United States Department of the Interior

FISH AND WILDLIFE SERVICE
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IN REPLY REFER TO:
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April 28, 2014

William Collins, Environmental Coordinator
Department of the Army
Army Base Realignment and Closure, Fort Ord Office
P.O. Box 5008, Building #4463 Gigling Road
Monterey, California 93944-5008

Subject: Formal Consultation for Vegetation Clearance Activities on 309 Acres in Burn Units 1, 2, and 3, on Former Fort Ord, Monterey County, California (8-8-14-F-28)

Dear Mr. Collins:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Department of the Army's (Army) proposed vegetation clearance activities and their effects on the federally endangered Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), the federally threatened California tiger salamander (*Ambystoma californiense*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*), and Monterey spineflower critical habitat, in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your September 20, 2013, request for consultation was received on September 23, 2013.

This biological opinion is based on information which accompanied your September 20, 2013, request for consultation, including the biological assessment (Army 2013); the Parker Flats prescribed burn experiment on former Fort Ord report (Pierce et al. 2010); the biological assessment accompanying your June 5, 2009, request for consultation (Army and Shaw Environmental (Shaw) 2009); the final Fort Ord vegetation clearance alternatives (Ahtna Government Services Corporation (Ahtna) 2002); the installation-wide multispecies habitat management plan (HMP) for former Fort Ord, California (U.S. Army Corps of Engineers (Corps) 1997); and personal communications between Service and Army staff. A complete record of this consultation can be made available at the Ventura Fish and Wildlife Office.

CONSULTATION HISTORY

In 1991, the Army was directed to close Fort Ord and transfer its property. The Army's action was considered a major Federal action that may affect species proposed for listing or listed as threatened or endangered under the Act. The Army prepared a biological assessment in 1993 (Corps 1993) to identify potential impacts to federally listed species, critical habitats, and species proposed for listing. The Army issued a supplement to the draft biological assessment (Army

1993b) describing potential impacts to listed species and critical habitats that may occur as a result of additional reuse alternatives. The Army submitted the biological assessments to the Service for the purpose of formal consultation in accordance with Section 7 of the Act. As a result of the initial consultation, the Service issued the Army a biological opinion (1-8-93-F-14) in 1993 (Service 1993) that addressed impacts to listed species as a result of the transfer and reuse of former Fort Ord property. The Service further required the Army to develop and implement a habitat management plan to reduce the incidental take of listed species and loss of habitat that supports these species. The HMP was published initially in February 1994. The Army revised the HMP in April 1997 to address changes in reuse plans and the Army's cleanup program in accordance with the 1993 biological opinion. As a result of changes in land use, remediation, and additional listings of species and critical habitat designations, the Army has completed several formal consultations with the Service. These biological opinions have been applied during ongoing remediation projects, caretaker actions, interim uses, and property transfers.

Since 2002, the Service has issued concurrence letters supporting the Army's fuel break expansions for the annual prescribed burn program. In our 2005 letter, we recommended that the Army consider reinitiating consultation with the Service to ensure changes in the project description were consistently described (Service 2005a); consequently, in 2009, the Army reinitiated consultation with the Service on all Army actions. While the 2009 consultation has been in progress, the Service has continued to support the Army's fuel break preparations, vegetation clearance activities, and transfer of parcel E29b.3.1, via informal and formal consultations. We have informed the Army that although consultation on the June 5, 2009, biological assessment is near completion, the programmatic biological opinion would not be issued before the start of the 2014 cleanup season; therefore, the Army has requested formal consultation on their proposed 2014 cleanup activities.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Prescribed burning has been the primary method of vegetation clearance in central maritime chaparral on the former Fort Ord in areas designated as habitat reserve and development with reserve areas or restrictions. The Army proposes to use manual and mechanical vegetation clearance methods under limited circumstances, when they will not undermine the goals of species preservation described in the HMP. The Army proposes to use manual or mechanical vegetation clearance when prescribed burns cannot be done safely, burning cannot be conducted because the size of the area is too small or lacks existing fuel breaks and access roads, areas have high vegetation moisture content or did not burn or burned incompletely during a prescribed burn, or areas require sampling before scheduled remedial actions and prescribed burns. The Army would generally limit manual and mechanical vegetation clearance to 50 acres or less of central maritime chaparral within each munitions response site in areas designated in the HMP as habitat reserve, development with reserve areas or development with restrictions, habitat

corridor, or habitat corridor with development allowances. It may be necessary to manually or mechanically clear larger acreages for the maintenance or establishment of fuel breaks. Specifically, in 2014 the Army proposes to manually cut 309 acres in Units 1, 2, and 3; these units were partially cut in preparation for the 2012 and 2013 burn seasons, and the Army now wishes to prepare the remaining acres of the three units. These units are located along the southwestern boundary of the impact area, in the vicinity of the cities of Del Rey Oaks and Seaside, and the Monterey Municipal Airport (Figure 2, Appendix A). The height of maritime chaparral in that part of the impact area poses an unacceptable risk of wildfire that may threaten adjacent communities. If the existing vegetation in these areas are burned, flame heights are expected to be between 15 to 35 feet; therefore, these areas are not safe to burn in their current condition. The proximity to the Monterey Airport and smoke sensitive areas are additional reasons for cutting before burning. Cutting the remaining 309 acres of central maritime chaparral in these units will allow for the completion of munitions and explosives of concern (MEC) remediation in Units 1, 2, and 3, and continuous progress toward the eventual transfer of the property to the Bureau of Land Management's Fort Ord National Monument. Once the MEC cleanup has been completed and vegetation has grown to a point to carry a fire, the Army would conduct prescribed burns in these cut units to facilitate the reestablishment of the rare and listed plant species found in this fire-adapted plant community. Because portions of Units 1, 2, and 3 have already been cut in 2012 and 2013, masticating the remaining portions of those units in 2014 is expected to result in the even re-growth of vegetation and more controlled burn conditions in the future.

Manual vegetation clearance methods would consist of using hand tools such as mowers, weed whippers, loppers, and chain saws. In most cases, standing vegetation would be cut at the base or pruned sufficiently to allow for access and improved visibility under canopies of trees and shrubs prior to cleanup actions. Grasses, non-woody vegetation, and small shrubs would generally be cut off at the base, and larger shrubs and trees would be pruned to allow access by MEC detection and removal technicians and equipment. Manually cleared vegetation would primarily be chipped and hauled offsite, and in some cases may be redistributed onsite in limited amounts. Mechanical vegetation clearance would be conducted by an equipment operator using equipment such as a Brush Hog, Bobcat with treads and mowing deck, or similar machinery. The operator would clear the standing vegetation down to a height of approximately 2 feet to facilitate a check for MEC, then a final cut to 6 inches by making one or more passes over the vegetation and in a manner to keep ground disturbances, such as ruts, to a minimum. The mowing apparatus would shred woody vegetation in place leaving shredded material on the ground. The amount and size of the material depends on the type of cutting head or blade and the density of vegetation.

General Avoidance and Minimization Measures

Before any cleanup related activity begins including vegetation clearance, all supervisors and field personnel will attend an environmental training program. A biologist familiar with Fort Ord HMP plant and wildlife species will present the environmental training program. As the project proceeds, all new personnel will also attend the environmental training before working on

the site. Topics covered in the training will include: (1) a habitat checklist or similar form to be completed that identifies the HMP species present on the site and measures to reduce and/or avoid impacts during the actions; (2) environmental training including a description and photo presentation of HMP plant and wildlife species that could be encountered in the project area; (3) environmental laws related to the conservation of these species; (4) guidelines and specific mitigation measures that personnel must follow to reduce or avoid impacts to HMP species or habitat, including but not limited to maps indicating locations of marked plants to avoid, instructions for replacing topsoil during digs in HMP-plant occupied areas, California tiger salamander-specific instructions (detailed below); and (5) appropriate points of contact to report unforeseen impacts on HMP species and encounters with California tiger salamander.

Baseline surveys will be conducted before the start of work. Presence, abundance, and locations of HMP species, and the condition of critical habitat will be recorded using the protocols outlined in the most current vegetation monitoring protocols (Burleson 2006, 2009), and the follow-up monitoring of HMP species will also be conducted in accordance with the vegetation monitoring protocol to ensure habitat recovery meets the established success criteria.

Specific Avoidance and Minimization Measures

The following specific avoidance and mitigation measures will be implemented to minimize disturbance and impacts to HMP species within the 309 acres proposed for manual or mechanical cutting.

1. The on-site biologist will oversee activities to ensure measures identified in the checklist are implemented and are revised as necessary.
2. Populations of HMP plants will be flagged and/or mapped to the extent possible to avoid and or reduce unnecessary disturbances.
3. The footprint of work areas, staging, and road access areas will be restricted to the extent possible, and access and work areas will be delineated, to limit unnecessary impacts to HMP species and habitat.
4. Existing roads will be used wherever possible, and use of vehicles off-roads will be minimized.
5. Follow-up visits will be conducted on all sites to identify potential erosion areas and weed free straw, straw wattle, or other corrective measures will be applied as necessary.
6. Baseline and follow-up habitat monitoring will occur in accordance with the approved vegetation monitoring protocol.
7. Survey, salvage, and relocation of larvae or adult California tiger salamander will be conducted as appropriate.
8. Monitoring results will be presented in the annual monitoring reports to determine success.
9. Invasive weed and erosion control will continue until property transfer.
10. Biologists authorized by the Service will record all relevant information, conduct California tiger salamander relocation in the event of encounters during work activity, and report any injury or death.

11. For erosion control activities, work areas will be searched for California tiger salamander during rainy periods when animals may be migrating.
12. For weed control, Roundup® will not be used within 100 feet of open water. Rodeo®, or a no-to-low-aquatic toxicity will be used if necessary in this zone.

Once the cut areas have re-grown for approximately 5 years or when vegetation has grown sufficiently to carry a fire, the Army will conduct a prescribed burn in the previously cut areas to stimulate the rare central maritime chaparral fire dependent species to reestablish. By burning these areas after the unexploded ordnance has been removed and the vegetation height has been reduced, the area will be able to be burned with significantly lower flame height that increases ability to contain the fire and reduces the threat of an escape into the adjacent wildland/urban interface.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS

Jeopardy Determination

The jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which describes the range-wide condition of the Monterey gilia, Monterey spineflower, and California tiger salamander, the factors responsible for those conditions, and their survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the condition of the Monterey gilia, Monterey spineflower, and California tiger salamander in the action area, the factors responsible for those conditions, and the relationship of the action area to the survival and recovery of the Monterey gilia, Monterey spineflower, and California tiger salamander; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the Monterey gilia, Monterey spineflower, and California tiger salamander; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the Monterey gilia, Monterey spineflower, and California tiger salamander.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the current status of the Monterey gilia, Monterey spineflower, and California tiger salamander, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the Monterey gilia, Monterey spineflower, and California tiger salamander in the wild.

Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied on the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the range-wide condition of designated critical habitat for the Monterey spineflower in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the *Environmental Baseline*, which analyzes the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated and interdependent activities on the PCEs and how that will influence the recovery role of the affected critical habitat units; and (4) *Cumulative Effects*, which evaluates the effects of future non-Federal activities, that are reasonably certain to occur in the action area, on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed federal action on the critical habitat of the Monterey spineflower are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the Monterey spineflower.

STATUS OF THE SPECIES

California Tiger Salamander

The Service recognizes three distinct populations of the California tiger salamander in Sonoma County, in central California, and in northern Santa Barbara County. On September 21, 2000, the Service listed the Santa Barbara County distinct population segment of the California tiger salamander as endangered (Service 2000). On March 19, 2003, the Service listed the Sonoma County distinct population segment of the California tiger salamander as endangered (Service 2003a). On August 4, 2004, the Service published a final rule listing the California tiger salamander as threatened range-wide, including the previously identified Sonoma and Santa Barbara distinct population segments (Service 2004). On August 19, 2005, U.S. District Judge William Alsup vacated the Service's downlisting of the Sonoma and Santa Barbara populations from endangered to threatened. Thus, the Sonoma and Santa Barbara populations are listed as endangered, and the central California population is listed as threatened. Critical habitat for the central population of the California tiger salamander was designated on August 23, 2005 (Service 2005b).

The California tiger salamander is endemic to the grassland community found in California's Central Valley, the surrounding foothills, and coastal valleys (Fisher and Shaffer 1996). As noted previously, three distinct populations are recognized by the Service: (1) in the coastal ranges of Sonoma County; (2) in central California including the San Francisco Bay area, the Central Valley, southern San Joaquin Valley, and the Central Coast Ranges; and (3) in northern Santa Barbara County. The distribution of breeding locations of this amphibian does not

naturally overlap with that of any other species of tiger salamander (Loredo et al. 1996, Petranka 1998, Stebbins 2003).

The California tiger salamander was first described as *Ambystoma californiense* by Gray in 1853, based on specimens that had been collected in Monterey, California (Grinnell and Camp 1917). Storer (1925) and Bishop (1943) also considered the California tiger salamander to be a distinct species. Dunn (1940), Gehlbach (1967), and Frost (1985) believed the California tiger salamander was a subspecies of the more widespread tiger salamander (*A. tigrinum*). However, based on studies of the genetics, geographic distribution, and ecological differences among the members of the *A. tigrinum* complex, the California tiger salamander has been determined to represent a distinct species (Shaffer and Stanley 1991, Jones 1993, Shaffer et al. 1993, Shaffer and McKnight 1996, Irschick and Shaffer 1997).

The California tiger salamander is a large and stocky terrestrial salamander with small eyes and a broad, rounded snout. Adults may reach a total length of 8.2 inches, with males generally averaging about 8 inches total length, and females averaging about 6.8 inches in total length. For both sexes, the average snout-to-vent length is approximately 3.6 inches (Service 2000). The small eyes have black irises and protrude from the head. Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. Males can be distinguished from females, especially during the breeding season, by their swollen cloacae (a common chamber into which the intestinal, urinary, and reproductive canals discharge), larger tails, and larger overall size (Loredo and Van Vuren 1996).

Historically, natural ephemeral vernal pools were the primary breeding habitats for California tiger salamanders (Twitty 1941, Fisher and Shaffer 1996, Petranka 1998). However, with the conversion and loss of many vernal pools through farmland conversion and urban and suburban development, ephemeral and permanent ponds that have been created for livestock watering are now frequently used by the species (Fisher and Shaffer 1996, Robins and Vollmar 2002).

California tiger salamanders spend the majority of their lives in upland habitats and cannot persist without them (Trenham and Shaffer 2005). The upland component of California tiger salamander habitat typically consists of grassland savannah, but includes grasslands with scattered oak trees, and scrub or chaparral habitats (Shaffer et al. 1993, Service 2000). Juvenile and adult California tiger salamanders spend the dry summer and fall months of the year in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Storer 1925, Loredo and Van Vuren 1996, Trenham 1998, Pittman 2005). Burrow habitat created by ground squirrels and utilized by California tiger salamanders suggests a commensal relationship between the two species (Loredo et al. 1996). Movement of California tiger salamanders within and among burrow systems continues for at least several months after juveniles and adults leave the ponds (Trenham 2001). California tiger salamanders cannot dig their own burrows, and as a result, their presence is associated with burrowing mammals (Seymour and Westphal 1994). Active ground-burrowing rodent

populations likely are required to sustain California tiger salamanders because inactive burrow systems become progressively unsuitable over time (Service 2004). Loredo et al. (1996) found that California ground squirrel burrow systems collapsed within 18 months following abandonment by, or loss of, the mammals.

California tiger salamanders have been found in upland habitats various distances from aquatic breeding habitats. In a trapping study in Contra Costa County, California tiger salamanders were trapped approximately 2,625 feet to 3,940 feet away from potential breeding habitat (Service 2004). During a mark and recapture study in the Upper Carmel River Valley in Monterey County, Trenham et al. (2001) observed California tiger salamanders dispersing up to 2,200 feet between breeding ponds between years. In research at Olcott Lake in Solano County, Trenham and Shaffer (2005) captured California tiger salamanders in traps installed 1,312 feet from the breeding pond.

Adults enter breeding ponds during fall and winter rains, typically from October through February (Storer 1925, Loredo and Van Vuren 1996, Trenham et al. 2000). Males migrate to the breeding ponds before females (Twitty 1941, Shaffer et al. 1993, Loredo and Van Vuren 1996, Trenham 1998). Males usually remain in the ponds for an average of about 6 to 8 weeks, while females stay for approximately 1 to 2 weeks. In dry years, both sexes may stay for shorter periods (Loredo and Van Vuren 1996, Trenham 1998).

Females attach their eggs singly or, in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris in the water (Storer 1925, Twitty 1941). In ponds with little or no vegetation, females may attach eggs to objects, such as rocks and boards on the bottom (Jennings and Hayes 1994). In drought years, the seasonal pools may not form and the adults may not breed (Barry and Shaffer 1994). The eggs hatch in 10 to 14 days with newly hatched salamanders (larvae) ranging in size from 0.5 to 0.6 inch in total length (Petranka 1998). The larvae are aquatic. Each is yellowish gray in color and has a broad, plump head; large, feathery external gills; and broad dorsal fins that extend well onto its back. The larvae feed on zooplankton, small crustaceans, and aquatic insects for about 6 weeks after hatching, after which they switch to larger prey (J. Anderson 1968). Larger larvae have been known to consume smaller tadpoles of tree frogs (*Pseudacris* spp.) and California red-legged frogs (*Rana draytonii*) (J. Anderson 1968). California tiger salamander larvae are among the top aquatic predators in seasonal pool ecosystems.

The larval stage of the California tiger salamander usually lasts 3 to 6 months, because most seasonal ponds and pools dry up during the summer (Petranka 1998). Amphibian larvae must grow to a critical minimum body size before they can metamorphose to the terrestrial stage (Wilbur and Collins 1973). Larvae collected near Stockton in the Central Valley during April varied from 1.9 to 2.3 inches in length (Storer 1925). Feaver (1971) found that larvae metamorphosed and left the breeding pools 60 to 94 days after the eggs had been laid, with larvae developing faster in smaller, more rapidly drying pools. The longer the inundation period, the larger the larvae and metamorphosed juveniles are able to grow, and the more likely they are

to survive and reproduce (Semlitsch et al. 1988, Pechmann et al. 2001). The larvae perish if a site dries before they complete metamorphosis (P. Anderson 1968, Feaver 1971). Pechmann et al. (2001) found a strong positive correlation between inundation period and total number of metamorphosing juvenile amphibians, including tiger salamanders.

Metamorphosed juveniles leave the breeding sites in the late spring or early summer. Like the adults, juveniles may emerge from these retreats to feed during nights of high relative humidity (Storer 1925, Shaffer et al. 1993) before settling in their selected upland sites for the dry, hot summer months. While most California tiger salamanders rely on rodent burrows for shelter, some individuals may utilize soil crevices as temporary shelter during upland migrations (Loredo et al. 1996). Mortality of juveniles during their first summer exceeds 50 percent (Trenham 1998). Emergence from upland habitat in hot, dry weather occasionally results in mass mortality of juveniles (Holland et al. 1990).

We do not have data regarding the absolute number of California tiger salamanders due to the fact that they spend most of their lives underground. Virtually nothing is known concerning the historical abundance of the species. At one study site in Monterey County, Trenham et al. (2000) found the number of breeding adults visiting a pond varied from 57 to 244 individuals. A Contra Costa County breeding site approximately 124 miles north of the Trenham et al. (2000) study site in Monterey County showed a similar pattern of variation, suggesting that such fluctuations are typical (Loredo and Van Vuren 1996). At the local landscape level, nearby breeding ponds can vary by at least an order of magnitude in the number of individuals visiting a pond, and these differences appear to be stable across years (Trenham et al. 2001).

Lifetime reproductive success for California tiger salamanders is typically low. Less than 50 percent breed more than once (Trenham et al. 2000). In part, this is due to the extended length of time it takes for California tiger salamanders to reach sexual maturity; most do not breed until 4 or 5 years of age. Combined with low survivorship of metamorphs (in some populations, less than 5 percent of marked juveniles survive to become breeding adults (Trenham 1998)), low reproductive success limits California tiger salamander populations. Because of this low recruitment, isolated subpopulations can decline greatly from unusual, randomly occurring natural events as well as from human-caused factors that reduce breeding success and individual survival. Based on metapopulation theory (Hanski and Gilpin 1991), factors that repeatedly lower breeding success in isolated ponds that are too far from other ponds for migrating individuals to replenish the population further threaten the survival of a local population.

The California tiger salamander is threatened primarily by the destruction, degradation, and fragmentation of upland and aquatic habitats, primarily resulting from the conversion of these habitats by urban, commercial, and intensive agricultural activities (Service 2000, Service 2003, Service 2004). Additional threats to the species include hybridization with introduced nonnative barred tiger salamanders (*A. tigrinum mavortium*) (Service 2000, 2004), destructive rodent-control techniques (e.g., deep-ripping of burrow areas, use of fumigants) (Service 2003a), reduced survival due to the presence of mosquitofish (*Gambusia affinis*) (Leyse and Lawlor

2000), and mortality on roads due to vehicles (Service 2000). Disease, particularly chytridiomycosis and ranaviruses, and the spread of disease by nonnative amphibians, are discussed in the listing rule as an additional threat to the species (Service 2004).

Recovery Objectives

A recovery plan for the central California population of the California tiger salamander has not been completed; however, the 2004 listing rule (Service 2004) outlines these conservation measures for protection and recovery of the species. The Service believes that protection and recovery of the California tiger salamander will require reduction of the threats from destruction, fragmentation, and degradation of wetland and associated upland habitats due to urban development, conversion of habitat to intensive agriculture, predation by nonnative species, disease, contaminants, agricultural and landscaping contaminants, rodent and mosquito control, road-crossing mortality, hybridization with nonnative tiger salamanders, and some livestock grazing practices. Threats from pesticide drift also must be reduced. These threats should be considered when management actions are taken in habitats currently and potentially occupied by the California tiger salamander, and areas deemed important for dispersal and connectivity or corridors between known locations of this species. Monitoring also should be undertaken for any management actions or scientific investigations designed to address these threats or their impacts.

Development of a recovery plan will bring together Federal, State, and regional agency efforts for the conservation of the California tiger salamander. A recovery plan will establish a framework for agencies to coordinate their recovery efforts. The plan will set recovery priorities and estimate the costs of the tasks necessary to accomplish the priorities. It also will describe the site-specific actions necessary to achieve conservation and survival of the species (Service 2004).

Monterey Spineflower

The Monterey spineflower was listed as a federally threatened species on February 4, 1994 (Service 1994), and 11,055 acres of critical habitat was designated on January 9, 2008 (Service 2008a). Information contained in this account was obtained primarily from the Monterey Spineflower (*Chorizanthe pungens* var. *pungens*) 5-Year Review (Service 2009).

Monterey spineflower is a prostrate annual species in the buckwheat family (Polygonaceae). It has long, somewhat wiry branching stems supporting aggregates of small white to pinkish flowers. Seeds typically germinate after the onset of winter rains and plants can be found above ground as early as December (Fox et al. 2006). Flowering occurs from late March to June, depending on weather patterns, and seed is dispersed in mid-summer.

At the time of listing, Monterey spineflower in the Monterey Bay area was known from scattered populations along the immediate coast, in the Prunedale Hills at Manzanita Park, in the coastal and inland areas of former Fort Ord, and from historical collections described as east of Watsonville and near Mission Soledad in the Salinas Valley. Since its listing, additional

populations of Monterey spineflower have been discovered in the Prunedale Hills of Monterey County and interior areas of Santa Cruz County.

Monterey spineflower is currently known to be extant in southern Santa Cruz and northern Monterey Counties. The distribution of Monterey spineflower extends from Santa Cruz County south along the Monterey Bay to the Monterey Peninsula. Two historical collections were made farther south, in southern Monterey County in 1935 and in northern San Luis Obispo County in 1842. The CNDDB lists 29 occurrences of Monterey spineflower that are presumed extant in this range (CNDDB 2014). Populations also occur inland in Monterey County in the Prunedale Hills and at former Fort Ord. One population has also been located in the Soledad area of the Salinas Valley (Reveal and Hardham 1989, CNDDB 2014). Many populations support large numbers of individuals (thousands or tens of thousands of plants) scattered in openings among the dominant perennial vegetation (CNDDB 2014).

Researchers recently investigated the phylogenetic relationships of various members of the genus *Chorizanthe*, subsection *Pungentes*, including Monterey spineflower (Brinegar 2006, Baron and Brinegar 2007, Brinegar and Baron 2008). Results from the first phase of the molecular study, using ribosomal DNA internal transcribed spacer (ITS) sequencing, indicate that Monterey spineflower and robust spineflower appear to be more closely related to one another than to the other subspecific taxa in the *C. pungens* and *C. robusta* complex. In a second phase of analysis, researchers sequenced chloroplast DNA to determine if it was possible to further differentiate Monterey spineflower from robust spineflower based on these genetic techniques. Results indicated that: (1) there is a general agreement between the results of the ITS sequencing and the DNA phylogenies for the *C. pungens/C. robusta* complex, while results for the other *Pungentes* taxa are often inconsistent with their position in the ITS-based phylogeny; (2) there is a general biogeographical pattern to this phylogeny with regard to the *C. pungens/C. robusta* complex; and (3) there is genetic diversity between populations of Monterey spineflower. While the researchers suggest that a taxonomic revision of the *Pungentes* complex may be in order, no changes are being proposed at this time (Baron in litt. 2008).

Monterey spineflower readily grows where suitable sandy substrates occur and, like other *Chorizanthe* species, where competition with other plant species is minimal (Harding Lawson Associates 2000; Reveal 2001). Studies of the soil requirements and shade tolerances of a related taxon, Scotts Valley spineflower (*Chorizanthe pungens* var. *hartwegiana*), concluded that this taxon is restricted to openings in sandy soils primarily due to its intolerance of shade produced by competing vegetation, rather than its restriction to the specific soil type (McGraw and Levin 1998). As an annual species, Monterey spineflower responds strongly to annual precipitation patterns and amounts, resulting in large fluctuations in the population of plants visible above-ground from year to year.

Where Monterey spineflower occurs within native plant communities, along the coast as well as at more interior sites, it occupies microhabitats found between shrubs where there is little cover from other herbaceous species. In coastal dune scrub, shifts in habitat composition caused by

patterns of dune mobilization that create openings suitable for Monterey spineflower are followed by stabilization and successional trends that result in increased vegetation cover over time (Barbour and Johnson 1988). Accordingly, over time there are shifts in the distribution and size of individual colonies of Monterey spineflower found in the gaps between shrub vegetation.

Human-caused disturbances, such as scraping of roads and firebreaks, can reduce the competition from other herbaceous species and consequently provide favorable conditions for Monterey spineflower, as long as competition from other plant species remains minimal. This has been observed at former Fort Ord, where Monterey spineflower occurs along the margins of dirt roads and trails and where it has colonized disturbances created by military training (Corps 1992, Bureau of Land Management (BLM) 2003). However, such activities also promote the spread and establishment of nonnative species, can bury the seedbank of Monterey spineflower, and do not result in the cycling of nutrients and soil microbial changes that are associated with some large-scale natural disturbances, such as fires (Stylinski and Allen 1999, Keeley and Keeley 1989).

The primary threats to the Monterey spineflower identified at the time of listing were development for human uses, recreation, and encroachment of invasive nonnative species into its habitat. While these are still occurring and diminishing occurrences of Monterey spineflower, other lands that support this taxon have been purchased by conservation-oriented organizations and are preserved (e.g., Long Valley in the Prunedale Hills) or have the potential for long-term preservation (e.g., Caltrans lands). Within its range, numerous occurrences are on lands being restored or enhanced (e.g., State Beaches, Naval Post-Graduate School) or are planned for restoration and enhancement (e.g., former Fort Ord). A primary component of these programs is the removal of nonnative invasive species that compete with Monterey spineflower. Monterey spineflower appears able to recolonize sites where nonnative species have been removed (Service 2009b).

Recovery Objectives

The Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998) outlines recovery criteria for Monterey spineflower. Monterey spineflower can be considered for delisting when the following criteria have been met:

1. When the Fort Ord disposal and reuse process has led the management agencies to develop, fund, and implement permanent protection plans for the species' habitat including permanent iceplant suppression programs; and
2. When beach-dune occurrences on State Park and private lands throughout its current range from Santa Cruz to the Monterey Peninsula are covered under a permanent protection plan. Plans at the time of writing to conserve roughly 60 percent of Fort Ord appear sufficient for recovery of the interior occurrence. A reassessment would be made should plans call for conservation of less habitat. Existing management along the coast at the State Parks units need to be supplemented with protection and management on private lands to be determined after a thorough analysis of the beach populations.

The recovery priority number for Monterey spineflower is 15. This number indicates that Monterey spineflower is a subspecies facing a low degree of threat and has a high potential for recovery.

Monterey Spineflower Critical Habitat
Critical habitat for Monterey spineflower was designated in a revised rule on January 9, 2008, designating a total of 11,055 acres within 9 critical habitat units in Santa Cruz and Monterey Counties, California (Service 2008a).

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, in determining which areas to designate as critical habitat within the geographical area occupied by the species at the time of listing, we considered the physical and biological features that are essential to the conservation of the species to be the primary constituent elements laid out in the appropriate quantity and spatial arrangement for conservation of the species. These 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, or 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.

The primary constituent element of critical habitat for Monterey spineflower is a vegetation structure arranged in a mosaic with openings between the dominant elements (e.g., scrub, shrub, oak trees, or clumps of herbaceous vegetation) that changes in spatial position as a result of physical processes such as windblown sands and fire and that allows sunlight to reach the surface of the following sandy soils: coastal beaches, dune land, Baywood sand, Ben Lomond sandy loam, Elder sandy loam, Oceano loamy sand, Arnold loamy sand, Santa Ynez fine sandy loam, Arnold-Santa Ynez complex, Metz complex, and Metz loamy sand (Service 2008).

Monterey Gilia
Monterey gilia was listed as a federally endangered subspecies on June 22, 1992 (Service 1992). Critical habitat has not been designated for this subspecies. Information contained in this account was obtained primarily from the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) 5-Year Review: Summary and Evaluation (Service 2008b).

Monterey gilia is an annual herbaceous plant in the phlox family (Polemoniaceae), endemic to the Monterey Bay and Peninsula dune complexes. Individual plants are less than 7 inches tall, with a basal rosette of leaves and white and purple funnel-shaped flowers. Fifteen known natural occurrences are distributed in discontinuous populations from Spanish Bay on the Monterey Peninsula north to Moss Landing. Monterey gilia is typically associated with sandy soils of dune scrub, coastal sage scrub, and maritime chaparral vegetation types in the coastal dunes of Monterey County, California. The species is thought to be primarily self-pollinating based on its stamens not protruding from the flower, no observations of pollinators, and very viable seed (Service 1998).

There are likely 24 currently extant occurrences of Monterey gilia; 7 occurrences were known at the time the subspecies was listed. Since listing, 11 additional inland occurrences of Monterey gilia have been located, 12 coastal occurrences have been located, and 5 occurrences have likely been extirpated. One occurrence was extirpated prior to listing. Although these inland occurrences may constitute a range extension from what was known at the time of listing, the overall range of the taxon is still limited. It is unclear as to where the range of the subspecies *Gilia tenuiflora* ssp. *arenaria* ends and the range of *Gilia tenuiflora* ssp. *tenuiflora* begins. There is an additional possibility that some cross-breeding is occurring on the boundary between these subspecies. Genetic analyses should be undertaken to confirm the range extents within this species.

The primary threats to Monterey gilia are habitat destruction due to development and an increase in cover by invasive, nonnative plant species which inhibits its ability to germinate and colonize. The interior sites are generally more at risk than coastal populations. The coastal populations of Monterey gilia on State Park lands are relatively more protected than interior sites at this time, although nonnative plant control is required at virtually all sites and repeated out-plantings have been necessary to maintain numbers and expand population areas. Because invasive species are a concern throughout the Monterey Bay region, it is likely that they pose a threat to Monterey gilia on private parcels in this area as well; however, little information is available regarding the status of occurrences on private lands along the coast.

The status of Monterey gilia since the time of listing has likely improved at some sites by virtue of current or planned management for conservation. Along the coast, acquisition of one private parcel by Big Sur Land Trust and management activities within the State Park units have been a benefit to the long-term conservation of the taxon. At inland sites, the current and future transfer of lands from former Fort Ord to the University of California and BLM will also potentially benefit the long-term conservation of the taxon; however, planned losses of habitat along the western edge of former Fort Ord via land transfers to local agencies for development, and likely future development of other private lands along the coast, will result in direct losses of populations, secondary impacts to a portion of the remaining populations, and increased fragmentation of remaining habitat particularly between the coastal and inland populations. For all remaining populations, both coastal and inland, threats due to invasive species will persist and will likely require management in perpetuity (Bossard et al. 2000).

Recovery Objectives

The immediate objective of Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998x) is to minimize the threats to the species and the habitats upon which they depend. The plan's primary objective is to delist taxa covered by the plan in a minimum of 20 years. This recovery plan includes recovery criteria for both Monterey gilia and Monterey spineflower.

Monterey gilia can be considered for delisting when habitat throughout its range in the Monterey Bay Dunes from Moss Landing to about Sand City, and from dunes in and near Asilomar State

Park on the Monterey Peninsula is protected from encroachment of non-native species, recreational activity (including off-road vehicles and horses), and development; restored to native vegetation at proper densities to allow natural colonization; monitored sufficiently to assure that local threats are spotted promptly; and has enough plants at enough locations within the protected vegetation to reasonably assure the viability of the species. Specific numbers at each location can be found in the recovery plan for the species.

The recovery priority number for Monterey gilia is 9. This number indicates that Monterey gilia is a subspecies that faces a moderate degree of threat and has a high potential for recovery.

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) define the action area being addressed in a consultation as the area that may be directly or indirectly affected by the proposed action and not merely the immediate area involved in the action (50 CFR 402.02). For this biological opinion, the action area is defined as the 309 acres of burn units 1, 2, and 3.

California Tiger Salamander

A total of 37 locations on approximately 91 acres of former Fort Ord are known California tiger salamander breeding sites. Of the locations known to support California tiger salamander populations, 10 of these areas which are in close proximity to each other may represent a metapopulation in the Hennekens Ranch Road area (Pools 5, 42, 56, 57, 58, 59, 60; Machine Gun Flats; 101 East; and 101 West). The Service published an Interim California tiger salamander Survey Protocol in the fall of 2003 (Service 2003b), which requires 2 years of larval surveys and an upland drift fence survey to be conducted between the two larvae surveys before absence can be determined; California tiger salamander presence is assumed in all potentially suitable habitats on Army owned lands unless absence has been ascertained using this protocol. There are no water bodies within Units 1, 2, and 3 and thus, no breeding habitat within these units; however, all 309 acres proposed to be cut are within California tiger salamander aestivation habitat (Army 2013). Ponds have been identified within 1 mile of the areas proposed to be cut; however, they have not held water long enough to support breeding within the past few years (Kowalski in litt. 2014).

Annual biological monitoring reports issued by the Army include reports of surveys and implementation of minimization measures. Since 2006, 10 adult and 3 juvenile California tiger salamanders have been encountered on the former Fort Ord; all of the animals were relocated to suitable habitat (Army 2007; Shaw 2008b, 2008c, 2010, 2011; Denise Duffy and Associates 2013, 2014; see Appendix B for more details).

Monterey Spineflower

The first base wide biological survey that included Monterey spineflower was first conducted by Jones & Stokes in 1992. The survey provided data on the general distribution and estimated

abundance of Monterey spineflower throughout Fort Ord. A total estimate of 10,456 acres of Monterey spineflower habitat was identified in this survey.

Significant populations of Monterey spineflower occur on lands of former Fort Ord (Jones & Stokes, 1992). Within grassland communities, Monterey spineflower occurs along roadsides, in fuel breaks, and in other disturbed sites, while in oak woodland, chaparral, and scrub communities, they occur in sandy openings between shrubs. In older stands with high shrub cover, the plant is limited to roadsides, fuel breaks, and trails that bisect these communities. At former Fort Ord, the highest densities of Monterey spineflower are located in the inland ranges where moderate disturbance has been the most frequent. This pattern of distribution and density of Monterey spineflower on former Fort Ord indicate that the type of activity conducted by Army use, such as fire and light to moderate disturbance of Monterey spineflower habitat, have also created the open conditions that result in high densities of the plant. Prior to onset of human use of this area, Monterey spineflower may have been limited primarily to openings created by wildfires within these communities.

Since the 1992 survey, additional data have been collected on all sites where the Army has conducted remedial actions. The HMP requires documenting Monterey spineflower abundance and distribution at all sites designated as future habitat where Army actions may affect the populations. Since 1992 and 1993, more than 186 acres of additional habitat have been identified and surveyed for populations of Monterey spineflower outside of the habitat mapped by Jones & Stokes. Surveys for Monterey spineflower conducted in 2000 found 64 acres of medium density spread between Unit 1 and Unit 2; another 2 acres of medium density population in Unit 2; and 2 acres of medium density and 9 acres of high density populations in Unit 3. The 2012 surveys in portions of Units 2 and 3 showed similar Monterey spineflower populations in the same general areas as in 2000 surveys. The data are submitted in annual biological monitoring reports each year when biological monitoring is conducted. The areas of Units 1, 2, and 3 proposed to be cut encompass 17 acres of Monterey spineflower distribution.

Monterey Spineflower Critical Habitat

On January 9, 2008, the Service published a revision of designated critical habitat for the Monterey spineflower. Nine critical habitat units comprising approximately 11,055 acres in Santa Cruz and Monterey counties were designated (Service 2008a).

Critical habitat Unit 8, located entirely on former Fort Ord, comprises 9,432 acres of grassland, maritime chaparral, coastal scrub, and oak woodland. Approximately 87 percent of this critical habitat unit is Federal land (8,172 acres) managed by BLM and the Army, 6 percent is State land (606 acres), and 7 percent is under local jurisdictions (654 acres). Portions of Fort Ord have been transferred to BLM; University of California, California State University at Monterey Bay; and local (city and county) jurisdictions. All of the lands included in this unit are designated as current or future habitat reserves under the Army's habitat management plan (Corps 1997). About one-half of Unit 8 still must be cleaned by the Army of environmental contaminants before the land can be transferred to BLM.

Unit 8 contains space for individual and population growth, including sites for seed dispersal and germination; provides the basic requirements for growth; and includes soils in the Arnold-Santa Ynez complex, Baywood sand, and Oceano loamy sand series (Soil Conservation Service 1978). Lands in this unit are intended to be managed at a landscape scale, using prescribed fire, as needed, to maintain a range of different-aged maritime chaparral stands (Corps 1997), and by doing so preserve substantial populations of rare maritime chaparral species in the Monterey Bay area. This unit was occupied at the time of listing (Service 1994) and is currently occupied. This unit is essential because it currently supports multiple large populations of Monterey spineflower, and it is one of only five units that include maritime chaparral and oak woodland habitats more representative of hotter, interior sites. The features essential to the conservation of the species may require special management considerations or protection in this unit due to threats from invasive species that crowd out Monterey spineflower, munitions cleanup methods on former ranges that remove and chip all standing vegetation, and recreational activities and road and trail maintenance that could trample plants (Service 2008b). Units 1, 2, and 3 include 250 acres of Monterey spineflower critical habitat.

Monterey Gilia

The first basewide survey including the Monterey gilia was conducted by Jones & Stokes in 1992 and 1993. The survey provided data on the general distribution and estimated abundance of Monterey gilia on Fort Ord. The report estimated approximately 3,756 acres of Monterey gilia habitat occur on Fort Ord (Jones & Stokes 1992, 1993). Since 1992 and 1993, more than 574 acres of additional habitat have been identified and surveyed for populations of Monterey gilia outside of the habitat polygons mapped by Jones & Stokes. Only a few isolated Monterey gilia populations were found during 2000 baseline surveys in Units 1, 2, and 3. In 2012, during surveys of portions of Units 2 and 3, Monterey gilia was found in less than an acre of Unit 3 with low density (Army 2013). Other human-caused factors that could affect the inland occurrences at former Fort Ord are vegetation management activities that fail to create or maintain the open, sandy conditions necessary for continued survival and colonization by Monterey gilia. These include the elimination of fire from chaparral communities, poorly timed (e.g., wet season) prescribed fires, the use of pre-fire treatments that result in increases in nonnative species, and the use of mechanical vegetation clearing that leaves the chipped vegetation on the soil surface (Zander and Associates 2007).

EFFECTS OF THE ACTION

Effects to California Tiger Salamander

All California tiger salamanders that occur in the vegetation clearance areas could be adversely affected by manual and/or mechanical vegetation removal activities. All of the 309 acres proposed for manual or mechanical clearing is potential upland habitat for California tiger salamander (Table 1). Disturbance from vegetation clearing may result in mortality or injury from crushing by equipment or vehicles and worker foot traffic. Work activities, including noise and vibration, may cause California tiger salamanders to leave the work areas. This disturbance and displacement may increase the potential for predation, desiccation, competition for food and

shelter, or strike by vehicles on roadways. These effects would be avoided or minimized by implementation of the following measures proposed by the Army: (1) the on-site biologist will oversee activities to ensure measures identified in the habitat checklist are implemented and are revised as necessary; (2) the footprint of work areas, staging and road access areas will be restricted to extent possible, and access and work areas will be delineated, to limit unnecessary impacts to HMP species and habitat; (3) existing roads will be used wherever possible, and use of vehicles off-roads will be minimized; (4) survey, salvage and relocation of larvae or adult California tiger salamander will be conducted as appropriate; (5) for erosion control activities, work areas will be searched for California tiger salamander during rainy periods when migrating animals may be abroad; and (6) for weed control, Roundup® will not be used within 100 feet of open water; Rodeo®, or a no-to-low-aquatic toxicity will be used if necessary in this zone.

Although survivorship for translocated California tiger salamanders has not been estimated, survivorship of translocated wildlife, in general, is reduced due to intraspecific competition, lack of familiarity with the location of potential breeding, feeding, and sheltering habitats, and increased risk of predation. Observations of diseased and parasite-infected amphibians are now frequently reported. Releasing amphibians following a period of captivity, during which time they can be exposed to infections of disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to localities containing species which have had little or no prior contact with such pathogens or parasites.

Chytrid fungus, *Batrachochytrium dendrobatidis* causes chytridiomycosis, a skin disease that has been found to disrupt osmoregulatory function in the skin of amphibians, resulting in an imbalance of electrolytes and death (Voyles et al. 2009). Chytridiomycosis in amphibians may be marked by deformed mouthparts in tadpoles, wherein most infected tadpoles will die at metamorphosis (Service 2002). Infected boreal toads (*Bufo boreas boreas*) showed few clinical signs of the disease but many appeared weak or lethargic, exhibited excessive shedding of skin and were reluctant to flee at the approach of humans (U.S. Geological Service 2000, as cited in Service 2002). Chytrid fungi are widespread in the environment where they act as decomposers of keratin, chitin, cellulose, and other plant material, and are known parasites of fungi, algae, higher plants, protozoa, invertebrates, and most recently in vertebrates. Chytrid fungi reproduce asexually by means of minute, fragile, motile spores, and are probably spread directly from amphibian to amphibian in water. These fungi most likely move from one water source to another on migrating amphibians, waterbirds, or flying insects (Daszak et al. 1999 as cited in Service 2002).

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

Table 1. Acreages of species and critical habitat that may be affected by vegetation clearance

Army Cleanup and Property Transfer Actions	Acreages of HMP Species and Critical Habitat that May be Affected				
	California Tiger Salamander		Monterey Gilia	Monterey Spineflower	Monterey Spineflower Critical Habitat
	Breeding Habitat	Upland Habitat			
Vegetation Clearance	none	309	1	17	250

Effects to Monterey Spineflower and Monterey Gilia

All manual and mechanical vegetation clearance activities may result in direct mortality or temporary loss of Monterey spineflower and Monterey gilia. In total we anticipate 17 acres of Monterey spineflower and 1 acre of Monterey gilia habitat to be temporarily disturbed (Table 1); all individual plants that occur in these areas would be subject to injury or death. Removal of vegetation could result in direct removal or cutting of plants; crushing or trampling by heavy equipment or personnel; erosion; and inadvertent introduction or promotion of invasive/nonnative species. Additionally, the manual and/or mechanical vegetation clearance may reduce or eliminate seed reproduction and/or resprouting of species within central maritime chaparral habitat, as indicated in the study conducted by Ahtna (2002). These effects would be greater for Monterey spineflower and Monterey gilia which are seed reproducing species, if vegetation removal activities are conducted prior to seed set. Reproduction may also be reduced or inhibited if chipped material is left on the site. Leaving chipped material behind has been observed to reduce germination by shrub and herbaceous species, influencing subsequent species composition to favor only a few shrub species capable of regenerating in such areas (Harding Lawson Associates 1999b), and has been known to reduce cover of live vegetation, either by chemical or physical inhibition (Ahtna 2002) and has been identified as a threat to Monterey spineflower and Monterey gilia, as the chipped material eliminates open, sandy conditions necessary for these species (Zander and Associates 2007, Service 2008c). Repeated or dense layers of chipped material may also eventually alter the nature of the sandy soils as the woody matter slowly decays. Results of burning after cutting in the Parker Flats prescribed burn experiment on former Fort Ord (Pierce et al. 2010) demonstrate that although the cover of species that vegetatively regenerate (resprouters) decreased, the cover of plant species that regenerate from seed (obligate seeders) at Parker Flats increased, and species diversity in treated (cut, crushed, or chained) burned plots was greater than in untreated burned plots and double that of unburned plots. Overall, the study concludes that the 2005 prescribed burning post-vegetation treatment has enhanced the cover of obligate-seeding plant species, the diversity of plant species, and the densities of HMP plant species at Parker Flats in 2010 relative to pre-burn conditions (Pierce et al. 2010).

Effects to Monterey Spineflower Critical Habitat

Manual and mechanical vegetation clearance could adversely affect 250 acres of Monterey spineflower critical habitat (Table 1). The 250 acres of Monterey spineflower critical habitat contain one or more components of the PCE for critical habitat and the proposed manual and/or mechanical vegetation clearance could alter the PCE in the project area. Manual and mechanical clearing of vegetation could have adverse impacts on Monterey spineflower critical habitat by altering the vegetation structure and openings that change in spatial position as a result of physical processes such as windblown sands and fire and that allow sunlight to reach the surface of sandy soils where Monterey spineflower occur. Worker and vehicle traffic could disturb the sandy soils where Monterey spineflower occur; however, limited disturbance that facilitates openings could be beneficial to habitat. Both prescribed burning and cutting can result in erosion and provide open areas that can be invaded by nonnative plant species; however, Monterey spineflower is able to colonize disturbed soils; therefore, we expect these effects to be temporary and reduced by the proposed minimization measures.

Maintenance and use of dirt fire roads and fuel breaks on former Fort Ord could have both beneficial and adverse effects on the PCE of Monterey spineflower critical habitat. Openings within native plant communities where there is little competition with other plant species has been identified as a component of the PCE for the critical habitat. Because Monterey spineflower is able to colonize disturbed soils, removal of a roadside strip of dense maritime chaparral to bare soil should create the appropriate elements of critical habitat for the species. These open fuel break strips are adjacent to more advanced successional vegetation stages which provide habitat for the pollinators, seed dispersers, and other native species which are important elements of Monterey spineflower critical habitat. While opening of the vegetation canopy benefits Monterey spineflower critical habitat, leaving chipped material on-site can reduce habitat values as discussed above. At former Fort Ord, vegetation in fuel breaks is to be maintained at 1 to 2 feet in height; therefore, the chipped layer should be sparse and the adverse effects of coverage temporary in these areas. Monterey spineflower has been found growing in cut areas where the chipped material was sparse. Fuel break and road maintenance activity and use can also facilitate erosion and invasion by nonnative plant species, the seeds of which may be spread by vehicles and equipment.

In summary, all manual and mechanical vegetation clearance activities may result in direct mortality or temporary loss of Monterey spineflower and Monterey gilia and could have adverse impacts on Monterey spineflower critical habitat due to their presence in the action area, worker and vehicle traffic, and the less favorable effects of cutting rather than burning on central maritime chaparral species; however, the Army has proposed to implement avoidance and minimization measures during vegetation clearance activities, and will apply prescribed burning to the areas once cleanup actions have been completed and the vegetation has regrown for approximately 5 years or has grown sufficiently to carry a fire. Although burning is the preferred method of vegetation clearance prior to cleanup activities, prescribed burning after cutting and cleanup activities were shown to be a restorative tool after such activities were conducted in Parker Flats on former Fort Ord in 2005. Burning after manually/mechanically

removing vegetation is a suitable measure when burning alone is deemed unsafe or infeasible under certain circumstances; this method is preferred over not burning at all. Adverse effects to Monterey spineflower critical habitat would be avoided or minimized by implementation of the following conservation measures proposed by the Army: (1) conducting prescribed burns once the cut vegetation has re-grown for approximately 5 years or grown sufficiently to carry a fire; (2) the on-site biologist will oversee activities to ensure measures identified in the checklist are implemented and are revised as necessary; (3) flagging and/or mapping of populations of HMP plants to the extent possible to avoid and or reduce unnecessary disturbances; (4) restricting to the extent possible the footprint of work areas, staging and road access areas, and delineating access and work areas, to limit unnecessary impacts to HMP species and habitat; (5) using existing roads wherever possible, and minimizing use of vehicles off-roads; (6) conducting follow-up visits on all sites to identify potential erosion areas and applying weed free straw, straw wattle, or other corrective measures as necessary; (7) conducting baseline and follow-up habitat monitoring in accordance with the approved vegetation monitoring protocol; (8) continuing invasive weed and erosion control until property transfer; (9) limiting the amount of chipped material left on site; and (10) implementing post-treatment, multi-year monitoring of MEC clearance areas, evaluating monitoring results against success criteria, and taking necessary corrective actions

Summary of Effects to Species

In determining whether a proposed action is likely to jeopardize the continued existence of a species, we consider the effects of the action with respect to the reproduction, numbers, and distribution of the species.

California Tiger Salamander

Reproduction: A total of 27 locations on approximately 56 acres of former Fort Ord are known California tiger salamander breeding sites. An additional 27 acres of potential breeding habitat are currently unoccupied. The 309 acres of land proposed to be cut do not contain California tiger salamander breeding habitat. Ponds have been identified within 1 mile of the areas proposed to be cut; however, those ponds have not held water long enough to support breeding within the past few years.

The Army has proposed measures to avoid and minimize impacts to California tiger salamanders during project activities. Former Fort Ord does not contain designated critical habitat for the species. Approximately 199,109 acres within 19 counties, including 4,159 acres in Monterey County, have been designated for the central population of California tiger salamander. Critical habitat units in Monterey County contain all three PCEs for the species, including breeding and dispersal habitat. Based on the lack of breeding habitat within the 309 acres proposed for cutting, proposed conservation measures to be implemented by the Army, and the numbers of known breeding locations elsewhere on former Fort Ord and critical habitat in the vicinity, we conclude that impacts to the overall breeding and reproduction capacity of the California tiger salamander due to the Army's current proposed activities would be negligible.

Number: Estimating the number of California tiger salamanders in the action area and that may be affected by the Army's actions is difficult; however, there are 27 known breeding sites on 56 acres of breeding habitat and 27 acres of potential breeding habitat have been identified within Fort Ord. In 8 years of monitoring, 0 to 4 California salamanders have been encountered annually during Army cleanup activities. This number does not indicate how many actual California tiger salamanders are taken each year, as we assume more are actually taken than observed; but, these numbers are an indication of the approximate number that could be encountered during future activities. Based on these relatively low numbers of observed California tiger salamanders in contrast to the amount of known occupied breeding habitat available on Fort Ord and nearby critical habitat, and implementation of avoidance and minimization measures proposed by the Army, we anticipate that impacts from the current proposed activities would not appreciably impact the overall numbers of the California tiger salamander. Incidental take of California tiger salamanders is discussed further in the incidental take statement below.

Distribution: The California tiger salamander occurs from the Santa Rosa area of Sonoma County, southern San Mateo County south to San Luis Obispo County, and the vicinity of northwestern Santa Barbara County (Service 2004a). In the Central Valley and surrounding Sierra Nevada foothills and Coast Range, the species occurs from northern Yolo County southward to northwestern Kern County and northern Tulare and Kings Counties (Service 2004a). Three hundred and nine acres of upland habitat may be affected during the Army's vegetation removal activities. California tiger salamanders may be temporarily displaced during these activities; however, the affected habitat will be restored and monitored post-cleanup and implementation of the Army's proposed conservation measures would avoid and/or minimize impacts to the species. Based on this information, we conclude that the overall distribution of the California tiger salamander would not be appreciably adversely impacted by the Army's activities.

Recovery: Protection and recovery of the California tiger salamander will require reduction of the threats from destruction, fragmentation, and degradation of wetland and associated upland habitats due to urban development, conversion of habitat to intensive agriculture, predation by nonnative species, disease, contaminants, agricultural and landscaping contaminants, rodent and mosquito control, road-crossing mortality, hybridization with nonnative tiger salamanders, some livestock grazing practices, and reduction from pesticide drift. Although the Army's proposed activities are likely to adversely affect California tiger salamanders, minimization and avoidance measures have been proposed and adverse effects are expected to be temporary. Survey, salvage, and relocation of California tiger salamanders when necessary will minimize impacts to the species during project activities. Burning, restoring, and monitoring of habitat after cleanup activities will help to ensure California tiger salamanders are not adversely affected for the long-term. Based on these factors, we conclude the Army's proposed actions will not have an appreciably adverse impact on the recovery of the California tiger salamander.

Monterey Spineflower and Monterey Gilia

Reproduction: The reproductive capacity of the Monterey spineflower and Monterey gilia could be adversely affected by complete or temporary loss of habitat and/or individuals, removal of the seed bank, increased erosion, and colonization of nonnative grasses or other nonnative plant species. The Army has proposed to avoid and/or minimize adverse effects. Surveying, monitoring, flagging and avoidance of populations, controlling invasive weeds and erosion, and burning, restoring, and monitoring habitat; would minimize the potential for disruption to the reproductive cycle. Based on the Army's proposed measures and implementation of prescribed burning, we conclude the Army's proposed actions will not have an appreciably adverse impact on the reproductive capacity of the Monterey spineflower and Monterey gilia.

Numbers and Distribution: Determining the exact number of plants for Monterey spineflower and Monterey gilia on Fort Ord is difficult; however, the Army has provided information on the area of occupied or suitable habitat for the species.

- The first base wide survey including the Monterey gilia was conducted by Jones & Stokes in 1992 and 1993. The survey provided data on the general distribution and estimated abundance of Monterey gilia on Fort Ord. The report estimated approximately 3,756 acres of Monterey gilia habitat occur on Fort Ord (Jones & Stokes 1992, 1993). Since 1992 and 1993, more than 574 acres of additional habitat have been identified and surveyed for populations of Monterey gilia outside of the Jones & Stokes polygons.
- The 1992 Jones and Stokes survey estimated 10,456 acres of Monterey spineflower habitat on Fort Ord. Since the 1992 survey, more than 886 acres of Monterey spineflower populations have been identified with more than 186 acres of Monterey spineflower occurring outside of the Jones and Stokes polygons. Critical habitat for Monterey spineflower on former Fort Ord comprises 9,432 acres.

Temporary and permanent loss of individual plants and associated habitat is anticipated. The implementation of avoidance and minimization measures and conducting prescribed burning and monitoring after the vegetation has regrown enough to carry a fire would avoid and/or minimize adverse effects to Monterey spineflower and Monterey gilia. Based on the these factors and the current status and distribution of Monterey spineflower and Monterey gilia on former Fort Ord, we conclude the Army's proposed actions will not have an appreciably adverse impact on the overall numbers and distribution of Monterey spineflower and Monterey gilia.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are unaware of any non-Federal actions that are reasonably certain to occur in the action area that would adversely affect the California tiger salamander, Monterey spineflower, or Monterey gilia.

CONCLUSION

After reviewing the current status of the California tiger salamander, Monterey gilia, Monterey spineflower, and Monterey spineflower critical habitat; the environmental baseline for the action area; the effects of the proposed actions; and the cumulative effects; it is the Service's biological opinion that the Army's actions, as proposed, are not likely to jeopardize the continued existence of the California tiger salamander, Monterey gilia, and Monterey spineflower; and are not likely to destroy or adversely modify designated Monterey spineflower critical habitat.

Our conclusion is based on the following:

1. The Army will implement measures to avoid and/or minimize impacts to California tiger salamander, Monterey gilia, Monterey spineflower, and Monterey spineflower critical habitat. These measures will be effective in avoiding or minimizing adverse effects to listed species.

2. Eight years of monitoring reports indicate that relatively low numbers of California tiger salamanders have been encountered during Army activities in contrast to the amount of known occupied breeding habitat available on Fort Ord. These California tiger salamanders were found unharmed and were relocated. The Army will continue to implement avoidance and minimization measures while working in California tiger salamander habitat and relocate individuals as necessary. Based on this history and the proposed measures, we expect few if any California tiger salamanders to be affected.

3. Following the monitoring period, restoration of species will be held to success criteria provided in the relevant habitat restoration plans. If success criteria are not achieved, the Army will investigate the causes of failure on a case-by-case basis and develop corrective measures.

4. Conducting prescribed burns in central maritime chaparral habitat is a requirement of the HMP and is beneficial to the habitat that supports Monterey gilia, Monterey spineflower, and Monterey spineflower critical habitat. Areas of vegetation that need to be cut instead of burned will be prescribed burned in the future once enough vegetation has grown back to carry a fire. We anticipate the effects of the proposed action to be temporary, with full habitat function returning in the future.

5. Based on the factors considered in the description of the proposed action, status of the species, environmental baseline, effects of the action, cumulative effects, and summary of effects; we do not anticipate the Army's proposed actions to have an appreciably adverse effect on the overall breeding and/or reproduction capacity, numbers, distribution, and the recovery of the California tiger salamander, Monterey gilia, Monterey spineflower, and Monterey spineflower critical habitat. Although species and habitats may be adversely affected in the short term, activities such as prescribed burning, habitat restoration,

monitoring, and management, are expected to result in long-term beneficial effects for species and habitat, helping to further meet, and not hinder, recovery criteria or goals

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

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

This biological opinion does not exempt any activity from the prohibitions against take contained in section 9 of the Act that is not incidental to the action as described in this biological opinion. Take that occurs outside of the action area or from any activity not described in this biological opinion is not exempted from the prohibitions against take described in section 9 of the Act.

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

California Tiger Salamander

The Service anticipates that all California tiger salamanders within the acres described in Table 1 would be subject to take as a result of the Army's activities. All life stages of California tiger salamanders would be subject to the following forms of take:

1. Take would occur in the form of capture and relocation if California tiger salamanders are found in work areas.
2. Harassment may occur during capture and relocation activities if California tiger salamanders are mishandled or overstressed and if these actions create the likelihood of injury to California tiger salamanders to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.
3. Ground disturbing activities, noise and vibration, use of machinery and vehicles, worker foot traffic, sedimentation and erosion, modifications in water quality, prescribed fires and associated activities may also result in harassment, injury, or death of California tiger salamanders if they are unable to be detected for relocation and remain in active work areas and are crushed or killed by machinery, vehicles, or worker foot traffic; if water quality is compromised by sedimentation or erosion, accidental spills of hazardous materials, careless fueling, oiling, or if a rain event occurs and California tiger salamanders are dispersing through the active work areas.
4. These activities may also result in harm if significant habitat modification or degradation from Army activities results in death or injury to California tiger salamanders by significantly impairing behavioral patterns such as breeding, feeding, or sheltering.

As described above, we expect some California tiger salamanders may be killed or injured by the Army's activities. Some California tiger salamanders within areas of ground disturbance will be killed or injured by the Army's activities because they are not likely to be detected during surveys. We anticipate all California tiger salamanders detected will be subject to take when captured and relocated, and a subset of the individuals captured may be killed or injured due to mishandling or stress.

We cannot quantify the precise numbers of California tiger salamanders that may be captured, killed, or injured as a result of the Army's proposed actions because California tiger salamanders move over time and animals may have entered or departed the action area since pre-construction surveys were conducted. Other individuals may not be detected due to their cryptic nature, small size, and low mobility, and finding a dead or injured California tiger salamander is unlikely. The protective measures proposed by the Army are likely to prevent mortality or injury of most individuals.

We are unable to reasonably anticipate the actual number of California tiger salamanders that would be taken by the proposed project; however, we must provide a number at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects of the Action sections of this biological opinion indicate that adverse effects to California tiger salamanders would likely be low based on implementation of proposed avoidance and minimization measures

and measures to restore and monitor. Based on these factors and what we know from annual reports of California tiger salamander encounters in the past, we can anticipate take of California tiger salamanders would also be low relative to the amount of breeding and upland habitat available on former Fort Ord. We recognize that for every California tiger salamander found dead or injured, other individuals may be killed or injured that are not detected; therefore, when we determine an appropriate take limit, we set the number at a lower limit, anticipating that the actual take would be higher.

Similarly, for estimating the number of California tiger salamanders that would be taken by capture, it is difficult to predict how many may be encountered. While the benefits of relocation (i.e., minimizing mortality) outweigh the risk of capture, we must provide a limit for take by capture at which consultation would be reinitiated. Though there are challenges to setting precise take limits, we do know how many California tiger salamanders have been encountered annually in years past (Appendix B) and can anticipate similar numbers for future years.

Based on the best available information and the analyses provided in this biological opinion, we conclude if two adult, subadult, or juvenile California tiger salamanders are found dead or injured; if two are captured and relocated during the project timeframe; or if any known California tiger habitat is degraded to the degree that it cannot be restored to meet success criteria even after corrective measures have been implemented; the Army must contact our office immediately to reinitiate formal consultation. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the impacts of the incidental take of the California tiger salamander.

1. Biologists must be authorized by the Service before they survey for, capture, and move California tiger salamanders in the action area.

2. Effects to the California tiger salamander must be minimized in the project area.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Army must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

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

    a. Only qualified personnel authorized under this biological opinion may handle California tiger salamanders. William Collins, Jami Davis, and Matt Johnson, are hereby authorized to capture, handle, and relocate California tiger salamanders during Army activities on former Fort Ord as analyzed in this biological opinion. If the Army wishes to use other biologists to capture, handle, and relocate California tiger salamanders, they must submit the credentials of the biologists who will conduct these activities to us for review and approval at least 30 days prior to the onset of any such activities. Biologists are not considered to be approved until the Service has responded in writing.

    b. The authorized biologists must record all pertinent information when California tiger salamanders are relocated, including the number of individuals captured, site of capture, site of relocation, habitat at capture, and activity for which the relocation was implemented.

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

    a. Prior to the onset of any project related activities, the Service-approved biologist must identify appropriate locations to receive California tiger salamanders in the event that they need to be relocated from the project area. These locations must be in proximity to the capture site, contain suitable habitat, must not be affected by project activities, and be free of exotic predatory species (i.e., bullfrogs, crayfish) to the best of the approved biologist's knowledge. Captured California tiger salamanders must be released as near as possible to the point of capture, in a manner that maximizes their survival. California tiger salamanders should be released into the mouth of a small mammal burrow or other suitable refugia that reduces the likelihood of desiccation and predation.

    b. Handling of California tiger salamanders must be done in an expedient manner with minimal harm to the individuals being handled. The hands and arms of all workers handling individuals should be free of lotions, creams, sunscreen, oils, ointment, insect repellent, or any other material that may harm California tiger salamanders.

    c. When relocating California tiger salamanders, the possible spread of chytrid fungus or other amphibian pathogens and parasites must be minimized by following the Declining Amphibian Populations Task Force's Fieldwork Code of Practice (DAPTF 1998) (Appendix C).

    d. If substantial rainfall (greater than 0.5 inch of rain in a 24-hour period) occurs, work activities must cease until the Service-approved biologist has searched the

work area for dispersing salamanders. Work activities may resume once the Service-approved biologist has determined that California tiger salamanders that are likely to be killed or injured by work activities are no longer present in the work area.

e. Careful control of trash and other waste products must be practiced at all work sites to avoid attracting predators.

f. Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment that could degrade water quality or upland habitat must be avoided. The Army must inform workers of the importance of preventing hazardous materials from entering the environment, define fueling areas at appropriate distances away from wetland and vernal pool areas or other water bodies, and have an effective spill response plan in place.

g. For erosion control activities, plastic monofilament netting or similar material that could potentially entrap California tiger salamanders or other animals must not be used.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the Army must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement to the Service's Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003) within 60 days following completion of the proposed project. The report must describe all activities that were conducted under this biological opinion, including activities that were described in the proposed action and required under the terms and conditions. The Army must provide reports of the number of California tiger salamanders relocated from the project area; killed or injured during project related activities; the dates and times of capture, mortality, or injury; specific locations of capture, mortality, or injury; approximate size and age of individuals; and a description of relocation sites.

DISPOSITION OF DEAD OR INJURED SPECIMENS

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

Care must be taken in handling injured animals to ensure effective treatment and care and in handling dead specimens to preserve biological material in the best possible state. Injured salamanders must be transported to a qualified veterinarian. Should any treated California tiger

salamanders survive, the Service should be contacted regarding the final disposition of the animals. We recommend that dead California tiger salamanders identified in the action area be tested for amphibian disease and/or undergo genetic analysis for the purpose of investigating hybridization; however, this recommendation is discretionary and to be determined by the Army upon contacting the Ventura Fish and Wildlife Office at the discovery of a dead California tiger salamander. If the Army chooses not to submit dead California tiger salamanders for testing, they must be placed with the California Academy of Sciences (Contact: Jens Vindum, Collections Manager, California Academy of Sciences Herpetology Department, Golden Gate Park, San Francisco, California, 94118, (415) 750-7037).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Service-approved biologist(s) relocate any other native reptiles or amphibians found within work areas, and remove nonnative fish and bullfrogs where they occur, using methods that will not adversely affect California tiger salamanders, if such actions are in compliance with State laws.

2. We recommend that dead California tiger salamanders identified in the action area be tested for amphibian disease and/or undergo genetic analysis for the purpose of investigating hybridization.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request for formal consultation. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption

issued pursuant to section 7(o)(2) will have lapsed and any further take would be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation. If you have any questions, please call Lena Chang of my staff at (805) 644-1766, extension 302.

Sincerely,

Stephen P. Henry
Field Supervisor

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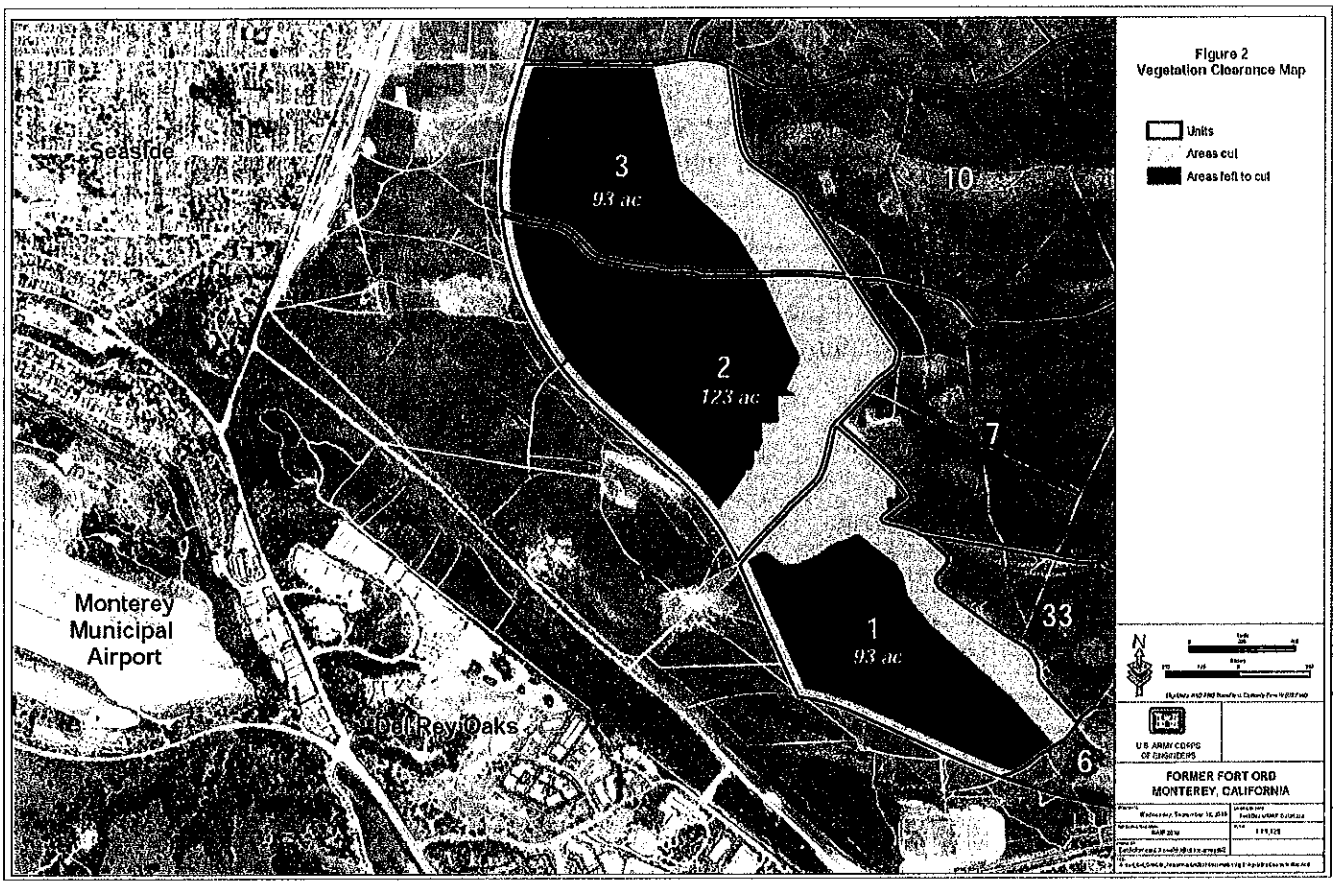
APPENDICES

APPENDIX A. Figure 2 vegetation clearance map (Army 2013)



APPENDIX B. California tiger salamander encounters during Army cleanup activities 2006-2013 (Army 2007; Shaw 2008b, 2008c, 2010, 2011; Denise Duffy and Associates 2013, 2014).

Year	Number encountered/life stage	Circumstances	Action taken
2013	1 adult	Found alive and uninjured inside a building	relocated
	1 adult male	Found during erosion control activities	relocated
2012	1 adult	Found alive and uninjured in a stockpile during excavation	relocated
2011	1 juvenile	Found alive and uninjured in a soil stockpile during excavation	relocated
	2 adults	Found alive and uninjured in excavation area	relocated
	1 juvenile	Found alive and uninjured during a sweep for unexploded ordnance of a soil stockpile following truck transport from an excavation area	relocated
2010	1 adult	Found alive and uninjured in excavation areas	relocated
2009	none	N/A	N/A
2008	none	N/A	N/A
2007	1 adult	Found alive and uninjured crawling inside of a building after a rain event	relocated
	1 juvenile	Found alive and uninjured under a log during preparation for MEC removal	relocated
2006	3 adults	1 adult was found in a concrete maintenance bay approximately 1.2 miles from the nearest known breeding pond. (No information available on the circumstances for the other 2 adults).	all relocated

APPENDIX C. The Declining Amphibian Populations Task Force Fieldwork Code of Practice (DAPTF 1998)

A code of practice, prepared by the Declining Amphibian Populations Task Force, provides guidelines for use by anyone conducting field work at amphibian breeding sites or in other aquatic habitats. Observations of diseased and parasite-infected amphibians are now being frequently reported from sites all over the world. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up unapparent infections of novel disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried in a variety of ways between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to novel localities containing species which have had little or no prior contact with such pathogens or parasites. Such occurrences may be implicated in some instances where amphibian populations have declined. Therefore, it is vitally important for those involved in amphibian research (and other wetland/pond studies including those on fish, invertebrates and plants) to take steps to minimize the spread of disease and parasites between study sites.

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each study site.

2. Boots, nets, traps, etc., should then be scrubbed with 70 percent ethanol solution (or sodium hypochlorite 3 to 6 percent) and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.

3. In remote locations, clean all equipment as described above upon return to the lab or "base camp". Elsewhere, when washing machine facilities are available, remove nets from poles and wash with bleach on a "delicates" cycle, contained in a protective mesh laundry bag.

4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolates species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean and store them separately and the end of each field day.

5. When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid indirect contact between them (e.g., via handling, reuse of containers) or with other captive animals. Isolation from un-sterilized plants or soils which have been taken from other sites is also essential. Always use disinfected/disposable husbandry equipment.

6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.

7. Used cleaning materials (liquids, etc.) should be disposed of safely and if necessary taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags (DAPTF 1998).

*When implementing the Declining Amphibian Populations Task Force Code of Practice, the Service-approved biologist may substitute a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care must be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.