Appendix A

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Amphibians				
Ambystoma californiense	California tiger salamander	T	Annual grasslands and grassy understory of valley-foothill hardwood habitats, need underground refuges, need vernal pools, stock ponds, or other seasonal water sources for breeding. The species persists in disjunct remnant vernal pool complexes in Sonoma and Santa Barbara counties, in vernal pool complexes and isolated ponds scattered mainly along narrow strips of rangeland on each side of the Central Valley from southern Colusa County south to northern Kern County, and in sag ponds and human-maintained stock ponds in the coast ranges from Suisun Bay south to the Temblor Range.	Not likely to occur because the project area does not provide suitable breeding or aestivation habitat for this species. The closest occurrence to the project area is approximately 6.9 miles south and is located in Alameda.
Rana aurora draytonii	California red-legged frog	T	Dense, shrubby riparian vegetation associated with deep ($\geq$ 0.7 meter), still or slow-moving water. Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergency riparian vegetation. Requires 11-20 weeks of permanent water for larval development, must have access to aestivation habitat.	Potential to occur. Ephemeral drainages in project area could provide suitable habitat. The closest occurrence to the project area is approximately 3.1 miles southeast and is located at Thornhill Pond, near Berkeley.
Reptiles				
Masticophis lateralis euryxantus	Alameda whipsnake	T	Rock outcrops in association with chaparral and coastal sage scrub. Inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses. Restricted to valley-foothill hardwood habitat of the coast ranges between the Monterey vicinity and north of San Francisco Bay.	Potential to occur. The closest known records of the Alameda whipsnake to the project area include captures of 6 Alameda whipsnakes in Claremont Canyon (which is located 1 mile southeast of the project area). These individuals were captured between 2002 and 2004 as part of an East Bay Regional Park District monitoring program (Klatt 2006).

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Birds				
Charadrius alexandrinus nivosus	Western snowy plover	T	Habitats used by nesting and nonnesting birds include sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees, and gravel bars.	Not likely to occur because the project area does not provide sandy coastal beaches, salt pans, etc. The closest occurrence to the project area is approximately 9 miles south and is located at bay farmland, San Francisco Bay adjacent to Oakland.
Haliaeetus leucocephalus	Bald eagle	T	Winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands on protected cliffs and ledges. Also nests on bridges and buildings in urban areas. Nests are normally built in the upper canopy of large trees, usually conifers.	Not likely to occur because the project area does not provide any lakes, reservoirs, large river systems, and/or cliffs and ledges.
Pelecanus occidentalis californicus	California brown pelican	E	Found in estuarine, marine subtidal, and marine pelagic waters along the California coast. In Northern California, fairly common to uncommon June to November. Usually rests on water or inaccessible rocks (either offshore or on mainland), but also uses mudflats, sandy beaches, wharfs, and jetties.	Not likely to occur because the project area is not located near estuarine, marine subtidal, and pelagic waters.
Rallus longirostris obsoletus	California clapper rail	E	Tidal salt marshes near tidal sloughs; perennial inhabitant of tidal salt marshes of the greater San Francisco Bay.	Not likely to occur because the project area does not provide tidal salt marshes. The closest occurrence to the project area is approximately 3.9 miles west and is located at Richmond inner harbor, between the University of California engineering field station and the breakwater, Richmond.
Sterna antillarum browni	California least tern	E	Nests on beaches and estuaries near waters that produce small fish. Prefers open areas where visibility is good. Substrate choice is generally sand or fine gravel and can be mixed with shell fragments.	Not likely to occur because the project area does not provide beaches and estuaries. The closest occurrence to the project area is approximately 7.7 miles southwest and is located at Alameda County Air Station, southwest of Oakland.

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Mammals				
Reithrodontomys raviventris	Salt marsh harvest mouse	E	Pickleweed is the primary habitat. Inhabits only saline emergent wetlands of San Francisco Bay and its tributaries. Requires higher areas for flood escape.	Not likely to occur because the project area does not provide pickleweed habitat. The closest occurrence to the project area is approximately 4.0 miles southwest and is located at Emeryville Crescent Marsh, adjacent to a storm drain and Bay Bridge approach.
Invertebrates				
Branchinecta lynchi	Vernal pool fairy shrimp	T	Vernal pools; small swales, earth slumps, or basalt-flow depression basins with grassy or occasionally muddy bottom, in unplowed grassland.	Not likely to occur because the project area does not provide any vernal pools or seasonal swales appropriate for this species.
Euphydryas editha bayensis	Bay checkerspot butterfly	T	Found in serpentine grasslands around San Francisco Bay. The host plant is dwarf plantain (*Plantago erecta*); also uses owl's-clover (*Castilleja* spp.).	Not likely to occur because the project area does not provide serpentine grasslands. The closest occurrence to the project area is approximately 4.4 miles southeast and is located at Joaquin Miller Park northeast of Oakland.
Speyeria callippe callippe	Callippe silverspot butterfly	E	Historically this butterfly-inhabited grasslands ranges over much of the northern San Francisco Bay region. On the San Francisco peninsula, this butterfly is now only known from San Bruno Mountain (approximately 10 miles south of San Francisco). In the East Bay, it was known from Richmond in the north to the Castro Valley in Alameda County. The only remaining population of this butterfly in Alameda County occurs in an undisclosed city park. The host plant is violet (*Viola pedunculata*).	Not likely to occur because the project area does not provide grasslands suitable for this butterfly species. No California Natural Diversity Database records exist of this species in the project vicinity.

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Fish				
Acipenser medirostris	Green sturgeon	P	A demersal (bottom-dwelling) species, mostly seen from inshore waters to 60 meters (197 feet). Spawns in the mainstem of large river systems in relatively fast water flows and probably in depths greater than 3 meters. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock. The only recently documented green sturgeon spawning locations are in the Klamath, Sacramento, and Rogue rivers along the west coast of North America. However, green sturgeon are known to range in nearshore marine waters from Mexico to the Bering Sea and are commonly observed in bays and estuaries along the coast with particularly large concentrations entering the Columbia River estuary, Willapa Bay, and Grays Harbor during the late summer.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Eucyclogobius newberryi	Tidewater goby	E	Tidewater gobies are uniquely adapted to coastal lagoons and the uppermost brackish zone of larger estuaries, rarely invading marine or freshwater habitats. The species is typically found in water less than 1 meter (3.3 feet) deep and salinities of less than 12 parts per thousand.	No potential because the project area is not located near any coastal lagoons, nor does it have any aquatic habitat. The closest occurrence to the project area is approximately 3.94 miles west and is located at Berkeley Aquatic Park, west edge of Berkeley adjacent to San Francisco Bay.

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Hypomesus transpacificus	Delta smelt	T	Found only in the Sacramento-San Joaquin Estuary, from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Euryhaline species, but for a large part of its life span, is associated with the freshwater edge of the mixing zone (saltwater-freshwater interface). Spawning habitats are side channels and sloughs in the middle reaches of the Delta. Spawns in shallow freshwater from December through July. Pelagic feeder.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Oncorhynchus kisutch	Central California coast Coho salmon	E	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Oncorhynchus mykiss	Central California coastal steelhead	T	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Oncorhynchus mykiss	Central Valley steelhead	T	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Oncorhynchus tshawytscha	Central Valley fall/late fall-run Chinook salmon	C	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Oncorhynchus tshawytscha	Central Valley spring-run Chinook salmon	T	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Oncorhynchus tshawytscha	Sacramento River winter-run Chinook salmon	E	Pacific Ocean, spawns in coastal streams and rivers, over gravel beds. Pool depth, volume, amount of cover, and proximity to gravel for spawning play key roles.	No potential because the project area is not located near the ocean, nor does it have any aquatic habitat.
Plants				
Arctostaphylos pallida	Pallid manzanita	T	Found in chaparral. Found only in the northern Diablo Range of California. Range into several distinct units: Contra Costa Hills, Mt. Diablo, Mt. Hamilton Range, Panoche Hills, San Carlos Range, and Estrella Hills. Prefers to grow in limited locations of the East Bay Hills on north- and east-facing slopes where bare, siliceous, mesic soils with low fertility exist.	Not likely to occur because the project area is located within species known range and does not provide suitable habitat for this species. The closest occurrence to the project area is approximately 0.5 mile north and is located on Dark Hill and Shasta roads, northeastern corner of Tilden Regional Park.
Chorizanthe robusta var. *robusta*	Robust spineflower	E	Cismontane woodland, coastal dunes, coastal scrub. Sandy terraces and bluffs or in loose sand; elevation from 3–120 meters.	Not likely to occur because the project area does not provide suitable habitat for this species. The closest occurrence to the project area is approximately 6.9 miles south and is located in Alameda.
Clarkia franciscana	Presidio clarkia	E	Restricted to grassland communities on serpentine soils in San Francisco and Alameda counties. Two populations are known from San Francisco Presidio. Three are known from the Oakland Hills in Alameda County, all from within 0.5 mile of each other. Total plant numbers fluctuate greatly; the upper limit reported in recent years is approximately 8,000 plants. Serpentine soils are formed from weathered volcanic (ultramafic) rocks such as serpentinite. dunite, and peridotite.	Not likely to occur because the project area does not provide grassland communities. The closest occurrence to the project area is approximately 6 miles southeast and is located at Redwood Regional Park, below East Bay Regional Park headquarters, northeast of Skyline Blvd.

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Holocarpha macradenia	Santa Cruz tarplant	T	Grasslands and prairies found on coastal terraces below 100 meters (330 feet) in elevation, from Monterey County north to Marin County. In the Santa Cruz area, the gently sloping terrace platforms are separated by steep-sided ‘‘gulches,’’ whereas in the Watsonville area (Monterey County) and on the eastern side of San Francisco Bay, the terraces are more extensively dissected, and *Holocarpha macradenia* populations occur on alluvium derived from the terrace deposits (Palmer 1986).	Not likely to occur because the project area does not provide grasslands and prairies. The closest occurrence to the project area is approximately 2.7 miles north and is located in lower Sather Canyon, between San Pablo and Briones reservoirs 2.7 miles due north of Vollmer Peak.
Lasthenia conjugens	Contra Costa goldfields	E	Valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range. Found in vernal pools, swales, and low depressions in open grassy areas; elevation from 1–455 meters.	Not likely to occur because the project area does not provide suitable habitat for this species. The closest occurrence to the project area is approximately 17.1 miles south and is located at about 0.25 mile north of western end of Depot Road; adjacent to (just east of) the American Salt Company, along shore of San Francisco Bay.

Federally Listed, Proposed, and Candidate Species with Potential to Occur in the Strawberry Canyon Vicinity

Scientific Name	Common Name	Federal Status	Preferred Habitat	Likelihood of Occurrence
Layia carnosa	Beach layia	E	The species is restricted to openings in coastal sand dunes ranging in elevation from 0-30 meters (0-100 feet), where it colonizes sparsely vegetated, partially stabilized dunes or relatively bare blowouts in secondary succession. In Northern California, it occurs in the northern fore dune community; in Monterey County, the species occurs in the central fore dune community described as the sand-verbena. It generally occupies sparsely vegetated open areas on semi-stabilized dunes. The fore dune community experiences some drifting sand and has low-growing herbaceous and perennial native species. The species also occurs in open areas, such as along trails and roads.	Not likely to occur because the project area does not provide suitable habitat for this species. The closest occurrence to the project area is approximately 9.0 miles southwest and is located at San Francisco Sand Dunes, San Francisco.
Suaeda californica	California seablite	E	Marshes and swamps. Margins of coastal salt marshes; elevation from 0–5 meters.	Not likely to occur because the project area does not provide marshes and swamps. The closest occurrence to the project area is approximately 3.3 miles west and is located near Fleming along Southern Pacific Railroad.

Federal Endangered Species Act

E - Endangered

T- Threatened

C- Candidate for listing status

P- Proposed for listing status

Source: USFWS species list and California Natural Diversity Database *search for five quadrangles surrounding the* project *area*

Appendix B

Biological Opinion from the U.S. Fish and Wildlife Service

United States Department of the Interior

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

In Reply Refer To:
1-1-07-F-0259

August 3, 2007

Mr. Alessandro Amaglio
Federal Emergency Management Agency
U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, California 94607-4052

Subject: Formal Consultation for the Strawberry Canyon Vegetation Management Project, Alameda County, California (PDMC-PJ-09-CA-2005-011)

Dear Mr. Amaglio:

This letter is in response to the Federal Emergency Management Agency's (FEMA) April 25, 2006, letter requesting the U.S. Fish and Wildlife Service (Service) consult on the proposed Strawberry Canyon Mitigation Project that is located east of the City of Berkeley in Alameda County, California. The Service received your request on April 28, 2006. We have had a number of meetings, telephone discussions, and exchange of electronic mail messages and correspondence on this project between January 2006 and July 25, 2007. This document represents the Service's biological opinion on the effects of the action on the threatened California red-legged frog (*Rana aurora draytonii*), and the threatened Alameda whipsnake (*Masticophis lateralis euryxanthus*) and its critical habitat. This response is issued under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The Service considers the protection of human life and safety to be of the utmost importance and highest priority; the Act contains provisions for conducting emergency actions that involve listed species (50 CFR § 402.05). We recommend FEMA review the Act and/or contact us for further details regarding these procedures.

This biological opinion is based on (1) your April 25, 2006 and February 9, 2007, letters; (2) the April 2006 biological assessment; (3) *Biological Assessment Strawberry Canyon Mitigation Regents of the University of California PDMC-PJ-09-CA-2005-011* dated April 2006; (4) numerous electronic mail and telephone conversations between URS Corporation, FEMA, and the Service; (4) a July 25, 2007, meeting between the Service and FEMA; and (5) other information available to the Service.

Consultation History

January 2006: The Service and URS Corporation exchanged emails regarding the status of Alameda whipsnake critical habitat.

April 25, 2006: The Service received the request for consultation and the biological assessment from FEMA.

July 24, 2006: The Service sent a letter to FEMA requesting additional information.

August 29, 2006: The Service and URS Corporation discussed Alameda whipsnake habitat and appropriate minimization measures during a telephone conversation. URS Corporation followed up with an email request for examples of minimization measures.

September 14, 2006: The Service provided URS Corporation with examples of minimization measures for the Alameda whipsnake via electronic mail.

January 23, 2007: The Service and URS Corporation discussed the minimization measures provided by us on September 14, 2006 during a telephone call. It was agreed minimization measures would be exchanged via electronic mail to facilitate the consultation.

February 9, 2007: The Service received a letter from FEMA containing some of the requested information.

April 12, 2007: The Service sent a letter to FEMA requesting additional information.

May 14, 2007: The Service and FEMA had a telephone discussion regarding outstanding project issues.

May-July, 2007: The Service and URS Corporation exchanged electronic mail messages regarding the proposed project.

July 2007: FEMA and the Service discussed the proposed conservation measures and the biological opinion in electronic mail mesages

July 24, 2007: The Service, FEMA, and URS had a meeting regarding the proposed conservation measures and the remaining outstanding issues.

July 25, 2007: The Service and FEMA finalized the conservation measures for the proposed project via electronic mail.

Mr. Alessandro Amaglio

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BIOLOGICAL OPINION

Description of the Proposed Action

The proposed action would consist of the selective removal of exotic vegetation such as eucalyptus (*Eucalyptus globulus* and *E. camaldulensis*), Monterey pine (*Pinus radiata*) and acacia (*Acacia* sp.) from within approximately 40.8 acres in Strawberry Canyon. The objective of the proposed action is to reduce the vegetative fuel for a fire that might occur in Strawberry Canyon. The vegetation management strategy of this project is to allow the forest to convert from the existing eucalyptus-dominated, exotic canopy to a native forest of California bay (*Umbellularia californica*), oak trees (*Quercus* sp.), big leaf maple (*Acer macrophyllum*), California buckeye (Aesculus californica), California hazelnut (*Corylus cornuta*), and other native tree and shrub species, which currently exist beneath the canopy. The native species produce either considerably lesser fuel loads or are most fuel productive well before the peak of the regional fire season.

The proposed action would remove approximately 10,000 stems of eucalyptus, pine, and acacia trees. The trees would be cut by handfellers and the mechanized feller-buncher. Hand felling involves a pair of workers using chainsaws and wedges to directionally fell the tree in a manner that allows easy processing. The feller-buncher is a tracked vehicle, with a self-leveling cab, that mechanically grasps the standing tree, cuts it with a hydraulically-powered chain saw, and lifts the tree into bunches for skidding. The feller-buncher is limited to slopes less than approximately 45%. Hand fellers would cut trees growing within 50 feet of streams and along steep slopes.

To prevent re-sprouting, a herbicide solution would be applied to the cambium layer of the freshly cut stump within a few minutes of felling. The herbicide mixture would likely consist of a combination of Garlon® 4 (triclopyr) and Stalker® (impazpyr) in a solution of esterified seed, oil, water, and marking dye. A typical tree requires 1 to 2 ounces of diluted solution.

Felled trees up to approximately 24 inches diameter at breast height (dbh) would be hauled by rubber-tired or tracked skidders along paths, called skid trails, to landings within the action area. There are nine landings that exist adjacent to fire trails or paved roads within the action area. Equipment would be staged fueled, and maintained at these landings while contractors are mobilized. Additional landings may be created when the distance from a tree patch to an existing landing exceeds 600 feet. Where possible, existing landings and skid trails from previous logging would be used instead of constructing new ones. The proposed action may also employ the use of high-lead cable system to retrieve logs to the landing without the use of rubber-tried or tracked skidders. At the landings, tree would be chipped using a grapple fed chipper or a tracked chipper. The entire tree would be fed into the chippers and pulled through the masticating blades by means of a conveyer belt and feed wheel. Alternatively, the tracked chipper may be driven to downed trees on gentle slopes. The wood chips from the chippers are expected to be 1 to 4 inches in size, and would be scattered within the action area.

Larger trees (greater than 24 inches dbh) would be lopped and scattered after felling. The lop-and-scatter method would also be used when it is impractical to skid a tree to the chipper, such as when trees are growing at a substantial distance from the main grove, or when trees are either up or down a steep slope. In these cases, the downed tree would be cut by chainsaw such that all portions of the tree come into contact with ground or with 24 inches of it. Typically, the tops are extensively cut and the main trunk is cut into 20- to 30-foot lengths. Some logs would be placed so that they can help control sediment and erosion, or support wildlife habitat.

Skidding would not be performed when the ground is wet. Cutting would begin along the northern portion and proceed southward over time. Work contracts may be issued for more than one contiguous area, for example, 5-acre portions of cutting adjacent to Grizzly Peak Boulevard in the first year. Subsequent cut blocks would be contiguous to those already completed, each with a clear path to the extent landing areas.

The objective is to leave all downed material onsite. However, if the site yields an excessive amount if large tree trunks, some material may be relocated to an adjacent portion of the hillside, or shipped for reuse as fuel, paper pulp, or horse bedding.

All cut tree stumps would receive semi-annual follow treatment of herbicides (Garlon® 4 Stalker®, RoundUp®) on any emerging stump sprouts, to ensure the permanent elimination of eucalyptus from action area. Eucalyptus seedlings emerging from the latent seed stock present in the area would be managed over time to prevent re-colonization.

The duration of the felling and removal portion of the action is anticipated to be 24 to 36 months, with 20 to 35 weeks of actual vegetation removal work. In general, work would be conducted during the months of August through November, in order to avoid the wet season and avian nesting and fledging season. Herbicide follow-up applications are anticipated to continue up to 7 to 10 years.

Conservation Measures

1. Prior to project implementation, the locations of sensitive areas, including Alameda whipsnake habitat, wetlands, and native trees to be retained on the project plans shall be clearly indicated. These plans will be submitted to the Service for review prior to project implementation.

2. The project manager or their designee shall be responsible for implementing these *Conservation Measures* of this biological opinion and shall be the point of contact for the project. The project manager or their designee shall maintain a copy of this biological opinion onsite whenever earthmoving and/or fuel reduction activities are taking place. Their name and telephone numbers shall be provided to the Service at least seven (7) working days prior to groundbreaking at the project. Prior to ground breaking, the project manager shall submit a letter to the Service verifying that they posses a copy of this biological opinion and have read the *Conservation Measures*.

3. At least twenty (20) working days prior to the date that the project is initiated in the field, the applicant or project proponent shall submit the name(s) and credentials of biologists/monitors who will serve as the on-site project biological monitors and on-call biologists to the Service for review and approval. The biological monitor(s) shall have demonstrated knowledge of the biology, ecology, and field experience identifying Alameda whipsnakes and California red-legged frogs. The on-call biologist(s) shall have demonstrated knowledge of the biology, ecology, and field experience capturing and handling Alameda whipsnakes and California red-legged frogs. No project activities shall begin until the applicant or project proponents have received written approval from the Service that the biologist(s) and monitor(s) are qualified to conduct the work.

4. The Service-approved biological monitor(s) shall be onsite during all activities that may result in the take of the California red-legged frog and/or the Alameda whipsnake. The potential for take shall be determined by the Service and the California Department of Fish and Game, or in their absence, the Service-approved biological monitor. Prior to approval, the Service-approved biologist(s) shall submit a letter to the Service verifying that they posses a copy of this biological opinion and understand its *Terms and Conditions*. The Service-approved biologist(s) shall keep a copy of this biological opinion in their possession when onsite.

5. The Service-approved biologist(s) and/or biological monitor(s) shall be given the authority through communication with the project manager or their designee to stop any work that may result in take of the California red-legged frog, Alameda whipsnake, and/or other listed species. If the Service-approved biologist(s) or biological monitor exercises this authority, the Service and the California Department of Fish and Game shall be notified by telephone and electronic mail within one (1) working day. The Service contact is Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species Program at the Sacramento Fish and Wildlife Office at telephone 916/414-6600 and e-mail Chris_Nagano@fws.gov.

6. The Service-approved biological monitor(s) will be onsite to monitor the initial vegetation removal and/or ground disturbance activities. The Service-approved biological monitor(s) shall perform a clearance survey for listed species immediately prior to the initial ground disturbance. Safety permitting, the Service-approved biological monitor(s) also will investigate areas of disturbed soil for signs of listed species within thirty (30) minutes following the initial disturbance of that given area. The Service-approved biological monitor(s) will be responsible for inspecting the project area for Alameda whipsnakes and California red-legged frogs before activities begin each day by checking under standing equipment before it is moved, and checking any debris piles.

7. If the Service-approved biological monitor(s) observed either of the two listed species in the work area, they will stop work and call the on-call biologist to move the California red-legged frog to a safe location within walking distance of the location where it was found; or if possible, Alameda whipsnake or California red-legged frog will be allowed to disperse on its own. The biological monitors shall not trap, handle, or move either of

these two listed animals. The individual animal will be monitored by the Service-approved biologist and/or biological monitor until it has been determined that it is not imperiled by predators or other dangers. Neither of these two listed species shall be moved to laboratories, holding facilities, or other facilities without the written authorization of the Service and the California Department of Fish and Game.

8. The Service-approved on-call biologist(s) may use nets or their bare hands to capture California red-legged frogs at the project site. The Service-approved biologist(s) shall not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two (2) hours before and during periods when they are capturing and relocating either of these two listed species. The Service-approved biologist(s) shall limit the duration of handling and captivity of individuals of the listed amphibian. While in captivity, individuals of the California red-legged frog shall be kept in a cool, moist, aerated environment, such as a bucket containing a damp sponge. Containers used for holding or transporting adults of the amphibian shall not contain any standing water. The Alameda whipsnake shall be placed in a pillowcase or similar container for transport to the release site.

9. The Service-approved biologist(s) and/or biological monitor shall take precautions to prevent introduction of amphibian diseases to the action area by disinfecting equipment and clothing as described within the Service's *California Red-Legged Frog Survey Guidance*. Both items are available at the Service's Sacramento office website (http://www.fws.gov/sacramento/es/ protocol.htm).

10. An employee education program on the Alameda whipsnake and California red-legged frog shall be completed prior to the date of initial groundbreaking or vegetation clearing (whichever date come first) at the project. The program shall consist of a brief presentation by the Service-approved biologist(s) to explain endangered species issues to all contractors, their employees, and agency personnel involved in the construction and earthmoving portions of the project. The program shall include a description of the Alameda whipsnake and California red-legged frog and their habitat needs; an explanation of the status of these species and their protection under the Endangered Species Act; associated consequences of non-compliance with this opinion; and a description of the measures being taken to reduce effects to these species during project implementation. Documentation of the training, including original sign in sheets, shall be submitted to the Service within ten (10) working days of the completion of the class.

11. If a California red-legged frog or Alameda whipsnake fuel reduction personnel or other personnel believe may be one of the listed species, the following protocol shall be implemented:

    a. Work or activities that may result in injury, death, harm, harassment, or capture of the individual animal will immediately cease.

b. The project manager and the Service-approved biological monitor and biologist shall immediately be notified.

c. The Service-approved biologist shall immediately notify the Service and/or California Department of Fish and Game by telephone.

d. The Service-approved biologist will move the California red-legged frog to a safe location within walking distance of the location where it was found; if possible, the Alameda whipsnake and California red-legged frog will be allowed to disperse on its own. The individual will be monitored by the Service-approved biologist until it has been determined that it is not imperiled by predators or other dangers. Neither of these two listed species shall be moved to laboratories, holding facilities, or other facilities without the written authorization of the Service and the California Department of Fish and Game.

12. To avoid injury or death of the Alameda whipsnake and/or California red-legged frog, no firearms shall be allowed on the project site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

13. Plastic mono-filament netting (erosion control matting) or similar material shall not be used in the action area because California red-legged frogs and Alameda whipsnakes may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

14. A Service-approved biological monitor(s) will monitor all project activities. The biologist(s) will be given the authority to stop any work that may result in the take of listed species and will be allowed sufficient time to contact the Service approved on-call biologist to move the animals from the site before work activities begin or resume. The individuals will be relocated to suitable habitat that will not be affected by project activities. Only individuals of listed species that are at risk of injury or death by project activities will be moved by the Service-approved biologist(s); any others will be left undisturbed.

15. If the Service-approved biological monitor and/or biologist(s) exercises stop authority, the Service and the California Department of Fish and Game will be notified by telephone and electronic mail within one (1) working day. The Service-approved monitor/biologist shall be the contacted for any employee or contractor who might inadvertently kill of injure a California red-legged frog and/or an Alameda whipsnake; or anyone who finds a dead, injured, or entrapped individual of these two listed species. The Service-approved monitor(s)/biologist(s) shall possess a working cellular telephone whose number will be provided to the Service and the California Department of Fish and Game.

16. Sensitive habitat areas shall be identified and delineated with high visibility temporary orange-colored fence at least four (4) feet in height, flagging, or other barriers. These areas contain core habitat and primary constituent elements for the Alameda whipsnake

and riparian habitat for the California red-legged frog. Such fencing shall be inspected by the Service-approved biological monitor and maintained daily until completion of the project. The fencing will be removed only when all construction equipment is removed from the site. No project activities shall occur outside the delineated project construction area.

17. Native understory plant species will be protected to the maximum extent practical.

18. The applicant will identify and limit to the maximum extent possible all access roads and skid trails.These areas will avoid scrub habitat, primary constituent elements for the critical habitat of the Alameda whipsnake, and stream and riparian habitats. The plans for these roads and trails will be submitted to the Service for review.

19. All material stockpiling and staging areas will be located within designated disturbed/developed areas that are outside of sensitive habitat areas as determined by the Service-approved biologist(s), California Department of Fish and Game, and/or the Service. Locations and methods of vegetation disposal within the action area will be submitted for review and approval for the Service.

20. Vehicle and equipment refueling and lubrication will only be permitted in designated disturbed/developed areas where accidental spills can be immediately contained. All project-related equipment shall be regularly maintained to avoid fluid leaks (e.g., gasoline, diesel fuel, hydraulic fluid). All leaking fluid shall be stopped or captured in a container until such time that the equipment can be immediately moved off-site and repaired. Storage of hazardous materials and refueling of equipment shall not occur within 500 feet of any pond or creek drainage. A plan shall be prepared for immediate containment and cleanup of hazardous material spills within or adjacent to each site.

21. Project-related vehicles will observe a 15-mile per hour speed limit in all project areas, except on City or County roads, and State and Federal highways. Off-road traffic outside of designated project areas will be prohibited.

22. To avoid or minimize attracting predators of the California red-legged frog and the Almeda whipsnake, all food related trash items, such as wrappers, cans, bottles, and food scraps will be disposed of in a securely covered container. These containers will be emptied, and debris removed from the project site at the end of each working day. All project related debris, such as extra logs or equipment or fuel-reduction related materials, will be removed from the work site upon completion of the project.

23. Best Management Practices (BMPs), as identified by the California Regional Water Quality Control Board, will be implemented to control erosion during and after vegetation removal.

24. The spread or introduction of exotic plant species shall be reduced by minimizing disturbance to areas during and following fuel reduction treatments. During the course of

post-treatment monitoring, each site will be inspected for the presence of newly established populations of threatened and endangered species as a result of the fuel reduction prescriptions. Additionally, each area will be inspected for evidence of severe erosion as a result of the vegetation management. If severe erosion is occurring at a site, only native plant seeds or stock shall be used for erosion control, unless otherwise approved by the Service. If necessary, fencing, signs, maintenance, access control, vegetation management, exotic species control, or any other commonly used erosion control technique may be used to promote the ecological health of the sites.

25. Stump application of Garlon® IV, Stalker®, or Roundup® will be conducted by a qualified licensed pest control applicator. No herbicide spraying or foliar application would occur. Herbicides would not be applied directly to water or to plants within 50 feet of standing water or an ephemeral stream.

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 purposes of the effects assessment, the action area includes the project footprint including the work areas, staging areas, access roads, and affected drainages within Strawberry Canyon.

Status of the Species/Environmental Baseline

California red-legged frog

The California red-legged frog was listed as a threatened species on May 23, 1996 (U.S. Fish and Wildlife Service 1996). Please refer to the final rule and the *Recovery Plan for the California Red-Legged Frog (Rana aurora draytonii)* (U.S. Fish and Wildlife Service 2002a) for additional information on this animal.

This species 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; the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

The historic range of the red-legged frog extended coastally from the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985; Hayes and Krempels 1986). The California red-legged frog was historically documented with 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (U.S. Fish and Wildlife Service 2002a). The animals are still locally abundant within portions of the San Francisco Bay area and the central

coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (U.S. Fish and Wildlife Service 2002a).

The California red-legged frogs have paired vocal sacs and vocalize in air (Hayes and Krempels 1986). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on the surface of the water (Hayes and Miyamoto 1984). The species breeds from November through March with earlier breeding records occurring in southern localities (Storer 1925). Individuals occurring in coastal drainages are active year-round (Jennings *et al.* 1992), whereas those found in interior sites are normally less active during the cold season.

Adult California red-legged frogs prefer dense, shrubby or emergent riparian vegetation closely associated with deep (>2.3 feet), still, or slow-moving water (Hayes and Jennings 1988). However, animals also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. The largest densities of this listed ranid currently are associated with deep pools with dense stands of overhanging willows (*Salix* species) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). The California red-legged frog disperses upstream and downstream of their breeding habitat to forage and seek sheltering habitat.

During other parts of the year California red-legged frog habitat includes nearly any area within 1-2 miles of a breeding site that stays moist and cool through the summer (Fellers 2005). According to Fellers (2005), this includes coyote bush (*Baccharis pilularis*), California blackberry thickets (*Rubus ursinus*), and root masses associated with willow (*Salix* species) and California bay trees (*Umbellularis californica*). Sometimes the non-breeding habitat used by the animal is extremely limited in size, for example, a 6-foot wide coyote bush thicket growing along a tiny intermittent creek surrounded by heavily grazed grassland (Fellers 2005). Sheltering habitat is potentially all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of the California red-legged frog within a watershed, and can be a factor limiting frog population numbers and survival.

Red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adult frogs are often associated with permanent bodies of water. Some frogs remain at breeding sites all year while others disperse. Dispersal distances are typically less than 0.5 mile, with a few individuals moving up to 1-2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005). Dispersing frogs in northern Santa Cruz County traveled distances from 0.25 miles to more than 2 miles without apparent regard to topography, vegetation type, or riparian

corridors (Bulger *et al.* 2003). Fellers and Kleeman (2007) and Bulger et al. (2003) found that California red-legged frog migration corridors can be less "pristine" (e.g., closely grazed fields, plowed agricultural lands) than breeding or non-breeding habitats. Bulger et al. (2003) observed that this listed ranid did not avoid or prefer any landscape feature or vegetation type. They tracked individuals that crossed agricultural land, including recently tilled fields and areas with mature crops. The threats facing migrating California red-legged frogs during their movements include being run over by vehicles on roads (Gibbs 1998; Vos and Chardon 1998), degradation of habitat (Vos and Stumpel 1995; Findlay and Houlahan 1997; Gibbs 1998), predation (Gibbs 1998), and dessication (Rothermel and Semlistch 2002; Mazerolle and Desrochers 2003).

Egg masses of the California red-legged frog contains about 2,000 to 5,000 moderate sized (0.08 to 0.11 inches in diameter), dark reddish brown eggs and are typically attached to vertical emergent vegetation, such as bulrushes (*Scirpus* species.) or cattails (Jennings *et al.* 1992). This species is often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Eggs hatch in 6 to 14 days (Jennings 1988). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992); eggs exposed to salinity levels greater than 4.5 parts per thousand results in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1990). Of the various life history stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). Sexual maturity normally is reached at 3 to 4 years of age (Storer 1925; Jennings and Hayes 1985). The California red-legged frog may live 8 to 10 years (Jennings *et al.* 1992). Populations of red-legged frogs fluctuate from year to year. When conditions are favorable red-legged frogs can experience extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, the species may temporarily disappear from an area when conditions are stressful (e.g., drought).

The diet of the California red-legged frog is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food items. Vertebrates, such as Pacific tree frogs and California mice (*Peromyscus californicus*), represented over half the prey mass eaten by larger frogs (Hayes and Tennant 1985). Hayes and Tennant (1985) found juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal. Feeding activity probably occurs along the shoreline and on the surface of the water (Hayes and Tennant 1985). The diet of the California red-legged frog is apparently unstudied, but their diet probably is similar to other ranid frogs that feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b).

Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (*Rana catesbeiana*) (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifastacus leniusculus*), and several species of warm water fish including sunfish (*Lepomis* species), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), and mosquitofish (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). Habitat loss,

non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range.

Several researchers in central California have noted the decline and eventual disappearance of California red-legged frog populations once bullfrogs became established at the same site (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). This has been attributed to both predation and competition. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (*Rana aurora aurora*), and suggested that bullfrogs could prey on subadult northern red-legged frogs as well. In addition to predation, bullfrogs may have a competitive advantage over California red-legged frogs; bullfrogs are larger, possess more generalized food habits (Bury and Whelan 1984), have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977), and larvae are unpalatable to predatory fish (Kruse and Francis 1977). In addition to competition, bullfrogs also interfere with California red-legged frog reproduction. Both California and northern red-legged frogs have been observed in amplexus with (mounted on) both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; M. Jennings, in litt.1993; R. Stebbins in litt. 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat. The urbanization of land within and adjacent to red-legged frog habitat has also impacted red-legged frogs. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks California red-legged frog dispersal, and the introduction of predatory fishes and bullfrogs. This report further identifies the conversion and isolation of perennial pool habitats resulting from urbanization as an ongoing impact to red-legged frogs.

Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frog infected with an iridovirus, which also was presented in sympatric three-spined sticklebacks in northwestern California. Ingles (1932a, 1932b, and 1933 cited in Fellers 2005) reported four species of trematodes from red-legged frogs, but he later synonymized two of them.

The recovery plan for the California red-legged frog identifies eight recovery units (U.S. Fish and Wildlife Service 2002a). The establishment of these recovery units are based on the Recovery Team's determination that various regional areas of the species' range are essential to its survival and recovery. The status of the California red-legged frog will be considered within the smaller scale of Recovery Units as opposed to the overall range. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs. The proposed project is located within the South/East San Francisco Bay Recovery Unit, which extends from the northernmost portion of Contra Costa

County, includes a portion of San Joaquin County south to Santa Clara County, includes the eastern portion of San Mateo County, and all of San Francisco County. Contra Costa and Alameda Counties contain the majority of known red-legged frog localities within the eastern San Francisco Bay area.

There are records of the California red-legged frog in the vicinity of the action area (California Department of Fish and Game 2007). There is suitable upland habitat and two ephemeral drainages run through the action area. The California red-legged frog has been recorded to move two miles. Therefore, the Service believes it is reasonable to conclude the threatened amphibian uses the action area for foraging, resting, and other essential behaviors based on the records of this animal, the biology and ecology of the species, the presence of suitable habitat, and its dispersal abilities.

Alameda Whipsnake

The Alameda whipsnake was federally listed as threatened on December 5, 1997 (U.S. Fish and Wildlife Service 1997). Approximately 406,598 acres within Contra Costa, Alameda, Santa Clara, and San Joaquin counties were designated as critical habitat for the species on October 3, 2000 (U.S. Fish and Wildlife Service 2000). The final rule was vacated and remanded on May 9, 2003. Critical habitat was re-proposed on October 18, 2005 (U.S. Fish and Wildlife Service 2005). A final rule on critical habitat was issued on October 2, 2006 (U.S. Fish and Wildlife Service 2006). A draft recovery plan for the Alameda whipsnake was published in November 2002 (U.S. Fish and Wildlife Service 2002).

The Alameda whipsnake is described as a slender, fast-moving, diurnal snake with a narrow neck and a relatively broad head with large eyes. The dorsal surface is colored sooty black with a distinct yellow-orange stripe down each side. The anterior portion of the ventral surface is orange-rufus colored, the midsection is cream colored, while the posterior and tail are pinkish. Adults range in length from 3 to 4 feet (U.S. Fish and Wildlife Service 1997). The Alameda whipsnake is one of two subspecies of the California whipsnake (*Masticophis lateralis*). The Alameda whipsnake is distinguished from the chaparral whipsnake (*M. l. lateralis*) by its sooty black dorsum, by wider yellow-orange stripes that run laterally down each side, the lack of a dark line across the rostral, an uninterrupted light stripe between the rostral and eye, and the virtual absence of spotting on the venter of the head and neck.

Alameda whipsnakes retreat into winter hibernacula in November and emerge in March. The species breeds from March through June, with mating appearing to occur near the hibernacula of the female (Swaim 1994). During the mating season females remain near their retreat sites while males disperse throughout their home ranges. Swaim (1994) found the mean home range size for four males was 13.6 acres, and 8.4 acres for 2 females. Alameda whipsnakes lay a clutch of 6 to 11 eggs, May through July (Stebbins 1985), and the young hatch and emerge in the late-summer to early-fall (Swaim 1994). The threatened reptile holds its head high off the ground to peer over grass or rocks for potential prey and is an active diurnal predator. Its diet includes lizards, skinks, frogs, small mammals, snakes, and nesting birds. The open habitat in which the Alameda whipsnake occurs may afford prey-viewing opportunities, perhaps aiding this sight-hunting snake

when it forages (Swaim 1994). Small mammal burrows, rock outcrops, and talus provide shelter from predators, egg-laying sites, over-night retreats, and winter hibernacula (Swaim 1994) and are associated with increased numbers of lizards. Lizards, especially the western fence lizard (*Sceloporus occidentalis*), appear to be the most important prey item for the Alameda whipsnake (Stebbins 1985; Swaim 1994).

The Alameda whipsnake is known to inhabit chemise-redshank chaparral, mixed chaparral, coastal scrub, annual grassland, blue oak-foothill pine, blue oak woodland, coastal oak woodland, valley oak woodland, eucalyptus, redwood, and riparian communities (Mayer and Laudenslayer 1988; Alvarez 2006). McGinnis (1992) has documented the species using oak woodland/grassland habitat as a corridor between stands of northern coastal scrub. Grassland habitats were used by male Alameda whipsnakes most extensively during the spring mating season (Swaim 1994). Females used these areas most extensively after mating (Swaim 1994), possibly looking for egg-laying sites or dispersing to scrub habitat (Swaim pers. comm. 2002). Egg-laying sites have been found close to scrub communities in grassland with scattered shrubs (Swaim 1994) and in true scrub communities which indicates that rock outcrops, talus, and burrows (mating habitats) need to be within dispersal range of scrub and grassland habitat (egg-laying habitats) (Swaim pers. comm. 2002). Swaim (1994) also observed Alameda whipsnakes mating in rock outcrops.

Scrub and chaparral habitat communities are essential for providing space, food, and cover necessary to sustain all life stages of the Alameda whipsnake. This habitat consists of Diablan sage scrub, coyote bush scrub, and chemise chaparral (Swaim 1994), also classified as coastal scrub, mixed chaparral, and chemise-redshank chaparral (Mayer and Laudenslayer, Jr. 1988). Swaim (1994) found that core areas (areas of concentrated use by Alameda whipsnakes, based on telemetry and trapping data) had the greatest occurrences on east, southeast, south or southwest facing slopes and were characterized by open or partially-open canopy or grassland within 500 feet of scrub. However, grassland and oak woodland habitat independent of chaparral habitat likely are important for this animal (Alvarez 2006). A recent examination of documented observations revealed that the species has been found 32% of the time in grass- or woodland habitats on slopes of varying aspects (Alvarez 2006). Additional data on habitat use gathered from incidental observations of free-ranging Alameda whipsnakes and recapture data from trapping surveys showed regular use of these habitats at distances greater than 600 feet from scrub and chaparral and included observations of the species more than 3.7 miles from scrub and chaparral communities (Swaim pers. comm. 2004).

Urban development has fragmented the originally continuous range of the Alameda whipsnake into five primary populations. These populations include (1) Sobrante Ridge, Tilden/Wildcat Regional Parks to the Briones Hills, in Contra Costa County (Tilden-Briones population); (2) Oakland Hills, Anthony Chabot area to Las Trampas Ridge, in Contra Costa County (Oakland-Las Trampas population); (3) Hayward Hills, Palomares area to Pleasanton Ridge, in Alameda County (Hayward-Pleasanton Ridge population); (4) Mount Diablo vicinity and the Black Hills, in Contra Costa County (Mount Diablo-Black Hills population); and (5) Wauhab Ridge, Del Valle area to the Cedar Mountain Ridge, in (Sunol-Cedar Mountain population) (U.S. Fish and Wildlife Service 1997). However, additional, yet undiscovered populations may also exit.

Fragmentation of habitat throughout the range of the Alameda whipsnake, presently allows for little or no genetic exchange to occur between the five corps populations. Interchange between Alameda whipsnakes in the Tilden-Briones, Oakland-Las Trampas, and Hayward-Pleasanton Ridge populations depends on dispersal over the Caldecott Tunnel in Contra Costa County and under the Highway 580 in Alameda County at the Eden Canyon interchange, the Dublin Boulevard undercrossing, or where San Lorenzo Creek passes under the highway (Service 1997). Interchange between the Hayward-Pleasanton Ridge and Sunol-Cedar Mountain populations depends on dispersal along Alameda Creek in Alameda County and crossing under I-680 where the creek passes under the highway, or crossing under the highway at Scott's Corner along Vallecitos Creek, or where two unnamed tributaries to Arroyo de la Laguna cross under I-680 north of Scott's Corner (U.S. Fish and Wildlife Service 1997). The Mount Diablo-Black Hills population has no path for dispersal to any of the other populations (U.S. Fish and Wildlife Service 1997).

The past and ongoing fragmentation of Alameda whipsnake habitat makes some populations of this species more vulnerable to extinction. Habitat patches with high ratios of edge to interior are known to provide less value for some species than round or square patches provide (Jimerson and Hoover 1991; Saunders *et al.* 1991). In fragmented habitats, species most prone to extinction are those that depend on native vegetation, require combinations of different habitat types, require large territories, and exist at low densities (Saunders *et al.* 1991). Alameda whipsnakes have been shown to be associated with native Diablan sage scrub, to forage in adjacent grasslands, and to migrate long distances along riparian corridors and over upland habitat. Few individuals have been captured during trapping studies conducted over thousands of trap days, indicating that this listed reptile may be sparse in numbers even in suitable habitat (Swaim 1994). These factors may combine to cause Alameda whipsnakes to be vulnerable to extinction in small habitat patches resulting from habitat fragmentation.

The breeding of closely related individuals can cause genetic problems in small populations, particularly the expression of deleterious genes (known as inbreeding depression). Alameda whipsnakes tend to be relatively rare even in suitable habitat as indicated by trapping studies that show low capture rates and relatively high recapture rates (about 3 captures, 1 recapture per 1,000 trap days) (Swaim 1994). Individuals and populations possessing deleterious genetic material are less able to adapt to changes in environmental conditions, even relatively minor changes. Further, small populations are vulnerable to the effects of genetic drift (the loss of genetic variability). This phenomenon also reduces the ability of individuals and populations to successfully respond to environmental stresses. Overall, these factors influence the survivability of smaller, genetically isolated populations.

A number of native and exotic mammals and birds are known or likely to be predators of the Alameda whipsnake including the California kingsnake (*Lampropeltis getula californiae*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginianus*), coyote (*Canis latrans*), gray fox (*Vulpes cinereoargenteus*), and hawks. Urbanization can lead to increased numbers and access to habitat by native predators, leading to increased levels of predation on native fauna (Goodrich and Buskirk 1995). The recent introduction of the red fox (*Vulpes vulpes*), a species not native to this region of the State, poses an additional threat to the

Alameda whipsnake. In situations where the habitat of this threatened reptile has become fragmented, isolated, and otherwise degraded by human activities, increased predatory pressure may become excessive, especially where alien species, such as rats (*Rattus* species), pigs (*Sus scofra*) and domestic cats (*Felis domesticus*) and dogs (*Canis familiaris*) are introduced or colonize the area. These additional threats become particularly acute where urban development immediately abuts Alameda whipsnake habitat. A growing movement to maintain feral cats in parklands is an additional potential threat from predation on wildlife (Coleman *et al.* 1997; Roberto 1995). Although the actual impact of predation on the listed species under such situations has not been studied, feral cats are known to prey on reptiles, including yellow racers (*Coluber constrictor mormon*) (Hubbs 1951), a fast, diurnal snake closely related to the Alameda whipsnake (Stebbins 1985).

McGinnis (1992) has suggested that grazing has impacted the habitat of the Alameda whipsnake in many areas east of the Coast Range. Overgrazing by livestock that significantly reduces or eliminates shrub and grass cover can be detrimental to this snake, and is suspected of being a primary cause in the reduction of several core populations. Many snakes, including the Alameda whipsnake, avoid such open areas because of the increased danger from predators and the lack of prey (McGinnis 1992), although Alvarez (2006) reported the listed species in introduced grasslands. Non-native plants may also replace native vegetation in areas that have been overgrazed or otherwise degraded. This may reduce the habitat suitability for the Alameda whipsnake by precluding the traditional prey base or altering canopy structure. Radiotelemetry data indicate that the listed reptile tends to avoid dense stands of eucalyptus (Swaim 1994).

The Alameda whipsnake is threatened directly and indirectly by the effects of historical and current fire suppression activities. Fire suppression exacerbates the effects of wildfires through the buildup of fuel (underbrush and woody debris) and the development of a closed scrub canopy, creating, over time, conditions for slow-moving, hot fires (Parker 1987; Rundel *et al.* 1987). These accumulated fuels can be ignited in a number of ways, including well-meaning prescribed burns that get out of manager's control, resulting in catastrophic wildland fires that can destroy many acres of habitat. The highest intensity fires occur in the summer and early fall when accumulated fuel is abundant and dry. During this period, hatchling and adult Alameda whipsnakes are above ground (Swaim 1994), and populations are likely to sustain the heaviest losses from fires.

The alteration of open chaparral or grassland habitats to an increased closed canopy structure due to fire suppression can also lead to the creation of relatively cool temperatures on the soil surface. Alameda whipsnakes have a higher mean active body temperature (92.1 degrees Fahrenheit) and a higher degree of body temperature stability (stenothermy) than has been documented in any other species of snake under natural conditions (Swaim 1994). The listed reptile can maintain this high, stable body temperature by using open and partially open and/or low growing shrub communities that provide cover from predators while providing a mosaic of sunny and shady areas between which Alameda whipsnakes can move to regulate their body temperatures (Swaim 1994). Tall, shaded stands of vegetation, such as poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis*), or other vegetation may not provide the optimum temperature gradient for it. Survey data show that Alameda whipsnakes are less likely to be found where

these plant species create a closed canopy (Swaim 1994). Hammerson (1979) observed the animals emerging from burrows in the morning, basking in the sun, and retreating into burrows when the soil surface temperatures began to fall.

Many of the native coastal scrub and chaparral plant species require periodic fires to stimulate new sprouting, seedling recruitment, and seed dispersal (Parker 1987; Keeley 1987). The natural fire frequency necessary to provide this stimulus in this habitat type is debated by scientists but ranges from 10 to 30 years (Keeley 1987; Rundel *et al.* 1987). Therefore, depending on the rate of fuel accumulation, prescribed burns can be conducted in areas where fires have been suppressed with a frequency of 10 to 30 years. Encroaching urban development and the fear of potential escaped wildfires however has necessitated the implementation of rigorous fire suppression practices in and around suitable habitat areas for the Alameda whipsnake by land management agencies in order to protect people and property.

According to the biological assessment, the closest known records include 6 captures from an East Bay Regional Park District monitoring study from 2002 to 2004. Numerous recent and historical sightings have been recorded adjacent to the action area within the dispersal distance of the species. Focused Alameda whipsnake surveys and trapping efforts were not completed for the Strawberry Canyon Mitigation Project. However, based on the habitat located within and adjacent to the action area, the biology and ecology of the Alameda whipsnake, including its dispersal behavior, and the nearby records of the listed species, the Service has concluded it is likely this listed animal utilizes the action area for foraging, resting, mating, and other essential behaviors.

Alameda Whipsnake Critical Habitat

On October 2, 2006, the final rule determining critical habitat for the Alameda whipsnake was published in the **Federal Register** (U.S. Fish and Wildlife Service 2006). The rule identifies approximately 154,834 acres within six critical habitat units based on but not limited to the following three primary constituent elements: (1) Space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; (2) cover or shelter; sites for breeding, reproduction, and rearing (or development) of offspring; and (3) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. The critical habitat is located in Alameda, Contra Costa, Santa Clara, and San Joaquin counties, California.

When designating critical habitat, the Service is required to list the known primary constituent elements essential to the conservation of the species, and that may require special management considerations and protection (50 CFR § 424.14). Such physical and biological features include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species (Service 2006).

The primary constituent elements for the Alameda whipsnake are based on the current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat necessary to sustain the essential life history functions of the subspecies. The three identified primary constituent elements are defined as: (1) scrub/shrub communities with a mosaic of open and closed canopy; (2) woodland or annual grassland plant communities contiguous to lands

containing primary constituent element 1; and (3) lands containing rock outcrops, talus, and small mammal burrows. These three elements are further described as follows.

Primary Constituent Element 1: Scrub/shrub communities with a mosaic of open and closed canopy

This element is defined by 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 occurring at elevations from sea level to approximately 3,850 feet 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 (California Department of Fish and Game 1998). Such scrub/shrub vegetation within these series form 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 birds.

Primary Constituent Element 2: Woodland or annual grassland plant communities contiguous to lands containing primary constituent element 1

The vegetation series of this element are comprised of one or more of the following: blue oak, coast live oak, California bay, California buckeye (*Aesculus californica*), 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 (California Department of Fish and Game 2006). This mosaic of vegetation supports a prey base consisting of western fence lizards and other prey species such as skinks, frogs, snakes, and birds and provides opportunities for: (1) 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, birds); (2) short and long distance dispersal within, between, or to adjacent to areas containing essential features (i.e., primary constituent elements 1 or 3); and (3) contact with other Alameda whipsnakes for mating and reproduction.

Primary Constituent Element 3: Lands containing rock outcrops, talus, and small mammal burrows

The areas within this element are used for retreats (shelter), hibernacula, foraging, dispersal, and provide additional prey population support functions.

There is no firm information on the actual population of Alameda whipsnake. In addition, there has been no analysis of the minimum viable population size necessary to maintain a stable or increasing population of Alameda whipsnake. However, to provide necessary conservation, a critical habitat unit needs to be large enough to incorporate enough breeding females to maintain a viable population and enough connectivity to assure genetic exchange, avoid low population suppression effects, and recolonization of disturbed habitat. Expert opinion is that the subspecies persists in relatively low numbers throughout its range (McGinnis 1992) and habitat units may therefore need to consist of large blocks of continues habitat to incorporate enough breeding females for a sustainable population.

During the mating season females remain near the retreat sites while males disperse throughout their home ranges (Swaim 1994). Swaim (1994) found that core areas (i.e., areas of concentrated use by Alameda whipsnakes, based on telemetry and trapping data) were predominantly located on east, southeast, south, or southwest facing slopes and were characterized by open or partially-open canopy or grassland within 500 feet of scrub. Additional trapping data has shown the maximum distance between Alameda whipsnake observations from the nearest scrub is much larger, up to 4.5 miles, than either the home range diameter or average movements, suggesting more extensive use of grassland for either foraging or corridor movement (Swaim 2005a). In addition, very recent trapping data in two of the six proposed units has shown several instances of snakes residing in and moving through predominantly north-facing slopes which have denser closed canopy (Swaim 2005b; Swaim 2005c). Closed-canopy areas are therefore considered essential because they provide avenues of dispersal and interaction between sub-populations, and movement through such closed-canopy areas has been documented.

Protecting the ability of Alameda whipsnake to move freely across the landscape in search of habitats is therefore essential for: (1) sustaining populations by providing opportunity for movement and establishment of home ranges by juvenile recruits; (2) maintaining gene flow by the movement of both juveniles and adults between subpopulations; and (3) allowing recolonization of habitat after fires or other natural events that have resulted in local extirpations. Other vegetation (e.g., annual grassland, blue oak-foothill pine, blue oak woodland, coastal oak woodland, valley oak woodland, eucalyptus, redwood, and riparian communities) adjacent to scrub habitat is therefore considered a feature essential to the conservation of the Alameda whipsnake. Thus, it is important that critical habitat units contain enough core areas (i.e. breeding females) to maintain a viable population and that these areas are connected by suitable contiguous dispersal habitat relatively uninterrupted by roads, structures, or other development, that provide for interchange and interaction among individuals and subpopulations within the limited distribution of Alameda whipsnake.

The irretrievable loss of occupied Alameda whipsnake habitat due to recent urban development is significant in areas adjacent to several of the proposed critical habitat units. This loss of habitat has has likely resulted in a commensurate reduction in population size for the Alameda whipsnake. Accordingly, the general pattern of habitat loss and fragmentation was taken into consideration in the designation of critical habitat.

Connectivity has been applied as a criterion to those areas where designation of critical habitat would result in a relatively high potential for dispersal between and within units of critical habitat. The need for special management considerations was assessed where such management may be essential to enhance the connectivity or the integrity of high quality habitat within a unit.

The designated critical habitat is being proposed on lands that were determined to be occupied at the time of listing and contain the features, or primary constituent elements, found to be essential to the conservation of the Alameda whipsnake. Within the boundaries of critical habitat, land that contains developed areas such as buildings, paved areas, and other structures has been excluded from this designation.

The action area is within proposed Critical Habitat Unit 6 (otherwise know as the Caldecott Tunnel Unit). This unit comprises 4,151 acres (1,680 hectares) within Contra Costa and Alameda Counties of which includes approximately 265 acres (107 hectares) within East Bay Regional Park lands, 720 acres (291 hectares) of State lands, and 3,166 acres (1,281 hectares) in private lands. The unit is connects critical habitat units 1 and 2.

The unit is bounded by dense urban development to the east and west. However, the vegetation and soil types that are known to support Alameda whipsnake are dominant throughout the unit (primary constituent elements 1, 2, 3). About eight Alameda whipsnake records are known from the unit between 1990 and 2002 (U.S. Fish and Wildlife Service 2006). Special management considerations in this unit include possible consolidation of existing roads, or limiting additional road construction in order to preserve a corridor function in this unit as a consequence of the restricted width of the unit and the current presence of a moderate number of roads. Prescribed burns may also be required to maintain the habitat mosaic considered essential. The unit is included in designated critical habitat because it contains features essential to the conservation of the Alameda whipsnake, is currently occupied, and represents the last remaining habitat connecting Unit 1 and Unit 2, which are two of the five population centers for the subspecies. Maintaining connectivity between units allows for dispersal between units for the subspecies and allows for genetic exchange among all three units.

The action area vicinity is relatively undeveloped and includes a network of protected open space. The habitat includes several vegetation communities, including coast oak woodland, coyote brush, and annual non-native grassland. All undeveloped lands on and adjacent to the action area contain one or more of the constituent elements of proposed Alameda whipsnake critical habitat, including essential scrub/shrub communities with a mosaic of open and closed canopy; woodland or annual grassland plant communities contiguous to lands containing scrub/shrub habitat; and lands containing rock outcrops, talus, and small mammal burrows.

Effects of the Proposed Action

Beneficial effects of the eucalyptus removal include: (a) reducing the potential of a catastrophic firestorm occurring within the action area, and (b) promoting native forest and scrub habitats. The benefits non-native vegetation removal are in accordance with goals outlined in the recovery plans for the species considered in this biological opinion. The project will result in effects to approximately 40.8 acres of suitable habitat for the California red-legged frog and Alameda whipsnake.

Potential effects to the California red-legged frog and Alameda whipsnake include harassment, injury, or mortality from project activities. Additional adverse effects of this action include temporary disruption and loss of habitat, potential release of contaminants, potential increases in predation and intra-species competition, potential reduction in recruitment, and potential decreases in prey availability. There is a likelihood the animals may be affected by being entombed in their burrows, buried or crushed, hit and injured or killed by vehicle strikes, poisoned by chemical agents (from herbicide application and equipment leakage), and harassed by noise and vibration. The California red-legged frog and Alameda whipsnake may become trapped if plastic mono-filament netting is used for erosion control or other purposes where they would be subject to death by predation, starvation, or dessication (Stuart *et al.* 2001; Barton and Kinkead 2005). The California red-legged frog and Alameda whipsnake may be adversely affected by the proposed project by temporarily blocking movement corridors, or by evening construction disturbing night time foraging, mating, movement, or subjecting them to predation that otherwise would not occur. The actions described in the *Minimization and Conservation Measures* of this biological opinion will reduce, but not eliminate, the potential for these effects.

California red-legged frogs and Alameda whipsnakes may emigrate from the action area to other unaltered habitat. This may increase competition in these areas for resources such as prey and shelter. This displacement will be temporary, so the likelihood of large-scale competition and mortality is presumed low. Changes in habitat also may cause changes in California red-legged frog, Alameda whipsnake, or prey, behaviors. In addition to an increase in dispersal from the treated area, recolonization of newly treated areas may be slowed by a lack of variety in the habitat.

Alameda Whipsnake Critical Habitat

This opinion on the proposed critical habitat for the Alameda whipsnake does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR § 402.02. Instead, we have relied upon the statue and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U. S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to the proposed critical habitat.

The proposed project will affect approximately 40.8 acres within Unit 6. The removal of non-native species will have temporary effects but will result in long term beneficial effects on critical habitat. The temporary one percent loss is not expected to appreciably diminish the value

of the critical habitat for the Alameda whipsnake, or prevent critical habitat from sustaining its role in the conservation and recovery of the species.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action are not considered in this section, because they require separate consultation pursuant to section 7 of the Act.

Land use practices surrounding the action area and is expected to continue to be primarily ranching and grazing. Inappropriate levels of grazing may facilitate the movement of exotic and/or invasive species, which may compete with listed species for food, shelter, and breeding habitats, prey upon either species, and/or degrade habitat quality. Additionally, exotic/invasive species can serve as a vector for pathogens. The continued spread and increased density of exotic/invasive species that compete for resources, degrade or eliminate habitat, and increase the occurrence of disease is an ongoing and significant threat to listed species.

Urbanization is known to cause habitat loss, fragmentation, and degradation, which affects a variety of plant and animal species. Range wide habitat loss is a contributing factor to the decline of both species. Habitats may be lost or degraded as a result of a number of activities including road and utility construction and maintenance, inappropriate grazing levels, agricultural expansion, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency.

Additional threats resulting from urbanization include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, ground squirrel reduction efforts, mosquito control, and residential development may occur without consultation with or authorization by the Service or the California Department of Fish and Game pursuant to their respectively Endangered Species Act.

Urban development results in increased numbers of pets. Both feral and domestic cats and dogs prey on aquatic and riparian species such as the California red-legged frog. People exploring creeks can harass, collect, and kill California red-legged frogs.

Many flood control projects replace natural streams with engineered channels and isolate them from their natural floodplains, disrupting natural hydrologic processes and degrading stream habitat. Flood channel maintenance often requires the removal of emergent aquatic and riparian vegetation, making these channels less suitable for California red-legged frogs.

Non-native species that prey upon, or compete with, listed species continue to be released into the environment. Releases are likely to increase with an increasing number of people living in an area. Bullfrogs, goldfish, mosquitofish, and warm water game fish species are all expected to continue to persist in the wild and degrade the quality of the habitat of the two listed amphibians.

The introduced animals may also act as disease vectors and impact threatened/ endangered species.

The application of pesticides, herbicides, or fertilizers could degrade surface water quality in wetlands, including creeks and streams. Water quality may become impaired when pesticides/fertilizers or sediment enters the proposed project from the surrounding residential area.

Diseases may also pose a significant threat though the specific effects of disease on the California red-legged frog and Alameda whipsnakes are not known. Pathogens are suspected of causing global amphibian declines (Davidson *et al.* 2003). Chytridiomycosis and ranaviruses are a potential threat to the red-legged frog because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson *et al.* 2003; Lips *et al.* 2003). Non-native species, such as bullfrogs and non-native tiger salamanders, are located within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner *et al.* 2006). Human activities can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e. contaminated boots or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in these two listed species being more susceptible to the effects of disease. Disease will likely become a growing threat because of the relatively small and fragmented remaining California red-legged frog breeding sites, the many stresses on these sites due to habitat losses and alterations, and the many other potential disease-enhancing anthropogenic changes that have occurred both inside and outside the species' range.

Increased access to aquatic habitat due to urbanization and associated road construction and improvements could facilitate or increase the spread of amphibian diseases within the range of the California red-legged frog. The global mass extinction of amphibians primarily due to chytrid fungus continues to be of significant concern (Norris 2007; Skerratt *et al.* 2007).

The global average temperature has risen by approximately 0.6 degrees C during the 20th Century (IFPC 2001, 2007; Adger *et al* 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IFPC 2001, 2007; Adger *et al.* 2007), and that it is "very likely" that it is largely due to manmade emissions of carbon dioxide and other greenhouse gases (Adger *et al.* 2007). Western North America's climate is predicted to change within the 21st century due to increasing concentrations of greenhouse gases (carbon dioxide, methane, nitrous oxide, and others) in the global atmosphere from burning fossil fuels and other human activities (Cayan *et al.* 2005, EPA Global Warming webpage http://yosemite.epa.gov). The impacts on California ecosystems from climate change are potentially large (Lenihan *et al.* 2003). Ongoing climate change (Anonymous 2007; Inkley *et al.* 2004; Adger *et al.* 2007; Kanter 2007) likely imperils the California red-legged frog, Alameda whipsnake, and the resources necessary for their survival. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitats and/or prey, and/or increased numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction, with range shifts precluded by lack of habitat.

Conclusion

After reviewing the current status of the California red-legged frog and the Alameda whipsnake, with the environmental baseline for the project area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the Strawberry Canyon Mitigation Project, as proposed, is not likely to jeopardize the continued existence of these two species. Critical habitat for the red-legged frog and Alameda whipsnake has been designated, however critical habitat for the red-legged frog is not in the action area, and therefore will not be affected by the proposed project. The action area is within designated Critical Habitat Unit 6 for the Alameda whipsnake. However, it is the Service's biological opinion that the proposed project will not result in destruction or adverse modification of critical habitat designated for the Alameda whipsnake.

INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulations pursuant to section 4(d) of the Act, prohibit take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. The Service defines harassment as an intentional or negligent act or omission that creates the likelihood of injury to listed species 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. The Service defines harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as 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), take that is incidental to and not intended as part of the agency action is not considered to be prohibited, provided such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are nondiscretionary, and must be implemented by FEMA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption under section 7(o)(2) to apply. FEMA has a continuing duty to regulate the activity that is covered by this incidental take statement. If FEMA (1) fails to require the applicant or any of its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because of the aquatic and secretive nature of the species, their relatively small size and cryptic coloration make the finding of a dead specimen unlikely, and the species occurs in habitats that make it difficult to detect. Losses of California red-legged frogs may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances.

Therefore, the Service anticipates that all individuals of the California red-legged frog inhabiting 40.8 acres will be subject to incidental take. This take is expected to be in the form of harm, harassment, injury, and mortality to red-legged frogs from project-related disturbance and habitat loss. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the project will become exempt from the prohibitions described under section 9 of the Act.

The Service expects that incidental take of the Alameda whipsnake will be difficult to detect or quantify because their secretive nature makes the finding of a dead specimen unlikely, losses may be masked by seasonal fluctuations in numbers, the species occurs in habitat that makes it difficult to detect, and this animal may range over a large territory. Therefore, the Service is estimating that all individuals of the Alameda whipsnake inhabiting 40.8 acres will be subject to incidental take. This take is expected to be in the form of harm, harassment, injury, and mortality to Alameda whipsnakes from project-related disturbance and habitat loss. Upon implementation of the Reasonable and Prudent Measures, incidental take associated with the project will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the California red-legged frog or the Alameda whipsnake. Critical habitat for the California red-legged frog and Alameda whipsnake has been designated, however critical habitat for the red-legged frog is not in the action area, and therefore will not be affected by the proposed project. The proposed project is within designated Critical Habitat Unit 6 for the Alameda whipsnake, however none will be adversely modified or destroyed as a result of the proposed project

Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on the red-legged frog and Alameda whipsnake.

1. The applicant shall implement the conservation measures in the project description as described in the *Project Description* of this biological opinion.

2. The applicant shall implement measures to avoid or minimize adverse effects to the California red-legged frog and the Alameda whipsnake.

3. The applicant shall ensure their compliance with this biological opinion.

Terms and Conditions

To be exempt from the prohibitions of Section 9 of the Act, FEMA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. The applicant and its contractor shall adhere to the following Terms and Conditions to implement Reasonable and Prudent Measure Number One (1):

   a. The applicant shall minimize the potential for harm, harassment, or killing of federally listed wildlife species resulting from project related activities by implementation of the conservation measures appearing in the *Project Description* of this biological opinion.

   b. The applicant shall make the *Terms and Conditions* of the biological opinion a required term in all contracts for the project that are issued by them to all contractors.

2. The applicant and its contractor shall adhere to the following Terms and Conditions to implement Reasonable and Prudent Measure Number Two(2):

   a. Should the applicant require additional area to stockpile downed vegetation, the applicant shall reinitiate consultation to address potential additional affects.

3. The applicant and its contractor shall adhere to the following Terms and Conditions to implement Reasonable and Prudent Measure Number Three (3):

   a. If requested, the applicant shall allow access by Service and/or California Department of Fish and Game personnel to the project site to inspect project effects to the Alameda whipsnake, California red-legged frog, and their habitats.

   b. The applicant shall report to the Service any information about take or suspected take of wildlife species not authorized by this biological opinion. The applicant must notify the Service via electronic mail and telephone within twenty-four (24) hours of receiving such information. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and photographs of the specific animal. The individual animal shall be preserved, as appropriate, and held in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are Chris Nagano, Deputy Assistant Field Supervisor, Endangered Species Program, Sacramento Fish and Wildlife Office at 916/414-6600, and Special Agent, Scott Heard of the Service's Law Enforcement Division at 916/414-6660.

   c. The applicant shall comply with the Reporting Requirements of this biological opinion.

Reporting Requirements

The Service must be notified within one (1) working day of the finding of any injured or dead Alameda whipsnakes and/or California red-legged frogs, or any unanticipated damage to their habitats associated with the proposed project. Injured California red-legged frogs and Alameda whipsnakes must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Notification must include the date, time, and precise location of the

individual/incident clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead individuals of either of these two three listed species must be sealed in a Zip-lock® 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. The Service contact persons are Chris Nagano, Deputy Assistant Field Supervisor (Endangered Species Program) at the Sacramento Fish and Wildlife Office at 916/414-6600; and Scott Heard, Resident Agent-in-Charge of the Service's Division of Law Enforcement, 2800 Cottage Way, Room W-2928, Sacramento, California 95825, at 916/414-6660.

The applicant shall submit a post-construction compliance report prepared by the Service-approved biologist to the Sacramento Fish and Wildlife Office within twenty (20) working days of the date of the completion of construction activity. This report shall detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the California red-legged frog and Alameda whipsnake, if any; (v) occurrences of incidental take of any of these listed species, if any; (vi) documentation of employee environmental education; and (vii) other pertinent information.

CONSERVATION RECOMMENDATIONS

Sections 2 (c) and 7(a)(1) of the Act direct 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 and the ecosystems upon which they depend. Conservation recommendations are discretionary agency activities to minimize or avoid the adverse effects of a proposed action on listed species, to help implement recovery plans, or to develop information. Accordingly, the Service recommends that FEMA:

1. FEMA should assist the Service in implementing recovery actions identified in the *Recovery Plan for the California red-legged Frog* (Service 2002).

2. FEMA should assist the Service in implementing recovery actions identified in the *Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California* (Service 2002)

3. Sightings of any listed or sensitive species should be reported to the California Natural Diversity Database of the California Department of Fish and Game. A copy of the reporting form and a topographic map clearly marked with the location the species were observed also should be provided to the Service.

4. FEMA should incorporate "environmentally friendly" erosion and stabilization techniques whenever possible in their projects.

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 the formal consultation for the Strawberry Canyon Mitigation Project in the East Bay Hills. As provided in 50 CFR § 402.16 and in the terms and conditions of this biological opinion, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion on the proposed Strawberry Canyon Mitigation Project, please contact Kim Squires, Ryan Olah, or Chris Nagano at the letterhead address or at telephone 916/414-6600.

Sincerely,

Chris Nagano

for Cay C. Goude
Acting Field Supervisor

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Thomas Klatt, University of California, Berkeley, California
Brian Wines, California State Water Resources Control Board, Oakland, California

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United States Department of the Interior

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

In Reply Refer To:
81420-2008-F-0483

DEC 17 2007

Mr. Alessandro Amaglio
Federal Emergency Management Agency
U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, California 94607-4052

Subject: Amendment to the Biological Opinion for the Claremont Canyon Vegetation Management Project in Claremont Canyon, University of California, Alameda County, California (PDMC-PJ-09-CA-2005-003)

Dear Mr. Amaglio:

This letter amends the August 3, 2007, biological opinion from the U.S. Fish and Wildlife Service (Service) (Service file: 1-1-07-F-0258) on the effects of the Claremont Canyon Vegetation Management Project on the threatened California red-legged frog (*Rana aurora draytonii*) (red-legged frog) and Alameda whipsnake (*Masticophis lateralis euryxanthus*) and its critical habitat. Your amendment request was received on November 5, 2007. This amendment is in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The following changes are made to the August 3, 2007, biological opinion.

Page 8, Conservation Measure 20:

Omit: Storage of hazardous materials and refueling of equipment shall not occur within 500 feet of any pond or creek drainage.

Add: The applicant will create a containment zone at each refueling point, employing a 45 millimeter ethylene propylene diene monomer (EPDM) liner and berm or similar product to assure that prophylactic containment is established prior to refueling or equipment maintenance involving fluids. On-site equipment shall be parked in these containment areas when not in use.

The other portions of the Project Description, Species Baseline, Effects Analysis, and Reasonable and Prudent Measures in the Biological Opinion and subsequent amendments remain the same.

This concludes formal consultation on the amended Claremont Canyon Vegetation Management Project. As provided in 50 CFR § 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this amendment to the biological opinion on the Claremont Canyon Vegetation Management Project, please contact Kim Squires or Ryan Olah at the letterhead address or at (916) 414-6625.

Sincerely,

fr Cay Goude
Acting Field Supervisor

cc:
Scott Wilson, California Department of Fish and Game, Yountville, California
Brian Wines, California State Water Resources Control Board, Oakland, California
Thomas Klatt, University of California, Berkeley, California

Appendix C

Response from the State Historic Preservation Officer

U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

FEMA 060310A
SM

March 8, 2006

Mr. Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
1416 9th Street, Room 1442-7
Sacramento, California 95814

Re: Regents of the University of California, Fire Mitigation Projects at Claremont Canyon and Strawberry Canyon, PDMC-PJ-09-CA-2005-003 and -011

Dear Mr. Donaldson:

The purpose of this letter is to transmit the enclosed technical report and summarize the results of an archaeological field review of lands potentially affected by two projects proposed in Alameda County, California. The Regents of the University of California (UC) have applied to the Federal Emergency Management Agency (FEMA) through the California Governor's Office of Emergency Services (OES) for Pre-Disaster Mitigation (PDM) Program grants to implement two vegetation management projects in Claremont and Strawberry Canyons (PDMC-PJ-09-CA-2005-003 and PDMC-PJ-09-CA-2005-011, respectively). The proposed effort is designed to mitigate future impacts associated with wildfires by reducing the available fuel load through a combination of hand clearing and mechanized removal of potential fuels from the project area. The attached report presents the results of a literature and archival review and an archaeological field survey of lands potentially affected by the proposed projects. This report was prepared by URS Corporation (URS), as a consultant to FEMA, to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Programmatic Agreement (PA) among FEMA, the State Historic Preservation Officer, OES, and the Advisory Council on Historic Preservation.

In summary, a field review of the project area was supplemented by a cultural resources records review conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System. In addition to the literature review, the California Native American Heritage Commission (NAHC) was contacted for a review of its Sacred Lands File as well as a list of Native American groups and individuals it believes should be contacted. The Sacred Lands File search was negative. FEMA sent letters to those groups and individuals listed by the NAHC. To date no responses have been received. An archaeological survey of the APE was undertaken on December 6 and 9, 2005, by URS. The results of the survey were negative

Project Description
Within the wildlands, exotic vegetation will be selectively removed from approximately 45 acres of Claremont Canyon and 66 acres of Strawberry Canyon. The exotic vegetation would be cut by hand fellers (using chainsaws and wedges) and the mechanized feller-buncher (a tracked vehicle). Felled trees (up to approximately 24 inches in diameter) would be hauled along paths ("skid trails") to landings within the project areas. At the landings, trees would be chipped using a grapple fed chipper. The staging of vehicles would occur at landings within the project area. Additional landings may be created mid-slope within the project area as needed.

Area of Potential Effects (APE) Determination
The proposed APE consists of all areas (within the individual project boundaries) where vegetation will be removed, and are depicted in Figures 2 and 3 in the attached technical report (in Appendix A). Pursuant to Stipulation VII.A. of the PA, FEMA seeks your concurrence with its determination of the APE.

Literature Review
Pursuant to Stipulation VII.B. of the PA, the project area was subject to a cultural resources literature review. The enclosed report provides a complete description of the literature review.

Natural Setting
The enclosed report provides a complete description of the natural setting.

Prehistory, Ethnohistory, and History
The enclosed report provides a complete description of the prehistory, ethnohistory, and history of the project area.

Cultural Resources Inventory Methods and Results
Mr. Brian W. Hatoff, M.A., RPA, of URS, qualified as an archaeologist under the Secretary of the Interior's Professional Qualification Standards, served as Principal Investigator for the cultural resources survey conducted in December 2005. The enclosed report provides a complete description of survey methods and results.

Findings and Conclusions
The results of the archaeological survey were negative for cultural resources within all areas surveyed. This letter and enclosed report provides a description of the undertaking, an APE determination, relevant maps, and a description of the steps FEMA has taken pursuant to Stipulation VII.C. of the PA to identify historic properties. As described above, no properties eligible for the National Register of Historic Places (NRHP) were identified through a literature review or pedestrian survey of the project area. Therefore, the proposed projects are not expected to have any effect on historic properties.

There is always the possibility that previously recorded or previously unidentified archaeological resources could be discovered during project construction. In accordance with Stipulation X of the PA, FEMA will require UC to stop work in the event of an unexpected discovery and will comply with the steps outlined in Stipulation X.

In accordance with Stipulation VII of the PA, FEMA has conducted the Standard Project Review. FEMA made a determination of "no historic properties affected" and, in accordance with the PA, is submitting for review the enclosed report supporting that determination. In accordance with Stipulation VII, FEMA may authorize funding for the project unless you object to this determination within 21 days of your receipt of this documentation.

If you have questions, you can contact me at (510) 627-7284 or Mr. Hatoff at (510) 874-3195.

Sincerely,

Alessandro Amaglio, AIA
Environmental Officer

Enclosure

Cc:
Dennis Castrillo, OES
Marcia Rentschler, OES
Tom Klatt, Regents of the University of California
Greg Kenning, Biggs Cardosa Associates, Inc. (enclosure omitted)
Mahvash Harms, Biggs Cardosa Associates, Inc. (enclosure omitted)
John Hesler, David J. Powers and Associates, Inc. (enclosure omitted)

CONCUR:

for
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

3/20/06

Appendix D

Public Comments and FEMA's Responses

Hills Conservation Network
1305 Alvarado Road
Berkeley, CA 94705
510-849-2601

6/30/07

Ms. Nancy Ward
Regional Administrator
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607
Ref: PDM05-PJ19,20
Cc: Robert McCord

Dear Ms. Ward,

We are residents of the Claremont Canyon area who are concerned over the vegetation removal projects in this area. Addressing our concerns, we have had extensive interactions with East Bay Regional Parks District and the University of California. UC has been tentatively awarded about $700k to complete two additional projects in Claremont and Strawberry Canyons. Our purpose in writing this letter is to ask that FEMA reconsider the approval of these projects.

Our concern over UC Berkeley's vegetation management programs, and specifically with the planned projects for ~40 acres in Claremont Canyon and ~65 acres in Strawberry Canyon, is based on the following:

1. Does the removal of an additional 15,000 tall trees, added to the more than 10,000 that have already been removed make sense, given the trees' favorable effect on global warming? Since the areas being proposed for cutting have no history of wildfire, targeting these areas seems questionable.

2. The fire risk mitigation for homes and property resulting from these projects appears to be minimal, because any structures are well in excess of 1/4 mile away.

3. UC's specific methods are a significant issue. Unlike EBRPD and EBMUD, UC does not remove felled trees, instead grinds them on site, leaving up to 24" of chips on the ground. This practice, while inexpensive to implement, results in an area that will be unlikely to sustain any significant re-vegetation (either native or non-native) for many years. In addition, it is known that leaving that amount of chips on the ground creates a significant fire hazard, not only due to potential ignition, but also due to the difficulty in extinguishing smoldering below surface. EBRPD considers chipping on site an unacceptable practice due to the creation of a "dead zone" and the increased risk of fire.

4. UC failed to comply with EIR-stipulated mitigations these projects. In the recently completed Claremont Canyon project, the following concerns came to light:

a. Until confronted by residents UC, had no written project plans in place
b. Once pushed by local residents, UC elected to use the contractor bid request as the formal project plan
c. Although UC committed to use 3rd party personnel to ensure

d. The actual project was in flagrant violation of the "project plan" document in the following areas:

i. The work proceeded in the rainy season while doing so was specifically prohibited

ii. Tree stumps were to be cut to 6" or less above grade. In fact, the majority of the stumps are several feet above grade

iii. Erosion control measures were supposed to have be erected immediately following cuts; none were erected

e. Herbicides were applied directly to trees in a creek running through the property

5. UC, unlike EBRPD has made no effort to encourage public involvement and transparency in the implementation of their projects. In addition to refusing to provide public grant documents, UC has made claims in those documents that they were able to achieve the greatest amount of tree removal per dollar spent of any public agency as a result of "streamlined approval processes apart from municipal oversight and undue political meddling". The request that UC adopt EBRPDs practice of open community review of preliminary EIR documents has been met with silence.

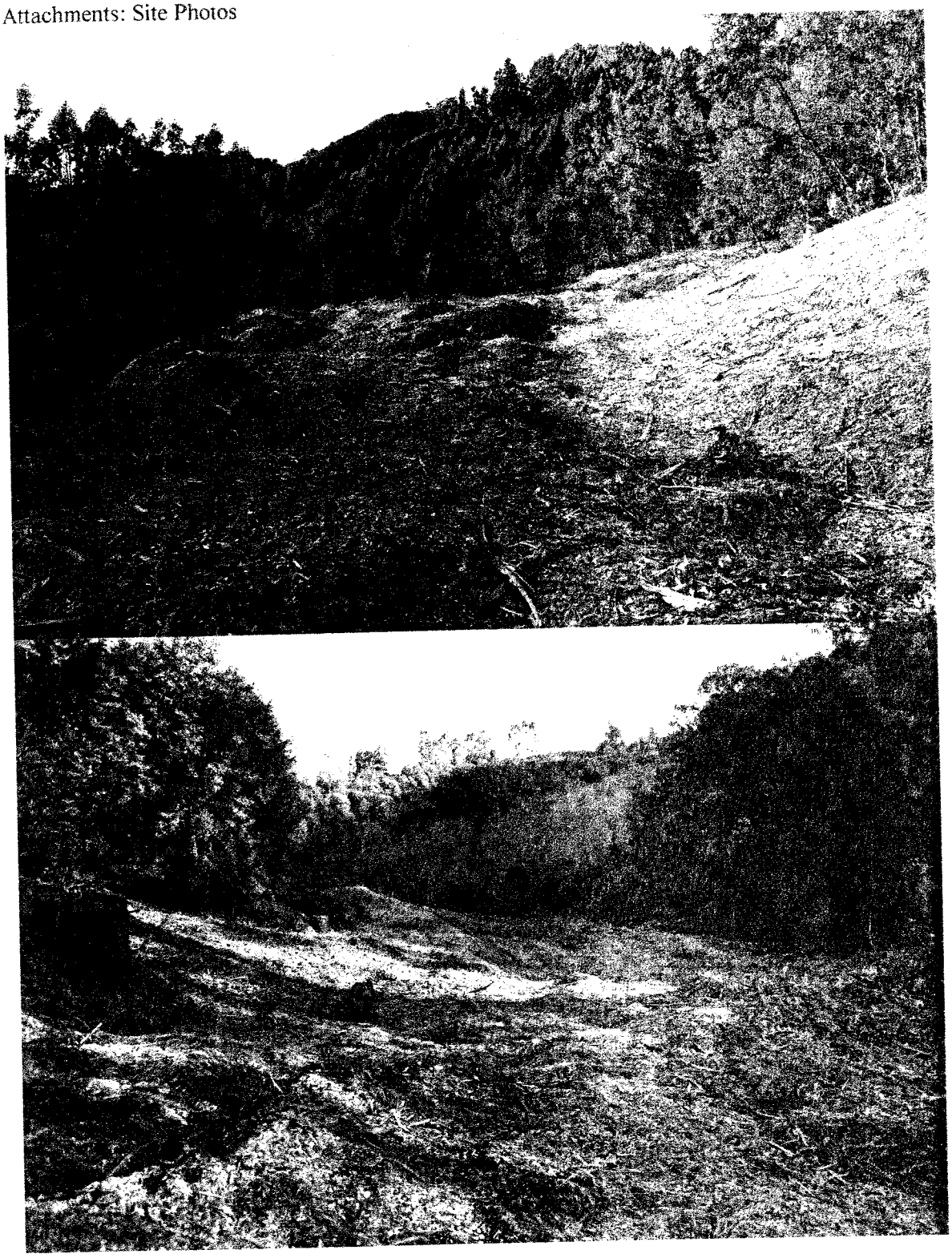
6. While the designated purpose for the use of FEMA funding was for fire safety and mitigation, given that the vegetation removal projects in Claremont and Strawberry canyons are far away from structures, and given the fact that UC, unlike EBRPD employs a process whereby a dead zone is created at the site, one might question what the real motivation for these projects is. It has been suggested that what UC is really doing is using federal funding (FEMA pre-disaster mitigation funds in this case) to remove forested areas as a precursor to future development projects. While it would be politically difficult to justify cutting down a forest to build new structures, once the trees are gone (for "fire safety" reasons) and replaced by dead zones, it would be relatively easy to take the next step with minimal opposition.

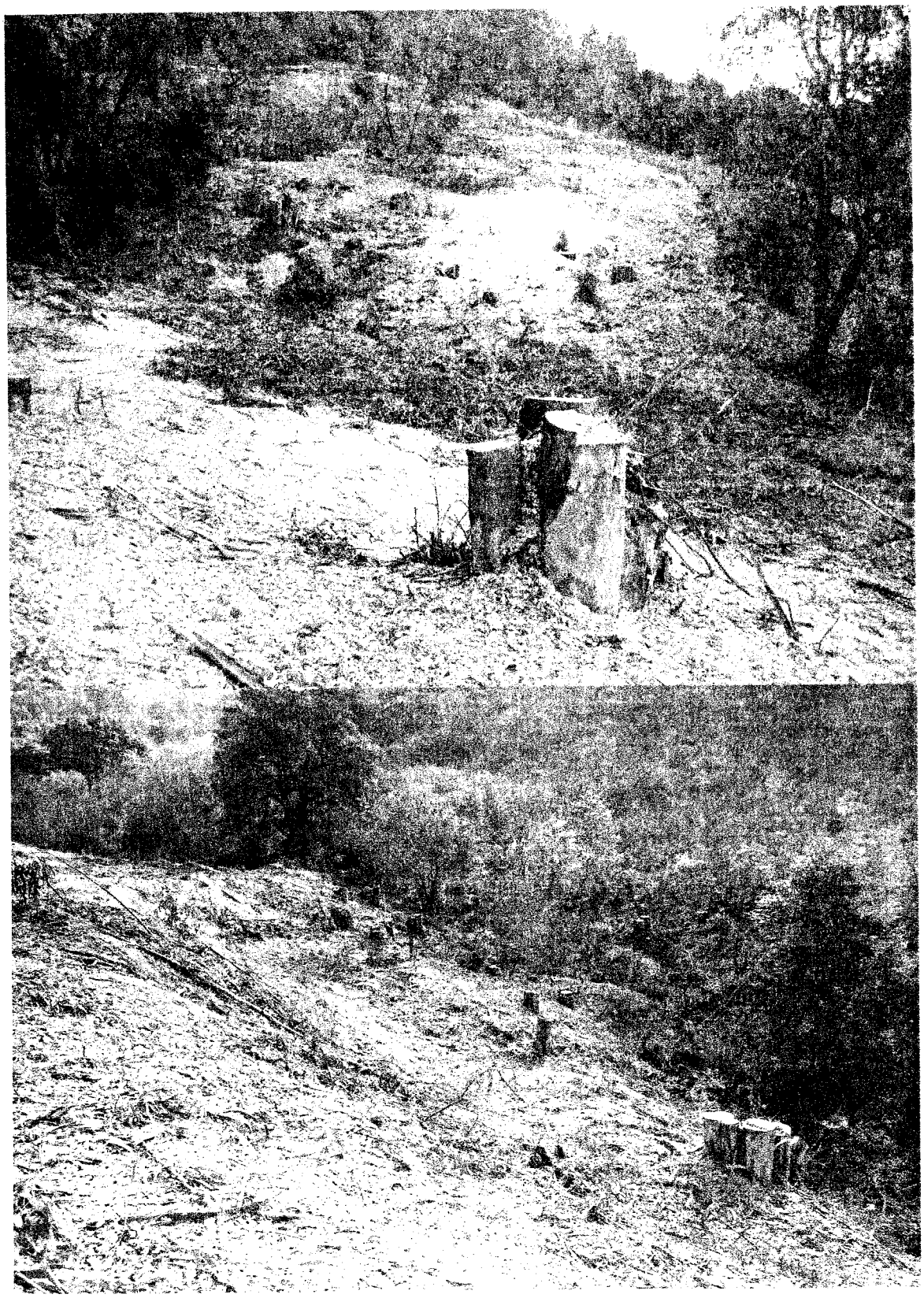
In summary, we believe that UCs use of FEMA vegetation management funds is a fraudulent use of federal funds. We see substantial evidence that UC is being disingenuous in their rationale for these projects. Finally, these projects have essentially no favorable impact in reducing fire danger. With these factors in mind, we ask that you reconsider the approval of these projects.

Sincerely,

Hills Conservation Network Directors
Dan Grassetti
Jerry Baer
Mikki Baer
Robbie Romano
Madeleine Hovland
Peter Gray Scott
Teresa Ferguson
Bob Sand

Attachments: Site Photos





U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

July 26, 2007

Hills Conservation Network Directors
1305 Alvarado Road
Berkeley, California 94705

Re: Claremont and Strawberry Canyons Fuel Reduction Projects, University of California at Berkeley, PDMC-PJ-09-CA-2005-003 and -011

This is in response to your letter dated June 30, 2007, to our agency's Regional Administrator, Ms. Nancy Ward. Your organization expressed concerns about proposed vegetation removal projects for which the University of California, Berkeley, has applied for funding under the Federal Emergency Management Agency's (FEMA) Pre Disaster Mitigation (PDM) Program, through the State of California Governor's Office of Emergency Services.

These projects are currently under environmental review; FEMA is consulting with the appropriate agencies for compliance with several statutes, as required, including Section 7 of the Endangered Species Act (ESA), Concurrently, we are performing these projects' review under the National Environmental Policy Act (NEPA), the decision making process that ultimately will allow FEMA to determine the validity of the project. This review is inclusive of public participation and comments.

I want to thank you for sharing your concerns, some of which have been already taken under due consideration during the review and consultation processes. Additionally, FEMA will provide you, and any other interested party, the opportunity to review and comment on the Draft Environmental Assessment (DEA) when completed. I look forward to hearing your feedback.

Sincerely,

Alessandro Amaglio
Environmental Officer

cc:
Marcia Rentschler, California Governor's Office of Emergency Services
Dennis Castrillo, California Governor's Office of Emergency Services

Hills Conservation Network
1305 Alvarado Rd.
Berkeley, CA 94705

8/10/07

Mr. Alessandro Amaglio
Environmental Officer
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607
Cc: Marcia Rentschler, Dennis Castrillo, Hills Conservation Network Directors
Ref: PDM05-PJ19,20

Dear Mr. Amaglio,

Thanks for your recent letter responding to our concerns over the awarding of these pre-disaster mitigation grants to UC Berkeley. While we greatly appreciate your consideration of the questions raised and information provided, and we plan to work on these issues as part of the formal NEPA and CEQA reviews, we do not believe this is a sufficient response to the concerns we raised.

We are confident that the formal environmental reviews will cause the environmental issues to be considered, however, neither a NEPA nor CEQA review is intended to address our primary concern, that these grant proposals are fundamentally fraudulent.

We ask that you consider the attached list of specific instances noted in our review of the PJ20 grant proposal. (the issues are identical in PJ19). We have highlighted some of the more egregious examples. There are undoubtedly many more. We also note that UC refused to provide us with copies of these public documents when requested. After reading these applications it became clear why they were reluctant to have this information made public.

While we fully support the NEPA and CEQA process and plan to participate, the two grant proposals under question should not be seriously considered for funding. Not only do these projects have little to do with pre-disaster mitigation, UC, by using fraudulent statements throughout these documents, has diminished it's credibility and our statements need to be researched prior to allowing these proposed projects to move forward.

As requested before, we would like to meet with your staff on this matter as soon as possible.

Sincerely,

Peter Gray Scott, 1991 Fire Survivor,
on behalf of the Directors of the Hills Conservation Network

Significant errors and fraudulent claims made in PJ20 (and PJ19)

Page 8. The coordinates for the proposed project appear to be incorrect

Page 13. UC did not follow CEQA in the implementation of its prior projects. These projects were allegedly cleared for environmental reviews pursuant to a campus-wide EIR published in 2004 (2020 LRDP EIR) that barely touches on the subject of vegetation management. Per CEQA, tiered EIRs were to have been completed, but they were not, and mitigations were to have been followed, which were not.

The statement that "based on previous reviews and consultations, no significant and/or cumulative negative impacts to aesthetics....." is patently false and completely unsubstantiated. The further statement that "UC has coordinated its efforts...with East Bay Regional Park District" is also a falsehood. The reality is that EBRPD has given up on attempting to work with UC due to UC's complete unwillingness to participate in a regional project. In fact, EBRPD, in planning for its measure CC projects is doing so without UC's participation, not because this is their desire, but as a result of UC's intractability. Finally, in the Claremont Canyon area where UC wants to use FEMA funds for more clear cutting, EBRPD (the largest landowner in Claremont Canyon) has determined that the fire potential in this area is so low that they will not use measure CC funds for any project in Claremont Canyon. EBRPD can demonstrate a scientifically rigorous process used to arrive at this conclusion while UC cannot.

UC goes on to say that they are eradicating only eucalyptus forests when the reality is that they are removing not only eucalyptus trees, but pines, acacias, essentially all trees other than oaks and bays.

The statement that this strategy has "won broad acceptance from the community" is a falsehood and unsubstantiated. There is a large segment of the community that finds UC's projects to be unnecessarily destructive and would prefer the approach taken by EBRPD. Over 200 signatures to this effect were delivered to UC and have been ignored.

Page 17. While we will address the cost/benefit analysis in the NEPA review process, the economic analysis presented in this grant proposal is nonsense. Their basic assertion appears to be that clear cutting in Claremont and Strawberry canyons is justified as wildfire mitigation, in spite of the fact that virtually no wildfires of any significance have ever occurred in these canyons. UC should follow the lead of EBRPD in conducting professional fire risk analyses prior to implementing projects such as these...but they have not done so and show no plan of performing such analyses. The results would not justify the expenditure of these funds for this purpose. While EBRPD can provide scientifically defensible data as to why certain areas should be cut, UC cannot.

Finally, in the official review of the '91 firestorm (available via a link at http://hillsconservationnetwork.org/Resources.html), there is no evidence that eucalyptus trees played any role in that disaster, yet UC continues to assert eucalyptus trees were a major cause of the fire.

Page 18. UC's statements as to their qualifications and expertise are highly questionable in light of the fact the tactics employed by UC are specifically prohibited by other professional land managers at EBRPD. The further assertion that all projects are completed on time, on budget, and are compliant with environmental considerations is a complete falsehood.

As an example, please consider the most recent project completed by UC on the South slope of Claremont Canyon.

On time? The project was put out for bid in early July of 2006 with a targeted completion date PRIOR TO THE RAINY SEASON. The project slipped into the rainy season and was not completed until early February. The specific prohibition against implementing this project during the rainy season was completely ignored, as were the requirements for erosion control measures.

On budget? While UC undoubtedly spent the money that they had for this project, the hallmark of UC's project was removing the maximum number of trees per dollar spent, irrespective of the environmental damage done. At one point in this project, felled trees were falling into the roadway while traffic was flowing with no traffic control... is this evidence of a well-managed project? If it was on budget it was only because the project ignored safety concerns and environmental mitigations specifically mandated, but which would have resulted in additional expense.

In compliance with environmental law? The EIR used to justify this project contained almost nothing about this or similar projects, there was no tiered EIR, the work plan (which contained the EIR mandated mitigations) was not followed, and the project is still not in compliance with these mitigations six months after completion:

-all stumps were to be no more than 4" above grade, yet the majority are in excess of 2 feet above grade

-erosion control measures were never implemented

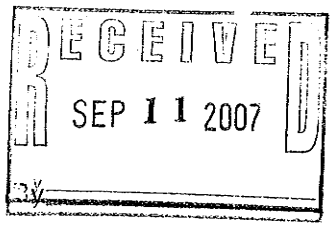
Page 21. UC asserts their methods "have shown no environmental problems or community complaints". While the first part of this statement is a completely unfounded assertion, the second is an outright falsehood. UC has not reported the fact that there has been considerable local opposition to what they have been doing. In fact there have been specific, documented complaints since prior to the writing of these grants, yet these inputs were unreported.

Page 27. UC goes on to assert that "no issues have arisen, and the work has been widely met with positive.....even by people who have an axe to grind with UC". Needless to say, this statement is simply not true. Various groups have expressed their opposition to what UC has been doing, and our group has provided UC with over 200 petition signatures demanding that they stop, yet they continue to make statements such as these in grant applications.

CLAREMONT CANYON CONSERVANCY

A COMMUNITY BASED ORGANIZATION FORMED IN 2001
TO SUPPORT LONG TERM STEWARDSHIP OF CLAREMONT CANYON

www.ClaremontCanyon.Org



August 24, 2007

Mr. Alessandro Amaglio
Environmental Officer
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607

Re: Support for FEMA grants PDMO5-PJ 19 and 20

Dear Mr. Amaglio,

I am writing to you as President of the Claremont Canyon Conservancy, in support of the University of California's FEMA grants PDMO5-PJ 19 and 20. We are a nonprofit community-based membership organization, representing over 400 households in the immediate area of Claremont Canyon. The Conservancy works in close cooperation with all of the regional landholders, including the Cities of Oakland and Berkeley; the East Bay Regional Parks District (EBRPD); and the University of California. Our organization was formed to facilitate communication between these various agencies and municipalities, to provide volunteer support, and to contribute additional funding for vegetation management and restoration projects as necessary.

This critical segment of Bay Area's wildland-urban interface is an important and diverse ecological corridor, but it is threatened by an ever-growing and unstable population of fire-prone, blue- and red-gum eucalyptus trees. The Pre-Disaster Mitigation Grant approved awarded by FEMA to the University and its partners at the City of Oakland and EBRPD is a critical link in protecting the East Bay from yet another devastating Diablo Wind-driven firestorm, for which these trees are an otherwise inevitable fuel source. The work that this grant will facilitate is essential, responsible, and potentially represents a model for local community-Federal agency partnership.

We feel that the University has been an exemplary steward of its portion of Claremont Canyon. Over the past six years, innovative approaches to wildfire fuel reduction, invasive weed control and habitat restoration have been

implemented under the leadership of Tom Klatt of the Office of Emergency Preparedness. The Conservancy has been proud to partner with the University in this work, which has been widely publicized the local print and television media, as well as in our regular neighborhood meetings, quarterly newsletters, and website. We maintain a Memorandum of Understanding with the University to provide community volunteers on a monthly basis to assist in post-logging remediation and restoration projects.

For its part, the University has supported complimentary work of the Conservancy on adjacent lands, including the removal of hundreds of blue gum eucalyptus and Monterey pines on EBRPD land in 2006. This work was funded by generous grants from the U.S. Fish and Wildlife Service (Grant numbers 04FWS0001, 04FWS0002, and 04FWS0003), funds from City of Oakland, and over $25,000 in private funds contributed by neighbors— a telling measure of community support for eucalyptus removal. Furthermore, the Conservancy polled its membership about this (and other topics) in 2006; over 90% firmly supported eucalyptus removal.

In summary, I would encourage you to respond to the pressing needs of the East Bay community, and the expertise and experience of the wildland fire professionals who unanimously support the scope of work outlined in FEMA grants PDMO5-PJ 19 and 20. It is an excellent plan, and enjoys enormous community support. Please feel free to contact me for any elaboration or clarification of the issues raised in this letter.

Kind regards,

Martin Holden, President
The Claremont Canyon Conservancy

August 26, 2007

Mr. Alessandro Amaglio
Environmental Officer
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607

Re: FEMA grants PDMO5-PJ 19 and 20

Dear Mr. Amaglio,

I have written to you previously in support of FEMA grants PDMO5-PJ 19 and 20, detailing other successful fuel-reduction projects in Claremont Canyon, and the overwhelming support that this kind of work enjoys in our community. This letter comes from myself as a concerned private citizen, and is intended to address some misconceptions that have recently been circulated by a group calling itself the "Hills Conservation Network".

To the best of my knowledge, this group consists of less than a dozen individuals. You should be aware that it is not registered as a nonprofit with the California Attorney General's Office. Although it often refers to "directors" in its correspondence, it is not required to maintain a board of directors, appoint other officers, or post any financial reports with the state. It is also not subject to the Nonprofit Integrity Act of 2004, which prohibits "committing unfair or deceptive acts, or engaging in fraudulent conduct." Since its formation last year, this group has devoted itself to opposing projects involving hazardous tree removal in our region—a position counter to the stated policies and goals of all local fire departments, land agencies, and conservation groups.

One assertion often made by this group is that no significant wildfires have occurred in Claremont Canyon. In fact, the canyon has suffered several serious fires in recent decades. A partial list follows:

- The **1946 Buckingham/Norfolk Fire** burned approximately 1,000 acres.
- According to the East bay Regional Parks District, two other large fires also occurred in Claremont Canyon between 1946 and 1956.
- The **1970 Buckingham/Norfolk Fire** burned 204 acres and 37 homes.
- The **1991 Tunnel Fire** or "**Oakland-Berkeley Firestorm**" burned 14 acres of wildlands in the Claremont Canyon Regional Preserve and dozens of homes along the southern ridge of the canyon. (In total, 1600 acres in the East Bay Hills were burned in this fire, 25 lives were lost, 3354 homes and 456 apartments destroyed, at an estimated cost of $1.5 billion.)
- The **1995 Claremont Avenue Fire** burned several acres in the mid-canyon

area, seriously injuring a firefighter.

- The **1999 Stonewall Fire** burned approximately 10 acres on the western edge of the canyon, adjacent to the University's Clark Kerr campus and the historic Claremont Hotel. Fortunately, this fire was successfully brought under control before Diablo wind conditions began the following day.

You may also hear the claim that the East Bay Regional Parks District does not consider Claremont Canyon to pose a fire danger, and that it does not intend to use voter-approved (Measure CC) fuels-reduction funding there. In fact, the EBRPD has made Claremont Canyon a priority in the allocation of wildfire-prevention funding, based in part on the fire history outlined above. Though the EBRPD may also use some of its own anticipated FEMA funding in the canyon, I have been assured by EBRPD Chief of Planning & Stewardship Brian Wiese that "There are fuels (and eucalyptus) concerns in the Canyon which will be addressed in the [Measure CC] wildfire plan and EIR, and in resulting fuels management projects." (Personal communication, August 17, 2007.) Furthermore, I can attest that EBRPD and University staff work together cooperatively and respectfully in the management of their adjacent wildland properties.

Finally, some claim that there is no evidence that eucalyptus trees contributed to the devastating 1991 Tunnel Fire. In fact, there is voluminous testimony from both firefighters and fire survivors about the role that eucalyptus played in increasing the flame height, intensity and spotting range of that fire. Australian researchers have authoritatively documented the role of eucalyptus in wildland fires there, and it has become increasingly clear to forestry scientists and public-safety professionals that eucalyptus plays a similar role in many California wildfires. According to the U.S. Fire Administration Report on the "East Bay Hills Fire" (Report 060 of the FEMA Major Fires Investigation Project), "the introduction of vegetative species which are not native to the area has dramatically impacted fuel loading. This is particularly true of the introduction of eucalyptus. Fuel accumulations in some areas under eucalyptus plantations have been estimated between 30 and 40 tons per acre." This is exactly the type of fuel loading that contributed to the Tunnel Fire, and exists today in Claremont Canyon.

In summary, I would strongly encourage you to "consider the source" when reviewing public comments on this matter, and to give more weight to the considered opinions of firefighting and public-safety professionals than to those of impassioned amateurs, however well-intentioned they may be.

Sincerely,

Martin Holden

Mr. Alessandro Amaglio
Environmental Officer
FEMA Region 9
1111 Broadway, Suite 1200
Oakland, CA 94607

September 7, 2007

Dear Alessandro,

This letter is submitted by me as a private citizen in support of the University of California, Berkeley's FEMA grant PDMO5-PJ 19, & 20

Today's Claremont and Strawberry Canyon eucalyptus fire concerns are directly related to the type of tree planted in dense failed timber plantations at the beginning of the last century. For a number of reasons, the trees were not thinned when the privately owned plantations were young, and the current eucalyptus groves are now more like dense thickets than healthy, safe woodlands. These groves like may others in the hills have not been maintained for almost 100-years, and are increasingly being viewed by fire officials and homeowners as a major factor in the wildfire risks faced today by nearby residents.

In March of 1973, H.H. Biswell, Professor of Forestry and Conservation at the University of California, Berkeley made this prophetic statement. "When eucalyptus waste catches fire, an updraft is created and strong winds may blow-flaming bark for a great distance. I think the eucalyptus is the worst tree anywhere as far as fire hazard is concerned. If some of that flaming bark should be blown on to shake roofs in the hills we might have a firestorm that would literally suck the roofs off the houses. People might be trapped".

To be fair, the 1991 Tunnel Fire was not primarily a eucalyptus fire in origin. The destructiveness of the Tunnel Fire can be attributed to a number of conditions including extreme Diablo winds blowing over high ridge tops and down steep leeward slopes into residential areas, pine groves igniting, eucalyptus groves igniting, brush igniting, densely spaced unprepared homes igniting, narrow streets, and unsuccessful fire fighting efforts, etc. However, the issue that I would like to focus on in this letter is how the Universities eucalyptus trees along the ridge and hillsides of Claremont and Strawberry Canyons might contribute to a major fire today, and not just the role of trees during the 1991 Tunnel Fire or during the many other East Bay Hill fires where eucalyptus or pine were implicated.

The debate about the value, appropriateness, and potential risks of having eucalyptus trees in dense groves has long been a hot topic. The 1995 Hills Emergency Forum (HEF) Fire Hazard Mitigation and Fuel Management Plan (which I worked on with UCB and other agency staff and consultant teams during the four years following the 1991 Tunnel Fire) determined that eucalyptus trees and the burning embers that they can produce in a wind driven wildfire are an important factor in the fire risks faced by Oakland and Berkeley Hill residents. The 1995 HEF Plan classified the Universities Groves in Claremont and Strawberry Canyons as 20-year old eucalyptus. The 20-year old label had nothing to do with age, but did relate to the structure of groves with too many trees per acre, too much flammable fuel, and a shrub understory with fuel ladders up to the crown. The Universities groves were also determined to have the potential for crown fire. The treatment recommendations for "20-year old" eucalyptus on page 16 of the HEF Plan's Technical Appendices covering Treatment Prescription Descriptions by Vegetation Type included a menu of options for land owners to consider including "Convert to more fire safe vegetation type, and Avoid moving towards second growth

eucalyptus". These are the options that the University has wisely selected for its ridge top and hillside properties.

It would be a serious mistake for those who want to keep eucalyptus and pine groves in the upper reaches of either canyon to conclude that minimum work needs to be done because trees are not the only potential source for burning embers. And, that it would be more efficient for homeowners on Panoramic Ridge and Claremont Canyon to retrofit their homes and maintain landscapes that would resist embers and firebrands coming from all sources in a major wildfire including eucalyptus and structures.

Unfortunately, we have a history of assuming one level of wildfire behavior in places like Claremont and Strawberry Canyons, and then professing surprise when something much more spectacular and disastrous happens. After experiencing how pine, eucalyptus, brush, and homes burned during high winds in the 1991 Tunnel fire, the disastrous fires of 2003 in San Diego, and even the Tahoe Angora fire in 2007, we should expect flames during a Diablo wind fire in the hills well above 150' in eucalyptus and pine trees, and ember showers blowing far ahead of the moving flame front onto lower canyon brush lands and unprepared residential areas. This type of extreme fire behavior happened in all three of the fires mentioned above, leaving firefighters and homeowners in retreat until the winds died, and only then were traditional firefighting measures successful. Too much wind, too much fuel, lack of defensible space, unprepared homes, and heroic but unsuccessful fire fighting efforts have all been factors in home loss.

Recent research into the major causes of structure loss during wind driven wildfire document the fact that many homes are lost because of burning embers and not just from the fires flaming front. Trying to predict the distance that burning embers and firebrands would travel and where will they land is like predicting where and how strong the wind will blow. In Australia, strips of burning eucalyptus bark and leaves have been reported to travel several miles ahead of a quick moving wind driven wildfire. Burning embers (some have speculated from the eucalyptus groves along the ridge) in the 1991 Tunnel Fire blew across highway 24 to ignite spot fires at Temescal Park, and then onto upper Rockridge Neighborhoods. Therefore, the distance between a eucalyptus or pine grove and its closest residential neighborhood will not be the limiting factor in home exposure to embers and firebrands. However, ember flight distance may be a very critical factor in how and were firefighting will occur as well as the evacuation time for homeowners.

Extreme fire behavior is largely unpredictable. So, resident and landowner efforts in areas where exposure is predictable should be focused on reasoned and well thought out measures for wildland management, for strategically located fuelbreaks, and for homes and landscapes that are designed and maintained to meet state and city codes for residences in the Urban/Wildland Interface. The 1991 Tunnel wildfire demonstrated the futility of trying to stop a major wind-driven wildfire on windy ridge tops and steep hillsides covered by dense vegetation with unprepared homes in dense hillside residential areas. Public agencies (especially the University) and hill residents have made major improvements over the last 16-years, but there is still much to do.

Over the past five years, I have observed the University working with the Claremont Conservancy in Claremont Canyon, the Regional Park District along Frowning Ridge, and with other HEF member agencies owning property along Grizzly Peak Boulevard. I have also met in the field with Tom Klatt many times, before and after retirement, to provide advice, comment on, and support the work of the University during their eucalyptus and pine conversion projects.

I would be very reluctant to ask the University, as the recently formed Hills Conservancy Network has done, to manage its dense eucalyptus groves on ridge top and steep leeward slopes above residences. There is absolutely nothing wrong with fire safe, and maintained eucalyptus woodlands that do not represent a potential threat to adjacent residential areas. There will be many such groves located away from homes on public and private lands east of the main ridge where fire risks are reduced and management is more feasible, and even in some locations where management is not required. However, after working with eucalyptus for more than 40-years, my personal opinion is that dense hillside blue gum eucalyptus plantations virtually defy reasonable management. Trees will sucker, resprout, and reseed at a rate that can't be contained without significant expenditures and repeated chemical, hand, and mechanical treatments making these groves maintenance and fire liabilities long into the future.

If fire safety, reasonable economics, and native vegetation are important goals for University property, then the Universities ridge top and mid-slope eucalyptus groves in Claremont and Strawberry Canyons should be converted to more fire safe native vegetation that will do very well when the eucalyptus trees are removed. The University has made excellent progress in converting its eucalyptus dominated areas in the upper end of both canyons to native trees and shrubs, and I would expect they would be able to do the same with their remaining FEMA projects. I support the Universities on going conversion projects, and hope you will approve the use of the FEMA funding as requested.

Sincerely,

Jerry D. Kent

Jerry D. Kent
Retired August 31, 2003- East Bay Regional Park District Assistant General Manager

Appendix E

List of Interested Parties

List of Interested Parties

Marcia Rentschler
Manager, Hazard Mitigation Program
California Governor's Office of Emergency Services
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Dennis Castrillo
Environmental Officer
California Governor's Office of Emergency Services
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Tom Klatt
Manager, Office of Emergency Preparedness
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President, The Claremont Canyon Conservancy
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Mr. David Kessler
President, North Hills Phoenix Association
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Mr. Jerry Kent
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Fire Chief Dan Farrell
Oakland Fire Department
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Councilmember Jean Quan
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Fire Commissioner Gordon Piper
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Councilmember Gordon Wozniak
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Berkeley, CA 94704

Councilmember Betty Olds
Berkeley City Council District 6
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Berkeley Fire and Disaster Commission
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2180 Milvia Street
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Cheryl Miller
Amphion Environmental
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Oakland, CA 94612