation, sheltering, and debris removal. Second, it provides financial assistance for the permanent restoration of disaster-damaged facilities. Third, it includes emergency transportation and emergency communications assistance.

Mitigation Programs

Community Assistance Program – State Services Support Elements (CAP-SSSE)

The CAP-SSSE Program provides financial assistance to states to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.

Cooperating Technical Partners Program (CTP)

The CTP Program provides financial assistance to states, local and Tribal governments, institutions of higher education, and other organizations to build upon and enhance the existing capabilities of these entities to increase local involvement in, and ownership of flood hazard identification, flood map maintenance, risk assessment, and risk communication to encourage responsible floodplain management and support their jurisdictional responsibilities as participating members of the NFIP.

Flood Mitigation Assistance Program (FMA)

The FMA Program provides grants to States, Territories, Tribal entities, and local governments for planning and carrying out activities designed to reduce the risk of flood damage to structures covered under contracts for flood insurance under the National Flood Insurance Program (NFIP).

National Dam Safety Program (NDSP)

The NDSP provides financial assistance to states to strengthen their dam safety programs, to include activities such as dam safety training, increasing dam inspections, increasing the submission and testing of emergency action plans, coordinating with state preparedness officials, identification of dams to be repaired or removed, and conducting dam safety awareness workshops.

National Earthquake Hazard Reduction Program (NEHRP)

The NEHRP provides financial assistance to certain organizations to mitigate earthquake losses in the United States through basic and directed research and implementation activities.

Pre-Disaster Mitigation Program (PDM)

The PDM Program provides competitive grants to States, Territories, Tribes, and local governments for mitigation planning and the project implementation.

Resilience Programs

Assistance to Firefighters Grant Program (AFG)

The AFG program provides funding for purchase of equipment and retrofit or construction of fire stations to improve first responder capabilities.

Emergency Management Performance Grants (EMPG)

The purpose of the EMPG is to provide Federal funds to states to assist state, local, territorial, and tribal governments in preparing for all hazards emergency preparedness capabilities.

Homeland Security Grant Program (HSGP)

The HSGP plays an important role in the implementation of the National Preparedness System by providing funding to states and urban areas to prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other threats. HSGP is comprised of three interconnected grant programs: (1) the State Homeland Security Program (SHSP), (2) the Urban Areas Security Initiative (UASI), and (3) the Operation Stonegarden (OPSG). Together, these grant programs and other future projects that may be included under the HSGP fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, management, and administration.

State Homeland Security Program (SHSP)

The SHSP supports state, tribal, territorial, and local preparedness activities that address high priority preparedness gaps across all core capabilities that support terrorism preparedness.

Urban Areas Security Initiative (UASI) Program

The UASI program assists high-threat, high-density Urban Areas in efforts to build, sustain, and deliver the capabilities necessary to prevent, protect against, mitigate, respond to, and recover from acts of terrorism.

Operation Stonegarden (OPSG)

The OPSG Program supports enhanced cooperation and coordination among Customs and Border Protection (CBP), United States Border Patrol (USBP), and Federal, state, local, tribal, and territorial law enforcement agencies. The OPSG Program provides funding to support joint efforts to secure the United States' borders along routes of ingress from international borders to include travel corridors in states bordering Mexico and Canada, as well as states and territories with international water borders.

Intercity Bus Security Grant Program (IBSGP)

The IBSGP provides funding to strengthen the Nation's critical infrastructure against risks associated with potential terrorist attacks. IBSGP provides funding for critical infrastructure hardening and other physical security enhancements to support transit operators serving the Nation's highest-risk metropolitan areas.

Intercity Passenger Rail – Amtrak (IPR) Program

Provides funds to protect critical surface transportation infrastructure and the traveling public from acts of terrorism and increase the resilience of the Amtrak rail system.

Integrated Public Alert and Warning System (IPAWS)

The Integrated Public Alert and Warning System (IPAWS) was established by Executive Order 13407 in 2006. In the event of a national emergency, the President may use IPAWS to send a message to the American people quickly and simultaneously through multiple communications

pathways. FEMA has identified several radio transmission sites across the nation with significantly powerful signals for this purpose, and FEMA is responsible for upgrading, maintaining, and managing the agency installed and owned auxiliary fuel systems at each of these radio transmission sites.

Nonprofit Security Grant Program (NSGP)

NSGP provides funding in order to integrate the preparedness activities of nonprofit organizations that are at high risk of a terrorist attack with broader state and local preparedness efforts.

Port Security Grant Program (PSGP)

The PSGP provides funding to port authorities, facility operators, and State and local agencies for activities associated with implementing Area Maritime Security Plans (AMSPs), facility security plans and other port-wide risk management efforts. PSGP funds are intended to improve port-wide maritime security risk management; enhance maritime domain awareness; support maritime security training and exercises; and maintain or reestablish maritime security mitigation protocols that support port recovery and resiliency capabilities with a focus on weapons of mass destruction, cyhersecurity, and attacks on soft targets.

Staffing for Adequate Fire and Emergency Response Grant Program (SAFER)

The SAFER Program provides financial assistance to fire departments and volunteer firefighter interest organizations to help them increase or maintain the number of training front line firefighters available in their communities.

Transit Security Grant Program (TSGP)

The TSGP provides funds to eligible public transportation systems (which include intra-city bus, ferries and all forms of passenger rail) for the protection of critical transportation infrastructure and the travelling public from acts of terrorism and to increase the resilience of transit infrastructure.

Tribal Homeland Security Grant Program (THSGP)

THSGP provides funding directly to eligible tribes to support the building, sustainment, and delivery of core capabilities to enable Tribes to strengthen their capacity to prevent, protect against, mitigate, respond to, and recover from potential terrorist attacks.

Appendix B

Programmatic Allowances

This list of Programmatic Allowances enumerates FEMA funded activities that based on FEMA experience have no or minimal effect on historic properties if implemented as specified in this Appendix, and will not require review by the SHPO and participating Tribe(s).

The Programmatic Allowances consist of two tiers – First Tier and Second Tier. Staff may apply First Tier Allowances whether or not they meet professional historic preservation qualification standards, while only staff meeting the applicable Secretary of Interior's (SOI) Professional Qualifications Standards in accordance with Stipulation I.B.1.a. of this Agreement may apply Second Tier Allowances.

When referenced in the Programmatic Allowances, "in-kind" shall mean that the result of the work shall match all physical and visual aspects of existing materials, including design, form, color, finish, texture, workmanship, and to the greatest extent possible, the materials. "In-kind" mortar will also match the strength and joint tooling of existing mortar, as appropriate. The "in-kind" repair provided for in both First and Second Tier Allowances in Appendix B should be limited to pre-existing architectural features and physical components of buildings and structures.

When referenced in the Allowances, "previously disturbed soils" shall refer to soils that have been changed from their natural depositional condition by excavation or other means (human or natural), and because of that disturbance, are not likely to possess intact and distinct soil horizons, and have the reduced likelihood of possessing historic properties within their original depositional contexts in the area and to the depth to be excavated.

I. First Tier Allowances

A. GROUND DISTURBING ACTIVITIES AND SITE MODIFICATION, when proposed activities described below substantially conform to the original footprint and/or are performed in previously disturbed soils, including the area where the activity is staged.

1. Debris and Snow Removal

- a. Debris removal and collection, including removal of snow, uprooted trees, limbs and branches from public rights-of-way and public areas, as well as the transport and disposal of such waste to existing licensed waste facilities or landfills. This includes the temporary establishment and expansion of non-hazardous debris staging, reduction, and disposal areas at licensed transfer stations, or existing hard-topped or graveled surfaces (e.g., parking lots, roads, athletic courts) but not the creation of new or temporary access roads.

- b. Removal of debris from private property provided that buildings are not affected, ground disturbance is minimal and in-ground elements, such as driveways, walkways or swimming pools are left in place.
- c. Chipping and disposal of woody debris by broadcasting within existing rights-of-way.
- d. Sediment removal from man-made drainage facilities, including retention/detention basins, ponds, ditches, and canals, in order to restore the facility to its pre-disaster condition. The sediment may be used to repair eroded banks or disposed of at an existing licensed or permitted spoil site.
- c. Dewatering flooded developed areas by pumping.

2. Temporary Structures and Housing

- a. Staging, installation, and removal of temporary structures for use as school classrooms, offices, or temporary shelters for essential public service agencies, such as police, fire, rescue and medical care, as well as temporary housing for disaster personnel and survivors at the following types of locations:
 - i. Single units on private residential sites when all utilities are installed above ground or tie into pre-existing utility lines.
 - ii. Existing RV/Mobile Home Parks and campgrounds with pre-existing utility hookups.
 - iii. Paved areas, such as parking lots and paved areas at such facilities as conference centers, shopping malls, airports, industrial port facilities, business parks, and military bases when all utilities are installed above ground or tie into pre-existing utility lines.
 - iv. Sites that have been previously prepared for planned construction, such as land being developed for public housing, office buildings, city parks, ball fields, schools, etc. when all utilities are installed above-ground or tie into pre-existing utility lines.
 - v. Areas previously filled to depths of at least two feet or more dependent on the depth of proposed utility installation so that subsurface utilities can be installed within fill material.
- b. Temporary repairs to single family, residential properties to ensure safe shelter with access to essential electrical supply, HVAC, hot water, natural gas and potable water, and protection from elements such as weatherproofing, and securing broken doors and windows.

3. Recreation and Landscaping

- a. Installation of temporary removable barriers.
- b. In-kind repairs, installation, or replacement, and minor upgrades/mitigation of bollards and associated protective barriers when in previously disturbed areas.

B. BUILDINGS AND STRUCTURES

1. Repair or retrofit of buildings less than 45 years old.
2. Removal of water by physical or mechanical means.
3. Installation of exterior security features and early warning devices on existing light poles or other permanent utilities.
4. Repair or replacement of contents within buildings less than 45 years old including furniture, movable partitions, computers, cabinetry, supplies, and equipment, and any other moveable items.

C. TRANSPORTATION FACILITIES, when proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils, including any staging areas.

1. Roads and Roadways

- a. Paving and repair of roads to pre-disaster geometric design standards and conditions using in-kind materials, shoulders medians, clearances, curbs, and side slopes. This Allowance does not include improvement to existing roadways and appurtenances.
- b. Construction of temporary emergency access roads in previously disturbed soils to allow for passage of emergency vehicles.
- c. Repairs to road slips and landslides that do not require grading of undisturbed soils on the up-hill side of the slip.
- d. Re-establishment, armoring and/or upgrading of existing roadway ditches.
- e. In-kind repair or replacement of traffic control devices such as traffic signs and signals, delineators, pavement markings, or traffic surveillance systems.
- f. Installation and removal of temporary traffic control devices, including pre-formed concrete barriers and fencings.

- g. In-kind repair or replacement of roadway safety elements such as barriers, guardrails, and impact-attenuation devices. In the case of guardrails, the addition of safety end treatments is permitted.

2. Airports

- a. In-kind repair or replacement of existing runway surfaces and features (e.g., asphalt, concrete, gravel, and dirt) and associated air transportation safety components and systems (e.g., lighting bars, beacons, signage and weather sensors).

3. Rail Systems

- a. In-kind repair or replacement of safety components.
- b. In-kind repair or replacement of existing track system and passenger loading areas.

D. FEES AND SERVICES

- 1. Reimbursement of a Subrecipient's insurance deductible, not to exceed \$2,500.

II. Second Tier Allowances

- A. GROUND DISTURBING ACTIVITIES AND SITE WORK**, when proposed activities described below substantially conform to the original footprint and/or are performed in previously disturbed soils, including the area where the activity is staged.

1. Footings, Foundations, Retaining Walls, Slopes, and Slope Stabilization Systems

- a. In-kind repair, replacement, and reinforcement of footings, foundations, retaining walls, slopes, and slope stabilization systems (e.g., gabion baskets, crib walls, soldier pile and lag walls) if related ground disturbing activities are within the boundary of previously disturbed soils.
- b. Installation of perimeter drainage (e.g., French drains) when performed in previously disturbed soils.

2. Recreation and Landscaping

- a. In-kind repairs or replacement, and minor upgrades to recreational facilities and features (e.g., playgrounds, campgrounds, fire pits, dump stations and utility hook-ups, swimming pools, athletic fields and signage, batting cages, basketball courts, swing sets, pathways, simple wooden/wire stream crossings).

- b. In-kind repair, replacement, and minor upgrades to landscaping elements (e.g., fencing, free standing walls, paving, planters, irrigation systems, lighting elements, signs, flag poles, ramps, steps).
 - c. Removal of fire or flood-damaged or destroyed standing trees within public rights-of-way, when trees are flush cut or stumps are ground to grade level, no root balls are removed, and all access and staging of equipment is within the existing hard surfaced public rights-of-way.
 - d. Repair or replacement of existing driveways, parking areas, parking lots, and walkways with materials of similar appearance in a manner that does not disturb historic landscape materials or features.
3. Piers, Docks, Boardwalks, Boat Ramps, and Dune Crossovers
- a. In-kind repair and replacement and minor upgrades to existing piers, docks, boardwalks, boat ramps and dune crossovers in areas of previously disturbed soils.
4. Cemeteries
- a. Removal of woody debris such as branches and limbs, from cemeteries, provided that heavy equipment and other machinery are not operated or staged on areas potentially containing human remains.
 - b. Resetting of toppled or settled grave stones, slabs, or monuments in the existing location when no associated repairs including repairs to address cracking, chipping, or other damages are proposed.
 - c. Removal of ash/soot from grave stones, slabs, or monuments provided that destructive treatments are not used including sand blasting, water blasting, or chemical cleaning.
5. Geotechnical Coring investigations for engineering and design purposes
- a. Geotechnical coring investigations within the existing, disturbed road bed and/or within the footprint of a damaged facility. The Allowance does not apply to shovel testing, trenching, clearing, grubbing, or installation of new access routes or establishment of new staging locations.
 - b. Geotechnical coring investigations at locations determined to have low potential for the presence of archaeological deposits, or within previously disturbed soils as determined by a SOI qualified archaeologist including review of CHRIS records, applicable tribal coordination, geological information, and/or other information. The Allowance does not apply to shovel testing, trenching, clearing, grubbing, or installation of new access routes or establishment of new staging locations.

B. BUILDINGS AND STRUCTURES

1. Interior Work: Floors, Walls, Stairs, Ceilings and Trim
 - a. In-kind repair and replacement of floors, walls, stairs, ceilings, and/or trim. The Allowance does not apply to decorative finishes, including murals, glazed paint, gold leaf, or ornamental plaster.
 - b. Interior cleaning of surfaces using a weak solution of household bleach and water, mold remediation, or mold removal. The Allowance applies to interior finishes, including plaster and wallboard, provided the cleaning is restricted to damaged areas and does not affect adjacent materials.
 - c. Non-destructive or concealed testing for hazardous materials (e.g., lead paint, asbestos) or for assessment of hidden damages.
2. Building Contents
 - a. Repair or replacement of building contents including furniture, movable partitions, computers, cabinetry, supplies, and equipment, and any other moveable items which are not character-defining features of a historic property.
3. Utilities and Mechanical, Electrical, and Security Systems
 - a. In-kind repair or replacement, or limited upgrading of interior utility systems, including mechanical (e.g., heating, ventilation, air conditioning), electrical, and plumbing systems. This Allowance does not provide for the installation of new exposed ductwork.
 - b. Elevation of heating, ventilation, and air conditioning system (HVAC) and mechanical equipment as long as it is placed or located where it is not visible from the street.
 - c. Installation or replacement of interior fire detection, fire suppression, or security alarm systems. The Allowance does not apply to surface-mounted wiring, conduits, piping, etc., unless previously existing, provided that installation of the system hardware does not damage or cause the removal of character-defining architectural features and can be easily removed in the future.
 - d. Installation of communication and surveillance security systems, such as cameras, closed-circuit television, alarm systems, and public address systems, provided that installation of the system hardware does not damage or cause the removal of character-defining architectural features and can be easily removed in the future.
 - e. Installation of building access security devices, such as card readers, enhanced locks, and security scanners (e.g., metal detectors), provided the device does not

damage or cause the removal of character-defining architectural features and can be removed in the future without impacts to significant architectural features.

4. Windows and Doors

- a. In-kind repair of damaged or severely deteriorated windows and window frames, shutters, storm shutters, doors and door frames, and associated hardware, where profiles, elevations, details and materials match those of the originals.
- b. In-kind replacement of window panes. Clear plate, double, laminated or triple insulating glazing can be used, provided it does not result in altering the existing window material, tint, form, muntin profiles, or number of divided lights. This Allowance does not apply to the replacement of intact decorative glass.
- c. Replacement of exterior, utilitarian, non-character-defining metal doors and frames leading into non-character-defining spaces with metal blast resistant doors and frames.
- d. Installation of security bars over windows on rear elevations.

5. Exterior Walls, Cornices, Porches, and Foundations

- a. Exterior cleaning including the removal of ash and soot from structures using the gentlest means possible and, provided that destructive surface preparation treatments are not used, such as water blasting, sandblasting, power sanding and chemical cleaning. Low pressure washing may be used to remove ash and soot, with power washing of historic masonry elements limited to the lowest psi possible, but not to exceed 300-400 psi. Should power washing greater than 300-400 psi be proposed for historic masonry, the decision regarding the proper psi level would be determined by a qualified professional. See National Park Service (NPS) Preservation Brief 1: *Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings*, and NPS Preservation Brief 6: *Dangers of Abrasive Cleaning to Historic Buildings*.
- b. In-kind repainting of surfaces, provided that destructive surface preparation treatments are not used, such as water blasting, sandblasting, power sanding and chemical cleaning.
- c. In-kind repair of walls, porches, foundations, columns, cornices, siding, balustrades, stairs, dormers, brackets, trim, and their ancillary components, or in-kind replacement of severely deteriorated or missing or lost features, as long as the replacement pieces match the original in detail and material. Any ground disturbance will be limited to previously disturbed soils.
- c. In-kind repair or replacement of signs or awnings.

- d. Installation of temporary stabilization bracing or shoring, provided such work does not result in additional damage.
- e. In-kind repair of concrete and masonry walls, columns, parapets, chimneys, or cornices, or limited in-kind replacement of damaged components including comparable brick, and mortar that matches the color, strength, content, rake, and joint width.
- f. Repairs to and in-kind replacement of elements of curtain wall assemblies or exterior cladding that is hung on the building structure, usually from floor to floor, and when the color, size, reflectivity, materials, and visual patterns are unaltered.

6. Roofing

- a. Installation of scaffolding, polyethylene sheeting, or tarps, provided such work will not result in additional damage or irreversible alterations to character-defining features.
- b. In-kind repair, replacement, or strengthening of roofing, rafters, fascia, soffits, gutters, verge boards, leader boxes, downspouts, or other damaged roof system components.
- c. Repairs to flat roof cladding, including changes in roofing materials, where the repairs are not highly visible from the ground level.

7. Weatherproofing and Insulation

- a. Caulking and weather-stripping to complement the color of adjacent surfaces or sealant materials.
- b. In-kind repair or replacement of insulation systems, provided that existing interior plaster, woodwork, exterior siding, or exterior architectural detail is not altered.

8. Structural Retrofits, Anchoring, Bracing, Reinforcing, and Strengthening

- a. The installation of the following retrofits/upgrades, provided such upgrades are not visible on the exterior, do not impact any interior character defining spaces or features, and do not impact storefront spaces readily visible from the exterior: wall bracing, braced and/or moment frames, plywood shear walls and/or bracing, foundation bolts, and cripple wall strengthening.
- b. Anchoring of walls to floor systems, provided the anchors are embedded and concealed from exterior view.
- c. Bracing and reinforcing of walls, chimneys and fireplaces, provided the bracing and reinforcing are either concealed from exterior view or reversible in the future.

- d. Strengthening of foundations and the addition of foundation bolts, provided that visible new work is in-kind, including mortar that matches the color, content, strength, rake, and joint width where occurring.
- e. The installation of the following retrofits/upgrades, provided that such upgrades are not visible on the exterior: attic bracing, cross bracing on pier-and-post foundations; fasteners; collar ties; gussets; tie downs; strapping and anchoring of mechanical, electrical, and plumbing equipment; concealed anchoring of furniture; installation of plywood diaphragms beneath first floor joists, above top floor ceiling rafters, and on roofs; and automatic gas shut-off valves.
- f. Replacement, repair or installation of lightning rods.

9. Americans with Disabilities Act (ADA) Compliance

- a. Installation of grab bars and other such minor interior modifications.

10. Safe Rooms

- a. Installation of individual safe rooms within the property limits of a residence where the installation would occur within the existing building or structure or in previously disturbed soils.

11. Elevation, Demolition, and Reconstruction

- a. Activities related to the elevation, demolition and/or reconstruction of buildings or structures less than 45 years of age so long as the proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils including any staging area, and the buildings or structures are not located within or adjacent to a National Register listed or eligible historic district.
- b. Reconstruction or replacement of buildings over 45 years of age that were completely destroyed by fire so long as the proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils including any staging area, and the buildings or structures are not located within or adjacent to a National Register listed or eligible historic district.

C. TRANSPORTATION FACILITIES, when proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils, including the area where the activity is staged.

1. Roads and Roadways

- a. Repair of roads to pre-disaster geometric design standards and conditions using in-kind materials, shoulders, medians, clearances, curbs, and side slopes. This Allowance permits minor improvement to meet current code and standards or

hazard mitigation measures, such as those designed to harden exposed surfaces, including the application of gravel armoring to side slopes and ditches.

- b. In-kind repair to historic paving materials for roads and walkways.
- c. In-kind repair or replacement, or minor upgrade of culvert systems and arches beneath roads or within associated drainage systems, including provision of headwalls, riprap and any modest increase in capacity for the purposes of hazard mitigation or to meet current codes and standards, provided that the work substantially conforms to the existing footprint of the damaged facility and will be confined to the areas washed-out in the event. For stone or brick culverts or arches beneath roadways, this allowance only applies to in-kind repair.
- d. In-kind repair or replacement of road lighting systems, including period lighting fixture styles.
- c. In-kind repair or replacement of road appurtenances such as curbs, berms, fences, and sidewalks.
- f. Stabilization of hazardous slopes within transportation rights-of-way. Stabilization methods include the installation of retaining walls and systems such as gabion baskets, crib walls, and soldier pile and lag walls. Work will not exceed the limits of the previously disturbed rights-of-way and will not take place within the boundary of any historic property listed or eligible for listing in the National Register. This allowance does not apply to any work in historic districts listed or eligible for listing in the National Register.

2. Bridges

- a. Installation of a temporary (Bailey-type) bridge over an existing structure or at a previously disturbed location, such as a former bridge location, to allow passage of emergency vehicles.
- b. In-kind repair or replacement of bridges and bridge components (e.g. abutments, wing walls, piers, decks, and fenders) in previously disturbed soils.

D. UTILITIES, COMMUNICATIONS SYSTEMS AND TOWERS, when proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils, including the area where the activity is staged.

1. General

- a. In-kind repair or replacement, or minor upgrading, small scale realignment, and elevation of utilities and associated features and structures within previously disturbed soils of rights-of-way or utility corridors.

- b. Installation of new utilities and associated features within existing rights-of-way.
 - c. Directional boring of new/replacement service line and related appurtenances involving boring or silt trenches within previously disturbed soils of rights-of-way or utility corridors.
 - d. In-kind repair or replacement, or minor upgrade of water towers provided activities take place within previously disturbed soils. Ground-level facilities may be added or expanded in previously disturbed areas. This Allowance does not apply to masonry water towers.
 - e. Repair or replacement of septic tanks, drain fields, or well pumps in previously disturbed soils.
2. Generators and Utilities
- a. In-kind repair or replacement, or minor upgrades, elevation, and/or installation of generators, HVAC systems, and similar equipment provided activities occur within previously disturbed soils and any roof-mounted equipment is not visible from the ground level.
3. Communication Equipment/Systems and Towers
- a. Acquisition, installation, or operation of communication and security equipment/systems that use existing distribution systems, facilities, or existing infrastructure right-of-way.
 - b. The collocation of communication and security equipment on existing towers and buildings/structures less than 45 year in age, provided that the work does not increase existing tower height or footprint by more than 10% and occurs within previously disturbed soils.
 - c. Enhancement, repair or replacement of existing communication towers and antenna structures provided the work does not increase existing tower height or footprint by more than 10% and occurs within previously disturbed soils.
 - d. Installation of new temporary (not to exceed 12 months) communications towers and antenna structures provided that the work does not require modification of buildings/structures 45 years or older and occurs within previously disturbed soils.
 - e. Installation of new communication towers, less than 200 feet tall, in previously developed urban complexes when the work does not require modification of buildings/structures 45 years or older, occurs within previously disturbed soil, and is not within 1,000 feet of the boundaries of a historic property.

E. WATER RESOURCE MANAGEMENT AND CONTROLS, when proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils, including the area where the activity is staged.

1. Canal Systems

- a. In-kind repairs or replacement to canal systems and associated elements.

2. Breakwaters, Seawalls, Revetments, and Berms

- a. In-kind repair or replacement of breakwaters, seawalls, and revetments, provided the work occurs in previously disturbed soils.

3. Dams, Levees, and Floodwalls

- a. In-kind repair of dams, levees, floodwalls and related features, including spillways, tide gates, and fuse plugs, provided the work occurs in previously disturbed soils.

4. Fish Hatcheries

- a. In-kind repair or replacement of fish hatcheries and fish ladders.

5. Waste-Water Treatment Lagoon Systems

- a. In-kind repair or replacement, or minor upgrades of waste-water treatment lagoon systems.

F. WILDFIRE RECOVERY AND MITIGATION, when proposed activities substantially conform to the original footprint and/or are performed in previously disturbed soils, including the area where the activity is staged.

1. Re-seeding

- a. Aerial seeding by fixed or rotary wing aircraft to re-establish vegetative ground cover after a wildfire.
- b. Hydro-seeding and/or placement of jute matting or other similar measures as appropriate and limited to heavily sloped and erodible areas, with minimal potential ground disturbance limited to surface soils only.

2. Creation of Defensible Space

- a. Creation of defensible space around private and public structures in the wildland interface through selective vegetation removal including limbing low branches, brush thinning and removal, clearing of leaves and pine needles on the ground surface, and limited thinning of small understory trees using hand-held tools,

chainsaws, and/or small rubber-tired, non-tracked, mechanized equipment fitted with a mower or masticator deck. The defensible space zone typically extends approximately 100 feet from the structure, but no more than approximately 200 feet in steep sloped areas. Equipment will be staged on improved surfaces to the maximum extent possible. Treatment areas will be accessed from existing roads and driveways.

- b. Creation of defensible space within 10' of an existing roadway through selective vegetation removal including limbing low branches, brush thinning and removal, and limited thinning of small understory trees using hand-held tools, chainsaws, and/or small rubber-tired, non-tracked, mechanized equipment fitted with a mower or masticator deck. Equipment will be staged on improved surfaces to the maximum extent possible.
 - c. Cutting and felling of trees 12 inches or less in diameter at breast height, and grinding stumps leaving root balls intact, within 30 feet of a public or private structure for the purpose of establishing defensible space. Trees will be cut in place using a chainsaw or hand tools, and removed from the property by hand, not dragged, to a debris stockpile area for use as firewood, chipped, or hauled to and disposed of at an approved solid waste facility.
 - d. Chipping and broadcasting of vegetative debris on site beyond the defensible space zone, piling (with limited burning possible), or hauling to and disposing of at an approved solid waste facility.
3. Vegetative Fuels Thinning Within Established Parks and Designated Open Space in the Wildland-Urban Interface
- a. Use of goats or sheep to graze on vegetative materials within a fenced area to reduce above-surface plant materials.
 - b. Selective vegetation removal including limbing low branches, brush thinning and removal, clearing of leaves, and limited thinning of small understory trees using hand-held tools, chainsaws, and/or small rubber-tired, non-tracked, mechanized equipment fitted with a mower or masticator deck. Treatment areas will be accessed from and equipment will be staged on existing surfaces such as park roads and trails.
 - c. Cutting and felling of trees 12 inches or less in diameter at breast height using a chainsaw or hand tools, and either left in place or removed from the property by hand, not dragged, to a debris stockpile area on an existing surface to be chipped or hauled to and disposed of at an approved solid waste facility.
 - d. Chipping and broadcasting of vegetative debris on site using a small rubber-tired, non-tracked, chipper or hauling to and disposing of at an approved solid waste

facility. Use of rubber-tired equipment will be limited to use during the dry season.

4. Wildfire-Resistant Structure Hardening

- a. Installation of a removable spark arrester on chimney and/or stovepipe outlets.

Appendix C

Treatment Measures

When avoidance or minimization of adverse effects is not appropriate, the following Treatment Measures are suggested for the resolution of adverse effects:

If Undertakings may or will result in adverse effects, FEMA, the Recipient(s), Subrecipient, SHPO, and participating Tribes(s) may develop a treatment measure plan that includes one or more of the following Treatment Measures, depending on the nature of historic properties affected and the severity of adverse effects. This Appendix may be amended in accordance with Stipulation IV.A.3. of this Agreement, Amendments.

A. Recordation

1. Digital Photography Package: Prior to project implementation, the designated responsible party shall oversee the successful delivery of a digital photography package prepared by staff or contractors meeting the Secretary's Professional Qualifications for Architectural History, History, Architecture, or Historic Architecture, as appropriate. The digital photography package will meet the standards cited in the NPS's *National Register of Historic Places Photographic Policy March 2010* or subsequent revisions (<http://www.nps.gov/nr/publications/bulletins/photopolicy/index.htm>).
 - a. The digital photography package shall include a comprehensive collection of photographs of both interior and exterior views showing representative spaces and details of significant architectural features and typical building materials. Exterior photographs shall include full oblique and contextual images of each elevation. Exterior views shall be keyed to a site plan while interior views shall be keyed to a floor plan of the building/structure. The photographs shall be indexed according to the date photographed, site number, site name, site address, direction, frame number, subject matter and photographer's name recorded on the reverse side in pencil.
 - b. The digital photography package shall include printed color copies of the digital photographs (on appropriate paper, per the NPS *Photographic Policy*), a CD/DVD of the digital photographs, a completed state architectural inventory form, and a written site history of the historic property.
 - g. The designated responsible party shall submit the digital photography package to the SHPO and participating Tribe(s) for review and approval. Once approved by the SHPO and participating Tribe(s), the designated responsible party shall submit a copy of the approved documentation to a state or local historical society, archive, and/or library for permanent retention.

2. 35mm Black and White Photography Package: Prior to project implementation, the designated responsible party shall oversee the successful delivery of a 35 mm black and white film photography package prepared by staff or contractors meeting the Professional Qualifications for Architectural History, History, Architecture, or Historic Architecture, as appropriate.
 - a. The 35 mm black and white film photography package shall include a comprehensive collection of photographs of both interior and exterior views showing representative spaces and details of significant architectural features and typical building materials. Exterior photographs shall include full oblique and contextual images of each elevation. Exterior views shall be keyed to a site plan while interior views shall be keyed to a floor plan of the building/structure. The photographs shall be indexed according to the date photographed, site number, site name, site address, direction, frame number, subject matter and photographer's name recorded on the reverse side in pencil.
 - b. The 35 mm black and white film photography package shall include one (1) full set of 35mm black and white film photographs printed on acid free paper, the corresponding 35mm film negatives in acid free sleeves, a completed state architectural inventory form, and a written site history of the historic property.
 - c. The designated responsible party shall submit the 35 mm black and white film photography package to the SHPO and/or participating Tribe(s) for review and approval. Once approved by the SHPO and/or participating Tribe(s), the designated responsible party shall submit a copy of the approved documentation to a state or local historical society, archive, and/or library for permanent retention.
3. Large Format Photography Package: Prior to project implementation, the designated responsible party shall oversee the successful delivery of a large format photography package prepared by staff or contractors meeting the Professional Qualifications for Architectural History, History, Architecture, or Historic Architecture, as appropriate.
 - a. The large format photography package shall include a comprehensive collection of photographs of both interior and exterior views showing representative spaces and details of significant architectural features and typical building materials. Exterior photographs shall include full oblique and contextual images of each elevation. Exterior views shall be keyed to a site plan while interior views shall be keyed to a floor plan of the building/structure. The photographs shall be indexed according to the date photographed, site number, site name, site address, direction, frame number, subject matter and photographer's name recorded on the reverse side in pencil.
 - b. The large format film photography package shall include one (1) full set of 4 x 5 or 5 x 7-inch photographs printed on acid free paper, the corresponding 4 x 5 or 5 x 7-inch negatives in acid free sleeves, a completed state architectural inventory form, and a written site history of the historic property.

- c. The designated responsible party shall submit the large format film photography package to the SHPO and/or participating Tribe(s) for review and approval. Once approved by the SHPO and/or participating Tribe(s), the designated responsible party shall submit copies of the approved documentation to a state or local historical society, archive, and/or library for permanent retention.

B. Public Interpretation

Prior to project implementation, FEMA, the Recipient(s), and Subrecipient shall work with the SHPO and/or participating Tribe(s) to design an educational interpretive plan. The plan may include signs, displays, educational pamphlets, websites, workshops and other similar mechanisms to educate the public on historic properties within the local community, state, or region. Once an interpretive plan has been agreed to by the parties, the SHPO and/or participating Tribes, the designated responsible party shall continue to consult throughout implementation of the plan until all agreed-upon actions have been completed by the designated responsible party.

C. Historical Context Statements and Narratives

Prior to project implementation, FEMA, the Recipient(s), and Subrecipient shall work with the SHPO and participating Tribe(s) to determine the topic and framework of a historic context statement or narrative that the designated responsible party shall be responsible for completing. The statement or narrative may focus on an individual property, a historic district, a set of related properties, or relevant themes as identified in the statewide preservation plan. Once the topic of the historic context statement or narrative has been agreed to, the designated responsible party shall continue to coordinate with the SHPO and participating Tribe(s) through the drafting of the document and delivery of a final product. The designated responsible party shall use staff or contractors that meet the Professional Qualifications for the appropriate discipline.

D. Oral History Documentation

Prior to project implementation, FEMA, the Recipient(s), and Subrecipient shall work with the SHPO and/or participating Tribe(s) to identify oral history documentation needs and agree upon a topic and list of interview candidates. Once the parameters of the oral history project have been agreed upon, the designated responsible party shall continue to coordinate with the SHPO and/or participating Tribe(s) through the data collection, drafting of the document, and delivery of a final product. The designated responsible party shall use staff or contractors that meet the Professional Qualifications for the appropriate discipline.

E. Historic Property Inventory

Prior to project implementation, FEMA, the Recipient(s), and Subrecipient shall work with the SHPO and/or participating Tribe(s) to establish the appropriate level of effort to

accomplish a historic property inventory. Efforts may be directed toward the resurvey of previously-designated historic properties and/or districts which have undergone change or lack sufficient documentation, or the survey of new historic properties and/or districts that lack formal designation. Once the boundaries of the survey area have been agreed upon, the designated responsible party shall continue to coordinate with the SHPO and/or participating Tribe(s) through the data collection process. The designated responsible party shall use SHPO and/or participating Tribe(s) standards for the survey of historic properties and SHPO and/or participating Tribe(s) forms as appropriate. The designated responsible party shall prepare a draft inventory report, according to SHPO and/or participating Tribe(s) templates and guidelines, and work with the SHPO and/or participating Tribes until a final property inventory is approved. The designated responsible party shall use staff or contractors that meet the Professional Qualifications for the appropriate discipline.

F. National Register and National Historic Landmark Nominations

Prior to project implementation, FEMA, the Recipient(s), and Subrecipient shall work with the SHPO and/or participating Tribes to identify the individual properties that would benefit from a completed National Register or National Historic Landmark nomination form. Once the parties have agreed to a property, the designated responsible party shall continue to coordinate with the SHPO and/or participating Tribes through the drafting of the nomination form. The SHPO and/or participating Tribe(s) shall provide adequate guidance to the designated responsible party during the preparation of the nomination form, and shall formally submit the final nomination to the Keeper for inclusion in the National Register. The designated responsible party shall use staff or contractors that meet the Professional Qualifications for the appropriate discipline.

G. Geo-References of Historic Maps and Aerial Photographs

Prior to project implementation, FEMA, the Recipient(s), and Subrecipient shall work with the SHPO and/or participating Tribe(s) to identify the historic maps and/or aerial photographs for scanning and geo-referencing. Once a list of maps and/or aerial photographs have been agreed upon, the designated responsible party shall continue to coordinate with the SHPO and/or participating Tribes through the scanning and geo-referencing process and shall submit drafts of paper maps and electronic files to the SHPO and/or participating Tribe(s) for review. The final deliverable produced by the designated responsible party shall include a paper copy of each scanned image, a geo-referenced copy of each scanned image, and the metadata relating to both the original creation of the paper maps and the digitization process.

H. Archaeological Sites: Archaeological Treatment Plan

1. In accordance with Stipulation II.C.6.a. of this Agreement, potential adverse effects to an archaeological property may be resolved through alternative mitigation measures to avoid or minimize adverse effects, or data recovery to recover important information that would have been otherwise lost as a result of an undertaking. FEMA staff or contractors that meet the Professional Qualifications for the appropriate discipline shall

determine applicability of an archaeological treatment plan (ATP), and as applicable, the appropriate level of documentation.

- a. The ATP will provide detailed descriptions of protection measures for archaeological resources and resources of importance to Tribes or Tribal organizations because of cultural affinity. The ATP could include, but is not limited to the establishment of environmentally sensitive areas (ESAs), use of preconstruction archaeological excavation, preservation-in-place, avoidance, minimization, monitoring during construction where appropriate, procedures to be followed when unanticipated discoveries are encountered [see Stipulation III.B.], processes for reevaluation and data recovery of discoveries, responsibilities and coordination with Tribes and Tribal organizations, NAGPRA compliance [Stipulation III.B.1.c.], and curation of recovered materials [Stipulation III.C.].
- b. The ATP will address historic properties adversely affected and set forth means to avoid, protect, or develop treatment measures to minimize the Undertaking's effects where FEMA, the SHPO, participating Tribe(s), and other consulting parties determine that adverse effects cannot be avoided. The ATP will conform to the principles of the ACHP's *Treatment of Archaeological Properties: A Handbook Parts I and II*, the *Secretary of the Interior's Guidelines for Archeology and Historic Preservation* (Federal Register, Vol. 48, September 29, 1983, pp. 44716-44742) and appropriate SHPO Guidelines. FEMA will take into consideration the concerns of the consulting parties in determining the measures to be implemented.
- c. Where data recovery is proposed, each ATP may include, but not be limited to:
 - i. Recovery of a reasonable sample of the intact archaeological deposits from National Register eligible archaeological sites that the agency determines, through the process set out in Stipulation II.C.6. of this Agreement, may be adversely affected by the implementation of the Undertaking;
 - ii. Specify the research issues/questions to be addressed through the recovery of data and explain how data from the historic property will address those research issues/questions;
 - iii. Specify methods to be used in fieldwork and analysis, and explain how these methods are relevant to the research issues/questions;
 - iv. Indicate how recovered materials and records will be curated, taking into account the expressed wishes of the participating Tribes;
 - v. Include a schedule for providing the participating Tribes with periodic updates on implementation of the data recovery plan;
 - vi. If applicable, include the curation agreement in accordance with applicable laws and regulations;

- vii. Specify the manner in which human remains and grave-associated artifacts recovered during data recovery will be treated according to applicable laws and regulations, taking into account the expressed wishes of participating Tribes; and
- viii. Clarify the public benefit that will be achieved from the ATP.