

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AH61

Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Bay Checkerspot Butterfly (*Euphydryas editha bayensis*)**AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the bay checkerspot butterfly (*Euphydryas editha bayensis*) (bay checkerspot), pursuant to the Endangered Species Act of 1973, as amended (Act). A total of approximately 9,673 hectares (23,903 acres) in San Mateo and Santa Clara counties, California, is designated as critical habitat.

Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection. The primary constituent elements for the bay checkerspot are one or more of the following: stands of *Plantago erecta*, *Castilleja exserta*, or *Castilleja densiflora*; spring flowers providing nectar; pollinators of the bay checkerspot's food and nectar plants; soils derived from serpentinic rock; and space for dispersal between habitable areas. In addition, the following are each primary constituent elements to be conserved when present in combination with one or more of the primary constituent elements above: areas of open grassland, topography with varied slopes and aspects providing surface conditions with warm and moderate to cool temperatures during sunny spring days, stable holes or cracks in the soil and surface rocks or rock outcrops, wetlands providing moisture during times of spring drought.

In addition, the following are each primary constituent elements to be conserved when present in combination with one or more of the primary constituent elements above: areas of open grassland, topography with varied slopes and aspects, stable holes or cracks in the soil and surface rocks or rock outcrops, and wetlands providing moisture during times of spring drought.

Section 7 of the Act prohibits destruction or adverse modification of critical habitat by any activity funded,

authorized, or carried out by any Federal agency. Section 4 of the Act requires us to consider economic and other impacts of specifying any particular area as critical habitat. We solicited data and comments from the public on all aspects of the proposed rule and economic analysis. We revised the proposal to incorporate or address new information received during the comment periods.

DATES: This rule becomes effective on May 30, 2001.

ADDRESSES: Comments and materials received, as well as supporting documentation used in the preparation of this final rule, will be available for public inspection, by appointment, during normal business hours at the Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room W2605, Sacramento, California 95825.

FOR FURTHER INFORMATION CONTACT: David Wright or Chris Nagano at the address above (telephone 916/414-6600; facsimile 916/414-6712).

SUPPLEMENTARY INFORMATION:**Background**

The bay checkerspot is a medium-sized butterfly with a wingspan of about 5 centimeters (2 inches (in.)). The forewings have black bands along all the veins on the upper wing surface, contrasting sharply with bright red, yellow, and white spots. The bay checkerspot is 1 of about 20 subspecies of *Euphydryas editha* (Miller and Brown 1981), and differs in physical appearance from other subspecies in a variety of size, wing coloration, larval, and pupal characteristics (Howe 1975; Mattoni *et al.* 1997). It differs from LuEsther's checkerspot (*Euphydryas editha luestherae*), (a later-flying, *Pedicularis*-feeding subspecies of Inner Coast Range chaparral in central California), by being darker, and lacking a relatively uninterrupted red band demarcating the outer third of the wing. The black banding on the forewings of the bay checkerspot gives a more checkered appearance than the smaller quino checkerspot butterfly (*Euphydryas editha quino*) of southern California (Service 1998).

Recent publications have advocated renaming the bay checkerspot, *Euphydryas editha bayensis*, as *Euphydryas editha editha* for reasons of historical precedence (Mattoni *et al.* 1997; Emmel *et al.* 1998). Mattoni and co-authors (1997) have also suggested that *Euphydryas editha editha* ranges from the San Francisco Bay area south to northern Santa Barbara County in California, and includes both the

populations commonly known as the bay checkerspot and several populations south of Santa Clara County whose subspecific status has been uncertain. If this expanded subspecific assignment is accepted by the scientific community, it would represent a range extension for the bay checkerspot. Until such time as we make any new or revised determination on the taxonomy, in this final rule, we treat the threatened bay checkerspot as occurring in San Francisco Bay area counties, notably the counties of San Mateo and Santa Clara, as described in the final rule for the subspecies (52 FR 35378).

The bay checkerspot formerly occurred around San Francisco Bay, from Twin Peaks and San Bruno Mountain (west of the Bay) and Contra Costa County (east of the Bay), south through Santa Clara County. Before the introduction of invasive Eurasian grasses and other weeds in the 1700s, its distribution may have been wider (Service 1998). In the decades preceding listing, the decline of the bay checkerspot was primarily attributed to loss of habitat and fragmentation of habitat due to increasing urbanization. Drought and other extremes of weather have also been implicated in bay checkerspot population declines (Ehrlich *et al.* 1980; Service 1998). Recent research has identified excess nitrogen deposition from polluted air as a threat to bay checkerspot habitats, due to its fertilizing effect enhancing the growth of invasive nonnative plants even in serpentine soil areas (Weiss 1999).

Habitat of the bay checkerspot most commonly is found on shallow, serpentine-derived or similarly droughty or infertile soils, which support the butterfly's larval food plants and also includes nectar sources for adults that may also occur on other adjacent soil types. Serpentine soils are high in magnesium and low in calcium, and are a strong indicator of habitat value for the bay checkerspot. The primary larval host plant of the bay checkerspot is *Plantago erecta* (dwarf plantain), an annual, native plantain. The bay checkerspot usually is found associated with *Plantago erecta* in grasslands on serpentine soils, such as soils in the Montara series. In Santa Clara County, the Inks and Climara soil series are related soils and often have inclusions of Montara (U.S. Soil Conservation Service 1974). Henneke and other serpentine soils also occur within the range of the bay checkerspot. Populations of the bay checkerspot formerly occurred on San Bruno Mountain and other locations with soils that are not serpentine. We believe this

indicates that, with otherwise suitable habitat conditions, the bay checkerspot is capable of living in nonserpentine soil areas.

Serpentine soils are well known for harboring rare and endemic plant species, and because the bay checkerspot inhabits serpentine areas, our critical habitat designation for the bay checkerspot overlaps habitat of several federally listed plant species: the San Mateo thornmint (*Acanthomintha obovata* ssp. *duttonii*), Santa Clara Valley dudleya (*Dudleya setchellii*), Coyote ceanothus (*Ceanothus ferrisiae*), Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*), fountain thistle (*Cirsium fontinale* var. *fontinale*), Marin dwarf flax (*Hesperolinon congestum*), white-rayed pentachaeta (*Pentachaeta bellidiflora*), and Metcalf Canyon jewelflower (*Streptanthus albidus* ssp. *albidus*) (Service 1998). However, bay checkerspot critical habitat does not include all the habitat essential to any of these plant species. Bay checkerspot critical habitat is also coincident with habitat for a number of rare plants and animals that are not federally listed (Service 1998).

In many years, bay checkerspot larvae may use a secondary host plant species, for instance, when dwarf plantain dries up while prediapause larvae are still feeding. *Castilleja* (*Orthocarpus*) *densiflora* (purple owl's-clover) and *Castilleja exserta* (*Orthocarpus purpurascens*) (exserted paintbrush) are known secondary host plants that often remain edible later in the season than dwarf plantain. Bay checkerspot adults also visit flowers for nectar. Nectar plants commonly visited include *Lomatium* spp. (desert parsley), *Lasthenia californica* (= *chrysostoma*) (California goldfields), *Layia platyglossa* (tidy-tips), *Muilla maritima*, and others. Moderate grazing is normally compatible with habitat for the bay checkerspot, since grazing can reduce the density and height of nonnative plants that compete with the native plants supporting the butterfly.

The bay checkerspot's life cycle is closely tied to host plant biology. Host plants germinate anytime from early October to late December, and senesce (dry up and die) from early April to mid May. Most of the active parts of the bay checkerspot life cycle also occur during this period. Adults emerge from pupae (a transitional stage between caterpillar and adult butterfly) in early spring, and feed on nectar, mate, and lay eggs during a flight season that typically lasts for 4 to 6 weeks in the period between late February to early May. The eggs hatch and the tiny larvae feed for about 2 to 3 weeks before entering diapause (a

temporary cessation of development) in mid to late spring. The postdiapause larvae emerge after winter rains stimulate germination of *Plantago*, and feed and bask until they are large enough to pupate and emerge as adults (Service 1998). If insufficient food is available, a post-diapause checkerspot larva can re-enter diapause and emerge again one year or more later (Singer and Ehrlich 1979; Mattoni *et al.* 1997).

Most *Euphydryas editha* subspecies exhibit generally sedentary behavior, with adults frequently remaining in the same habitat patch in which they developed as larvae (Ehrlich 1961, 1965; Boughton 1999, 2000). Female bay checkerspots were found to be more likely to emigrate than males (Ehrlich *et al.* 1984). When female *Euphydryas editha* butterflies fail to encounter preferred host plants, the likelihood of emigration to other suitable habitat patches increases (Thomas and Singer 1987). Adult dispersal by the bay checkerspot is typically less than 150 meters (490 feet) between recaptures (Ehrlich 1961, Ehrlich 1965, Gilbert and Singer 1973). However, Harrison (1989) recaptured bay checkerspots greater than 1 kilometer (0.6 mile) from the point of release in 5 percent of cases. Long-distance dispersal in bay checkerspot butterflies has been documented as far as 7.6 km (4.7 miles) (D. Murphy pers. comm.), 5.6 km (3.5 miles) (1 male), and 3 km (2 miles) (1 female) (Harrison 1989). The butterflies are likely to be capable of dispersing even longer distances. In all dispersal observations and experiments, long-distance movements are hard to detect, and thus their frequency and importance are difficult to quantify. Qualitative observations suggest that bay checkerspots move readily over suitable grassland habitat, but are more reluctant to cross scrub, woodland or other unsuitable habitat. Roads, especially, those traveled more heavily and at higher speeds, present a risk of death or injury to dispersing butterflies. Where corridors that facilitate dispersal exist, they may support the persistence of bay checkerspot populations.

Long-distance habitat patch colonization may be achieved within a single season through long-distance dispersal of individual butterflies, or over several seasons through stepping-stone habitat patch colonization and dispersal events. In one study of the Santa Clara County bay checkerspot metapopulation, no colonizations of unoccupied habitat patches farther than 4.5 kilometers (2.8 miles) from the source population were detected over a 10-year period (Harrison *et al.* 1988). A mathematical model of unknown

accuracy predicted satellite habitat patches at a distance greater than 7 to 8 kilometers (4 to 5 miles) from a primary source population were not likely to support populations (Harrison *et al.* 1988).

The known range of the bay checkerspot is now reduced to Santa Clara and San Mateo counties, and it is patchily distributed in these locales. Studies of the bay checkerspot have described its distribution as an example of a metapopulation (see literature cited in Service 1998). A metapopulation is a group of spatially separated populations that can occasionally exchange dispersing individuals. The populations in a metapopulation are usually thought of as undergoing interdependent extinction and colonization, where individual populations may go extinct, but later recolonize from another population. That is, although member populations may change in size independently, their probabilities of existing at a given time are not independent of one another because they are linked by processes of extinction and mutual recolonization, processes that occur on the order of every 10 to 100 generations (Harrison *et al.* 1988). The ability and propensity of larvae to undergo multiple-year diapause in the field, and survival rates during repeated diapause, all currently unquantified, will also affect the persistence time of local populations. Bay checkerspot populations may also exhibit "pseudo-extinction," where the species is not found, but nonetheless continues to inhabit a site and reappears in a subsequent year. Since the early stages of the bay checkerspot are extremely difficult or impossible to locate in surveys (White 1987), the failure to discover caterpillars that diapause for more than 1 year may be responsible for pseudo-extinctions. Because of pseudo-extinction and metapopulation dynamics, even sites that in some years apparently lack the bay checkerspot are important to the survival and recovery of the species.

The timescale of bay checkerspot metapopulation dynamics, which includes boom and bust fluctuations of site populations, effects of California's variable climate, extirpations (loss of local populations) and recolonizations, is on the scale of decades to centuries, much longer than typical human planning efforts. Adequacy of designated critical habitat lands for conservation of the bay checkerspot depends on long-term persistence of the species' Santa Clara and San Mateo metapopulations, through conservation of many habitat patches and opportunity for dispersal/

recolonization / gene flow events that link populations in the metapopulations. Such dispersal events must include long-distance colonizations that are rare because they occur during unusually favorable years or sequences of years for the bay checkerspot, resulting in population booms and many more dispersing butterflies.

Bay checkerspot populations vary greatly from year to year. Many or most individuals of the species live only a single year, and with high fecundity (fertility), high mortality, and sensitivity to weather and perhaps other ecological conditions, large population swings are common for the bay checkerspot. Fluctuations of more than 100-fold have been observed. These fluctuations are not always in synchrony among populations at different sites.

Weiss *et al.* (1988) and Murphy and Rehm (1992) found that the populations of the bay checkerspot butterfly take refuge during dry years largely on cool north- and northeast-facing serpentine grassland slopes. However, they reported that during years of above-average rainfall the species expands its population on warmer slopes, including more xeric south- and west-facing slopes. Although infrequent and short-term, such expansions can contribute to the long-term metapopulation persistence, especially for a species like the bay checkerspot, whose numbers are regulated more by environmental factors than population density. Murphy and White (1984) stated that long-distance dispersal events associated with population outbreaks may contribute significantly to colonization or recolonization of unoccupied areas and hence to long-term survival of the checkerspot butterflies.

Habitat areas that appear to be low quality or are temporarily low quality, therefore, can be essential to the long-term persistence of bay checkerspot populations, which reside in habitats vulnerable to highly variable or catastrophic environmental phenomena, such as drought, or habitat destruction caused by urban development. Patches of habitat, whether of high or marginal quality, can serve as "stepping stones" for regional metapopulations. These patches can facilitate gene flow between small populations and can provide routes for individuals to colonize surrounding habitats that have been subject to local extinction. Loss of temporarily empty "stepping stone" habitat patches would disrupt the dynamics of the entire bay checkerspot metapopulation. According to Murphy (1990) " * * * the necessity of protecting remnants of once extensive

metapopulations will demand the protection of both presently occupied habitat patches and those which may be presently unoccupied, but which can support the bay checkerspot under certain climatic conditions."

Previous Federal Action

On October 21, 1980, we were petitioned by Dr. Bruce O. Wilcox, Dennis D. Murphy, and Dr. Paul R. Ehrlich to list the bay checkerspot as an endangered species. We published a Notice of Status Review on February 13, 1981 (46 FR 12214). Following our status review, we found that listing the bay checkerspot was warranted but precluded by other pending listing actions (49 FR 2485). We proposed the bay checkerspot for listing as endangered with critical habitat on September 11, 1984 (49 FR 35665), and listed the subspecies as threatened on September 18, 1987 (52 FR 35366). At the time of listing, because of difficulty in resolving the value of specific habitats to the subspecies and assessing the activities being conducted in those areas, we concluded that critical habitat was not determinable. We published a Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (Recovery Plan) in September 1998 that includes the bay checkerspot (Service 1998), as required under section 4(f) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*).

On June 30, 1999, the Center for Biological Diversity filed a complaint against us challenging our critical habitat findings for seven species, including the bay checkerspot butterfly. On August 30, 2000, the United States District Court for the Northern District of California (Southwest Center for Biological Diversity v. Bruce Babbitt, *et al.*, CIV 99-3202 SC) ruled on several of the species involved, including the bay checkerspot butterfly. The court ordered us to propose critical habitat within 60 days of the ruling and to finalize the designation within 120 days of the proposed designation. A subsequent settlement agreement with the Center for Biological Diversity extended the date for the final decision to April 20, 2001.

We proposed critical habitat for the bay checkerspot butterfly on October 16, 2000 (65 FR 61218). The original comment period closed on December 15, 2000. A notice of availability for the draft economic analysis and reopening of the public comment period was published in the **Federal Register** on February 9, 2001 (66 FR 9683). The second comment period closed on March 12, 2001.

Critical Habitat

Critical habitat is defined in section 3 of the Act as—(i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures that are necessary to bring an endangered species or a threatened species to the point at which listing under the Act is no longer necessary.

Critical habitat receives protection under section 7 of the Act through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a Federal agency. Section 7 also requires consultation on Federal actions that are likely to result in the destruction or adverse modification of critical habitat. In our regulations at 50 CFR 402.02, we define destruction or adverse modification as " * * * the direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical." Aside from the added protection that may be provided under section 7, the Act does not provide other forms of protection to lands designated as critical habitat. Because consultation under section 7 of the Act does not apply to activities on private or other non-Federal lands that do not involve a Federal nexus, critical habitat designation would not afford any additional protections under the Act against such activities.

To be included in a critical habitat designation, the habitat must first be "essential to the conservation of the species." Critical habitat designations identify, to the extent known using the best scientific and commercial data available, habitat areas that provide essential life cycle needs of the species (i.e., areas on which are found the primary constituent elements, as defined at 50 CFR 424.12(b)).

Section 4 requires that we designate critical habitat at the time of listing and based on what we know at the time of

the designation. When we designate critical habitat at the time of listing or under short court-ordered deadlines, we will often not have sufficient information to identify all areas of critical habitat. We are required, nevertheless, to make a decision and, thus, must base our designations on what, at the time of designation, we know to be critical habitat.

Within the geographic area occupied by the species, we will designate only areas currently known to be essential. Essential areas should already have the features and habitat characteristics that are necessary to sustain the species. We will not speculate about what areas might be found to be essential if better information became available, or what areas may become essential over time. If the information available at the time of designation does not show that an area provides essential life cycle needs of the species, then the area should not be included in the critical habitat designation. Within the geographic area occupied by the species, we will not designate areas that do not now have the primary constituent elements, as defined at 50 CFR 424.12(b), that provide essential life cycle needs of the species.

Our regulations state that, "The Secretary shall designate as critical habitat areas outside the geographic area presently occupied by the species only when a designation limited to its present range would be inadequate to ensure the conservation of the species" (50 CFR 424.12(e)). Accordingly, when the best available scientific and commercial data do not demonstrate that the conservation needs of the species require designation of critical habitat outside of occupied areas, we will not designate critical habitat in areas outside the geographic area occupied by the species.

Our Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (Vol. 59, p. 34271), identifies criteria, establishes procedures, and provides guidance to ensure that decisions made by the Service represent the best scientific and commercial data available. It requires Service biologists, to the extent consistent with the Act and with the use of the best scientific and commercial data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When determining which areas are critical habitat, a primary source of information is the listing package for the species. Additional information may be obtained from a recovery plan, articles in peer-

reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, unpublished materials, and expert opinion or personal knowledge.

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, because of the information available for us at the time of designation, we recognize that designation of critical habitat may not include all of the habitat areas that may eventually be determined to be necessary for the recovery of the species. For these reasons, critical habitat designations do not signal that habitat outside the designation is unimportant or may not be required for recovery. Areas outside the critical habitat designation will continue to be subject to conservation actions that may be implemented under section 7(a)(1), and to the regulatory protections afforded by the section 7(a)(2) jeopardy standard and the take prohibitions of section 9 of the Act, as determined on the basis of the best available information at the time of the action. We specifically anticipate that federally funded or assisted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

Methods

In identifying areas that are essential to conserve the bay checkerspot, we used the best scientific information available. This included habitat suitability and site-specific species information. We have emphasized areas of current and historical bay checkerspot occurrences, especially larger sites in proximity to known occurrences. To maintain genetic and demographic interchange that will help maintain the viability of a regional metapopulation, we included corridor areas that allow movement between populations. Dispersal is a crucial function for a species with metapopulation dynamics like the bay checkerspot.

We used data on known and historic locations and maps of serpentine soils to identify potentially important areas. Then, through the use of 1990s digital orthophotos available through the Bay

Area Digital GeoResource (BADGER) website (<http://badger.parl.com>), and limited ground checking, we estimated the current extent of suitable breeding habitat. We included in critical habitat both suitable habitat and areas that link suitable breeding habitat, since these links facilitate movement of individuals between habitat areas and are important for dispersal and gene flow and, thus, to the conservation of the subspecies. For the final rule, we checked the critical habitat boundaries we proposed for the subspecies against 1999 SPOT satellite imagery and removed identifiable developed areas.

Our 1984 proposal to list the bay checkerspot with critical habitat (49 FR 35665) proposed five critical habitat zones. Four of the five are included in this designation, with modifications based on improved knowledge of the biology and habitat of the subspecies. Since publication of the original proposal, the fifth zone (Woodside Zone) has been mostly converted to housing. Therefore, it is not included in the critical habitat designation. Since 1984, a great deal of literature on the bay checkerspot butterfly, both published and unpublished, has added to our understanding of the subspecies (see literature cited in Service 1998; Weiss 1999; Weiss and Launer 2000). Based on this expanded information and other information in the Recovery Plan (Service 1998), we have been able to identify habitats and populations that were poorly documented before the mid-1980s, and assess their significance. Besides the four previously identified critical habitat zones, this final rule identifies 11 additional habitat units essential to the conservation of the bay checkerspot, for a total of 15 critical habitat units. Further, information provided in comments on the proposed designation and draft economic analysis were evaluated and taken into consideration in the development of this final designation.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas to designate as critical habitat, we must consider those physical and biological features (primary constituent elements) essential to the conservation of the species and that may require special management considerations and protection. These include, but are not limited to, space for individual and population growth and for normal behavior; food, water, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing 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 elements of critical habitat for the bay checkerspot are those habitat components that are essential for the primary biological needs of foraging, breeding, maturation, and dispersal. The areas we are designating as critical habitat provide some or all of the known primary constituent elements for the subspecies, which include: stands of *Plantago erecta*, *Castilleja exserta*, or *Castilleja densiflora*; spring flowers providing nectar; pollinators of the bay checkerspot's food and nectar plants; soils derived from serpentine rock; and space for dispersal between habitable areas. In addition, the following are each primary constituent elements to be conserved when present in combination with one or more of the primary constituent elements above: areas of open grassland, topography with varied slopes and aspects providing surface conditions with warm and moderate to cool temperatures during sunny spring days, stable holes or cracks in the soil and surface rocks or rock outcrops, wetlands providing moisture during times of spring drought.

Appropriate grassland vegetation provides cover for larvae, pupae and adults, egg-laying stimuli and sites for females, and adequate open ground for larvae to be able to crawl efficiently in search of foraging, basking, diapause, or pupation sites (Service 1998). Stands of food plants, including nectar plants, are important in the bay checkerspot's life cycle. The bay checkerspot's primary larval food plant is *Plantago erecta*, an annual, native plantain. The larvae also often use a secondary food plant species, usually either *Castilleja (Orthocarpus) densiflora* (purple owl's-clover) or *Castilleja exserta (Orthocarpus purpurascens)* (exserted paintbrush). These secondary food plants tend to remain edible later in the season than the plantain. Bay checkerspot adults benefit from visiting flowers for nectar. Nectar plants commonly visited include *Lomatium* spp. (desertparsley), *Lasthenia californica* (= chrysostoma) (California goldfields), *Layia platyglossa* (tidy-tips), *Muilla maritima* (sea muilla), and others.

Adequate native pollinators to sustain populations of *Castilleja* and nectar species, including, but not limited to, such groups as bumblebees and solitary bees, are important to the value of critical habitat because these plants are dependent on pollinators to reproduce and perpetuate their populations in the

area. *Plantago erecta* is thought to be self-pollinating.

The bay checkerspot usually is found associated with grasslands on serpentine soils, such as the Montara soil series. In Santa Clara County, the Inks and Climara soil series are related soils and often have inclusions of Montara (U.S. Soil Conservation Service 1974). Henneke and other serpentine soils also occur within the range of the bay checkerspot. Serpentine soils often support other primary constituent elements, but they are not limited to serpentine soils. Soil structure with stable holes or cracks and surface rocks or rock outcrops provide cover and shelter for bay checkerspot larvae seeking diapause sites and basking sites.

Bay checkerspot adults have been observed to fly considerable distances during drought conditions to draw water or solutes from moist soils around wetlands ("puddling," Launer *et al.* 1993). Triggering of the puddling behavior by drought conditions suggests it is a directed, adaptive behavior, and that the butterflies are seeking out moist areas during times of water or heat stress to obtain essential nutrients or water (Launer *et al.* 1993).

Adult bay checkerspots are capable of dispersing over long distances. Movements of more than 5.6 kilometers (km) (3.5 miles (mi)) have been documented (see Service 1998), and longer movements are possible. Adult dispersal, especially by fertilized females carrying eggs, is vital to the maintenance of natural bay checkerspot metapopulation structure, which requires reestablishment or replenishment of populations that are at or near local extinction. Roads, especially those traveled more heavily and at higher speeds, present a risk of death or injury to dispersing bay checkerspots. Where open spaces exist that facilitate dispersal, they support the persistence of bay checkerspot populations and metapopulations. Some habitats or land uses are thought to be more suitable for dispersal than others; for example, grassland may be more readily crossed than woodland or landscaped areas. But documented long-distance movements demonstrate that the bay checkerspot is sometimes capable of crossing a variety of substrates (Service 1998).

Topographic diversity provides opportunities for early season warmth as well as cool north-and east-facing slopes that are a refuge for the subspecies during droughts. Bay checkerspot larvae develop more rapidly when they can bask in sunlight that penetrates short-statured grassland vegetation. Adults also use warm

exposures for basking, and find early-season nectar plants on warm south-and west-facing slopes (Weiss *et al.* 1988).

Criteria Used To Identify Critical Habitat

In an effort to map areas that have the features essential to the conservation of the subspecies, we used data on known bay checkerspot locations, and conservation planning areas that were identified in the Recovery Plan (Service 1998) as essential for the recovery of the subspecies.

We also considered the existing status of lands in designating areas as critical habitat. The bay checkerspot is known to occur on State, county, and private lands. The range of critical habitat extends in the south from the San Martin area, in Santa Clara County, north to San Bruno Mountain in San Mateo County. We could not depend on Federal lands for critical habitat designation because we are not currently aware of any Federal lands within the range of the bay checkerspot that can be inhabited by the butterfly. We are also not aware of any Tribal lands in or near the critical habitat units for the bay checkerspot.

Section 10(a) of the Act authorizes us to issue permits to take listed species incidental to otherwise lawful activities. An incidental take permit application must be supported by a habitat conservation plan (HCP) that identifies conservation measures that the permittee agrees to implement for the species to minimize and mitigate the impacts of the requested incidental take. One small, short-term HCP covers the bay checkerspot on about 4 hectares (ha) (10 acres (ac)) of critical habitat through November 2001. This HCP permits temporary project-related impacts from electric transmission line work. To date, project construction anticipated to affect the bay checkerspot is substantially complete (see the Relationship to Habitat Conservation Plans section below for additional information on the relationship between HCPs and critical habitat designation).

In selecting areas of critical habitat, we made an effort to avoid developed areas, such as towns and other similar lands, that are unlikely to contribute to bay checkerspot conservation. However, the information available to us did not allow us to exclude all recently developed areas, such as towns, housing developments, or other lands unlikely to contain the primary constituent elements essential for conservation of the bay checkerspot. Existing features and structures within the boundaries of the mapped units, such as buildings, roads, aqueducts, railroads, airports,

other paved areas, lawns, and other urban landscaped areas are not likely to contain primary constituent elements essential for the conservation of the bay checkerspot. Federal actions limited to those areas, therefore, would not trigger a section 7 consultation, unless they affect the species and/or primary constituent elements in adjacent critical habitat.

Critical Habitat Designation

The areas we are designating as critical habitat currently provide some or all of those habitat components necessary to meet the primary biological needs of the bay checkerspot butterfly. Table 1 shows the approximate area of critical habitat by county and land ownership. Lands designated are under private and State and local ownership. The subspecies is not known to occur, or to have historically occurred, on Federal lands. Lands designated as

critical habitat have been divided into 15 Critical Habitat Units. Critical habitat designated for the bay checkerspot includes 9,673 ha (23,903 ac), with 806 ha (1,992 ac) in San Mateo County and 8,867 ha (21,911 ac) in Santa Clara County. Because the bay checkerspot is nearly confined to island-like patches of habitat, its critical habitat is easily categorized into separate areas or units (see maps). We present brief descriptions of each unit, and our reasons for designating it as critical habitat, below.

Conserving the bay checkerspot includes the need to reestablish historic populations of the subspecies to areas within several of the units, in order to secure the butterfly in representative sites in its former range, and in a range of habitat and climate conditions. Returning the bay checkerspot to good representatives of its former diversity of sites and habitat and climate conditions

is necessary to reduce the long-term risk of range-wide extinction of the subspecies (Service 1998).

The long-term probability of the survival and recovery of the bay checkerspot butterfly is dependent on the maintenance of its metapopulation dynamics through the protection of existing serpentine habitat, the movement of individuals between these sites, and the ability of the butterflies to recolonize habitat where they have become extirpated. Recolonization of sites with suitable habitat that contained populations that have become extinct and the maintenance of genetic diversity within existing populations is dependent upon "stepping stones" of habitat, including habitat that may appear marginal, that the bay checkerspot can colonize and disperse from during rare periods of very favorable climatic conditions.

TABLE 1.—APPROXIMATE CRITICAL HABITAT IN HECTARES (HA) AND ACRES (AC) BY COUNTY AND OWNERSHIP

[Area estimates reflect critical habitat unit boundaries; however, not all the areas within those broad boundaries, such as cities, towns, or other developments, contain habitat features considered essential to the survival of the bay checkerspot]

County	Federal	Local/State	Private	Total
San Mateo	0	520 ha (1,285 ac)	286 ha (707 ac)	806 ha (1,992 ac).
Santa Clara	0	922 ha (2,278 ac)	7,945 ha (19,633 ac)	8,867 ha (21,911 ac).
Total	0	1,442 ha (3,563 ac)	8,231 ha (20,340 ac)	9,673 ha (23,903 ac).

Unit 1. Edgewood Park/Triangle Unit

Occurring in San Mateo County, this unit comprises 217 ha (535 ac) in T.5 S., R.4 W. (Mount Diablo meridian/base line). Included is most of Edgewood Natural Preserve, a county park southeast of the junction of Edgewood Road, and I-280, and watershed lands of the San Francisco Public Utilities Commission, Water Supply and Treatment Division, within the triangle formed by I-280, Edgewood Road, and Canada Road, as well as a small additional area of serpentine soil on the west side of Canada Road. Much of this area also falls within the San Francisco State Fish and Game Refuge. The area supports the Edgewood population of the bay checkerspot discussed in the subspecies' Recovery Plan, which is the main population of the San Mateo metapopulation of the bay checkerspot (Service 1998). Without the Edgewood population the San Mateo metapopulation would almost certainly go extinct, resulting in the loss of one of only two metapopulations of the bay checkerspot and a significant range reduction for the subspecies. This population is also the northernmost remaining population of the subspecies. The unit contains considerable areas of

good habitat, although additional management attention may be needed for the bay checkerspot to thrive here. The unit is 7 km (4 mi) northwest of the Jasper Ridge unit.

Unit 2. Jasper Ridge Unit

Occurring within San Mateo County, the unit covers 287 ha (709 ac) in Stanford University's Jasper Ridge Biological Preserve, in T.6 S., R.3 W. (Mount Diablo meridian/base line). Decades of data and dozens of published scientific papers about the Jasper Ridge population of the bay checkerspot exist. The population has severely declined in recent years, and may now be extirpated (Service 1998). However, we are confident that a stable population of the subspecies can be restored to Jasper Ridge because the area is protected and managed as a biological preserve by Stanford University and suitable habitat continues to be present. The Jasper Ridge population is essential as a supporting element of the San Mateo metapopulation, and a backup to the Edgewood and prospective San Bruno Mountain populations. The unit is 34 km (21 mi) west-northwest of the Communications Hill unit, the closest

connection to units in the Santa Clara County metapopulation.

Unit 3. San Bruno Mountain Unit

This unit also occurs in San Mateo County, with approximately 303 ha (748 ac) in T.3 S., R.5 W. (Mount Diablo meridian/base line), above the 152 m (500 ft) elevation contour, and east of the western Pacific Gas and Electric transmission corridor on San Bruno Mountain. This unit is mostly within San Bruno Mountain State and County Park, and is inside the boundaries of the San Bruno Mountain Area Habitat Conservation Plan area. The bay checkerspot formerly inhabited this area, but is believed to have been extirpated around 1986 by a combination of factors, including over-collection and a fire that burned its habitat. However, this unit has supported a substantial bay checkerspot population in the past, and it is reasonable to expect that the butterfly can be reestablished here.

San Bruno Mountain represents the most northerly part of the subspecies' former range on the San Francisco peninsula with reasonably good conditions to support the bay checkerspot. The San Bruno Mountain

unit is essential as a supporting element of the San Mateo metapopulation, and a backup to the Edgewood and Jasper Ridge populations. The unit lies 25 km (16 mi) north-northwest of the Edgewood Park/Triangle unit.

Unit 4. Bear Ranch Unit

The Bear Ranch unit, totaling 250 ha (617 ac), lies west of Coyote Lake (Coyote Reservoir) in the eastern hills of the Santa Clara Valley, in southern Santa Clara County (T.9 S., R.4 E. and T.10 S., R.4 E., Mount Diablo meridian/base line). The unit is named for a ranching property that partly occurs in the unit. The ranch and lands, including and surrounding the unit, are now owned and managed by the Santa Clara County Parks and Recreation Department. This location represents one of the most recent population discoveries of the bay checkerspot, and has been documented for several years as a persistent population. The population is also one of the most southerly occurrences of the bay checkerspot. It lies about 10 km (6 mi) southeast of the Kirby core population area described in the Recovery Plan (Service 1998), with some intervening habitable areas and adequate dispersal corridors. Over 40 ha (100 ac) of mapped and an unquantified acreage of unmapped serpentine soils in several large to small patches occur within the unit. In addition to the significance of its position establishing the outer perimeter of the range of the subspecies, the Recovery Plan makes the protection of large, good-quality habitat areas near core populations, such as this, a high priority (Service 1998).

Unit 5. San Martin Unit

This unit includes 237 ha (586 ac) west of San Martin, in the western foothills of the Santa Clara Valley in southern Santa Clara County (T.9 S., R.3 E.). Included in the designated critical habitat are extensive areas of serpentine soils and intervening areas that support habitat or are used for dispersal. Regular occupation of the unit by the bay checkerspot has been documented, although no quantitative surveys are available of this population. The unit lies entirely on private lands in unincorporated Santa Clara County, about 6.4 km (4 mi) west-southwest of the Bear Ranch unit and 11 km (7 mi) south of the Kirby core area. This is the second population at the southern periphery of the range. The Recovery Plan makes the protection of large, good-quality habitat areas near core populations, such as this, a high priority (Service 1998). We are not aware of any public lands in the unit.

Unit 6. Communications Hill Unit

Communications Hill, and adjacent hilltops in south-central San Jose, are formed by outcroppings of serpentine rock, with grasslands capable of supporting the bay checkerspot. This unit occurs in Santa Clara County and covers 179 ha (443 ac) of mostly undeveloped land. It also crosses a major road and railroad tracks, and includes a quarry that we believe, after appropriate reclamation, could be restored to bay checkerspot habitat. The bay checkerspot has been documented on Communications Hill in the past. A survey of a limited portion of the hill conducted in the spring of 2000, but which missed the early weeks of the butterflies' flight season, did not detect the subspecies (Arnold 2000). Whether the unit is currently occupied is not known. We believe this unit functions as habitat of the species, functions in its regional metapopulations dynamics, and functions as a "stepping stone" for bay checkerspot dispersal. The Recovery Plan (Service 1998) calls for conservation of larger habitat areas currently or historically occupied by the bay checkerspot. Conservation of habitat at Communications Hill is identified in the Recovery Plan as a priority 2 action, i.e., a recovery action that must be taken to prevent decline or other negative impact short of extinction (Table IV-1, task 2.1.19 in the Recovery Plan). This location also represents the northwestern-most remnant of the Santa Clara County metapopulation. The unit is surrounded by Curtner Avenue, Almaden Expressway, Hillsdale Avenue, and Monterey Road (T.7 S., R.1 E., Mount Diablo meridian/base line), and lies 3 km (2 mi) west of the Silver Creek unit.

Much of this unit lies on private lands within unincorporated lands, with a smaller area in the City of San Jose. Portions of a Santa Clara County communications facility, a San Jose water company facility, and recently developed lands may fall within the unit. Only currently undeveloped areas supporting the primary constituent elements of habitat for the bay checkerspot would be subject to regulatory oversight of any Federal actions.

Unit 7. Kalana Hills Unit

The Kalana Hills unit in Santa Clara County comprises 99 ha (244 ac) on the southwest side of the Santa Clara Valley between Laguna Avenue and San Bruno Avenue (T.9 S., R.2 E., Mount Diablo meridian/base line). Four serpentine outcrops form hills or hillsides in this area. At least one population of the bay

checkerspot has been documented on one or all of these outcrops in recent surveys. This unit also includes some intervening areas that connect the closer outcrops. The Coyote Ridge unit lies about 3.2 km (2 mi) to the northeast, the Santa Teresa unit about 2 km (1.2 mi) to the northwest, the San Vicente-Calero unit about 3.2 km (2 mi) to the west, and the Morgan Hill unit about 3.2 km (2 mi) to the southeast. Because of its proximity to several other, large population centers for the bay checkerspot, we expect the Kalana Hills unit to be regularly occupied by the subspecies. If, as is possible given the bay checkerspot's large population swings, the butterfly's population in the unit were to die out, it is likely to be quickly reestablished by bay checkerspots immigrating from adjacent sites. We are not aware of any public lands in the unit. A portion of the largest and northernmost serpentine outcrop is within the limits of the City of San Jose; the remainder of the unit is on private lands in unincorporated Santa Clara County.

Unit 8. Kirby Unit

The Kirby critical habitat unit includes 2,797 ha (6,912 ac) along the southern portion of "Coyote Ridge" in Santa Clara County (T.8 S., R.2 E., T.8 S., R.3 E., and T.9 S., R.3 E., Mount Diablo meridian/base line). It contains the Kirby area for the bay checkerspot discussed in the subspecies' Recovery Plan (Service 1998). The ridge, informally known as Coyote Ridge, runs northwest to southeast, parallel to and east of Highway 101 from Yerba Buena Road to Anderson Reservoir in Santa Clara County, and forms the eastern slope of the Santa Clara Valley (U.S. Geological Survey (USGS) 7.5 minute quadrangles San Jose East, Lick Observatory, Santa Teresa Hills, and Morgan Hill. The ridge is not named on these maps). Coyote Ridge also parallels the Silver Creek Fault and Silver Creek itself. Extensive serpentine soil areas, and four population areas for the bay checkerspot (Kirby, Metcalf, San Felipe, and Silver Creek Hills) lie on, or adjacent to, this ridge and fault system (Service 1998). Metcalf Canyon, Silver Creek, and nonserpentine soil areas create natural divisions among these four population areas. The Kirby unit is the southernmost of four critical habitat units corresponding to the four population areas along Coyote Ridge, and runs along this ridge east of Highway 101 and Coyote Creek from Metcalf Canyon south to Anderson Lake. The northern boundary of the Kirby unit abuts the Metcalf unit. The northwest tip of the Kirby unit also

connects to the Tulare Hill Corridor unit.

The Kirby critical habitat unit regularly supports one of the largest populations of the bay checkerspot, and is considered one of the centers of the subspecies' Santa Clara County metapopulation. The Recovery Plan (Service 1998) considers protection of the area of the highest priority for conservation of the subspecies. The unit contains several hundred acres of diverse serpentine grassland habitat as well as nectaring areas, seasonal wetlands, and dispersal areas. The unit includes lands within the limits of the City of San Jose, private lands in unincorporated Santa Clara County, and small areas in the City of Morgan Hill. Public lands in this unit include the Santa Clara County Field Sports Park and portions of Santa Clara County Motorcycle Park, Anderson Lake County Park, Coyote Creek Park, and lands of the Santa Clara Valley Water District. A 101 ha (250 ac) reserve, leased by Waste Management Inc. on behalf of the Kirby Conservation Trust to further conservation of the bay checkerspot, also falls within the unit. The Kirby Conservation Trust has funded extensive research on the bay checkerspot for more than a decade at the lease site, greatly improving our understanding of the ecology, population dynamics, and conservation needs of the subspecies (see literature cited in Service 1998). We removed approximately 57 ha (141 ac), all nonserpentine lands, from the unit as it was proposed on October 16, 2000.

Unit 9. Morgan Hill Unit

The Morgan Hill unit in Santa Clara County includes 293 ha (724 ac) northwest of the City of Morgan Hill in Santa Clara County (T.9 S., R.2 E., T.9 S., R.3 E., Mount Diablo meridian/base line). It lies less than 3.2 km (2 mi) southwest of the Coyote Ridge unit and about 3.2 km (2 mi) southeast of the Kalana Hills unit. This is the area described as "north of Llagas Avenue" in our 1998 Recovery Plan. The unit is partly within the limits of the City of Morgan Hill and partly on private lands in unincorporated Santa Clara County. Murphy Springs Park, a small city park, is within the unit. The Morgan Hill unit has large areas of serpentine soils and grassland with a variety of slope exposures, suitable for the bay checkerspot. The unit has been documented to be occupied by the bay checkerspot in the past, as well as in more recent surveys in the past 2 to 3 years. Because of its large habitat area and proximity to core populations of the bay checkerspot, the Recovery Plan

considers protection of this area essential to the conservation of the subspecies (Service 1998). We removed approximately 81 ha (201 ac), mostly residential development, from the unit as it was proposed.

Unit 10. Metcalf Unit

This unit includes 1,356 ha (3,351 ac) in Santa Clara County, east of Highway 101, south of Silver Creek Valley Road, north of Metcalf Canyon, and west of Silver Creek (T.8 S., R.2 E., Mount Diablo meridian/base line). The unit contains the Metcalf area for the bay checkerspot, one of the four largest habitat areas and three largest current population centers for the bay checkerspot (Service 1998). As of the spring of 2000, this area supported the bay checkerspot's densest population (Weiss *in litt.* 2000). Hundreds of acres of serpentine soils, and thousands of bay checkerspot butterflies, occur within the unit. This area is considered one of the centers of the subspecies' Santa Clara County metapopulation. The Recovery Plan (Service 1998) considers protection of the area of the highest priority for conservation of the bay checkerspot. This unit adjoins the Kirby unit to the south, San Felipe unit to the east, Silver Creek Hills unit to the north, and Tulare Hill Corridor unit to the west, and provides crucial habitat connectivity for bay checkerspot dispersal among these areas. The Metcalf unit lies in the City of San Jose and on private lands in unincorporated Santa Clara County. Portions of Santa Clara County Motorcycle Park, Coyote Creek Park, and lands of Santa Clara Valley Water District fall within the unit. We removed approximately 260 ha (643 ac), mostly commercial and residential development, from the unit as it was proposed.

Unit 11. San Felipe Unit

This unit includes 404 ha (998 ac) in Santa Clara County, southwest of San Felipe Road and north of Metcalf Road (T.8 S., R.2 E., Mount Diablo meridian/base line), primarily on private lands in unincorporated county lands, but also within San Jose city limits. The unit contains the San Felipe population area for the bay checkerspot, one of the four largest habitat areas and three largest current population centers for the bay checkerspot (Service 1998). This area is considered one of the centers of the subspecies' Santa Clara County metapopulation. The Recovery Plan (Service 1998) considers protection of the area of the highest priority for conservation of the bay checkerspot. Several hundred acres of serpentine soils occur within the unit with

nectaring and dispersal areas. We are not aware of any public lands in the unit.

Unit 12. Silver Creek Unit

The Silver Creek unit comprises 318 ha (787 ac), primarily within the limits of the City of San Jose, but with some area on private lands in unincorporated Santa Clara County (T.7 S., R.1 E., T.7 S., R.2 E., T.8 S., R.2 E., Mount Diablo meridian/base line). This unit is surrounded by Highway 101 and Coyote Creek on the west, Yerba Buena Road on the north, Silver Creek on the east and northeast, and Silver Creek Valley Road on the south. The unit includes the Silver Creek Hills population area for the bay checkerspot (Service 1998). It includes nearly 405 ha (1,000 ac) of contiguous serpentine soils, other scattered serpentine outcrops, and also habitat less suitable for breeding but needed for nectar-feeding or dispersal. Approximately 382 ha (943 ac) of developed areas and graded lands permitted for development have been removed from the unit as it was proposed. Included in our final designation for this unit is a roughly 162 ha (400 ac) nature preserve owned by William Lyon Homes (former Presley Homes) and managed by the non-profit Silver Creek Preserve. Several electric transmission lines and two major natural gas lines cross the unit.

In the last several years, a small population of the bay checkerspot has been documented in the Silver Creek unit, and the area has a long history of much larger populations. Portions of the unit known to have been inhabited by the bay checkerspot in the past are currently in degraded condition. With the management being implemented by Lyon Homes and Silver Creek Preserve, we believe that the Silver Creek Hills population is likely to increase, and that much of the degraded area will be restored to useful breeding habitat. The Silver Creek unit has extensive, diverse, and high-quality habitat, and represents the northernmost unit of the Santa Clara County metapopulation. The Silver Creek unit provides a population reservoir critical to the survival of the Santa Clara County metapopulation of bay checkerspot—the larger and more viable of the two remaining metapopulations (Service 1998).

Unit 13. San Vicente-Calero Unit

The San Vicente-Calero unit contains 759 ha (1,875 ac) within and to the west of Calero County Park, Santa Clara County (T.8 S., R.1 E., T.8 S., R.2 E., T.9 S., R.1 E., and T.9 S., R.2 E., Mount Diablo meridian/base line). This area supports a known population of the bay

checkerspot in a large area of good-quality habitat; other areas within the unit that are suitable for the bay checkerspot have not been surveyed. The unit is also within bay checkerspot dispersal distance of the Santa Teresa Hills unit (see below), which we consider to be capable of supporting a very large population of the bay checkerspot, and the Kalana Hills unit (number 9, above), which are themselves accessible to and from other units. Therefore, we believe the San Vicente-Calero population can contribute significantly to maintaining the Santa Clara County metapopulation of the bay checkerspot. For all these reasons, the Recovery Plan (Service 1998) considers protection of this area essential to the conservation of the subspecies. The unit is south of McKean Road and east of the town of New Almaden, Almaden Road, and Alamitos Creek. It lies about 1.6 km (1 mi) south of the Santa Teresa unit and about 3.2 km (2 mi) west of the Kalana Hills unit. Portions of the unit outside the county park are within the limits of the City of San Jose.

Unit 14. Santa Teresa Hills Unit

The Santa Teresa Hills unit includes 1,821 ha (4,500 ac) in Santa Clara County (T.8 S., R.1 E. and T.8 S., R.2 E., Mount Diablo meridian/base line) with extensive areas of serpentine soils. Portions of the Santa Teresa Hills are known to support the bay checkerspot now, and have supported the subspecies in the past, but no current comprehensive survey of the bay checkerspot in the area is available. We believe that the Santa Teresa Hills could support a significant population of bay checkerspots. In addition to adding a fifth substantial population to the Santa Clara County metapopulation, conservation and management of the Santa Teresa Hills population would support development of a strong population of the bay checkerspot in a slightly cooler, moister area of the county, at a site that may experience less air pollution than the more eastern units. The Santa Teresa Hills critical habitat unit is intended to include most undeveloped habitat in the area, as well as intervening areas that are unsurveyed or less suitable but needed for dispersal among higher-quality areas. The unit lies north of Bailey Avenue, McKean Road, and Almaden Road, south of developed areas of the city of Santa Clara, and west of Santa Teresa Boulevard. The unit abuts the Tulare Hill Corridor unit.

Unit 15. Tulare Hill Corridor Unit

The Tulare Hill Corridor unit, 355 ha (876 ac) in Santa Clara County, connects the Coyote Ridge (Kirby and Metcalf, and through them, San Felipe and Silver Creek) and Santa Teresa units. Tulare Hill is a prominent serpentine hill that rises from the middle of the Santa Clara Valley in southern San Jose, west of the crossing of Metcalf Road and Highway 101 (T.8 S., R.2 E., Mount Diablo meridian/base line). Extensive habitat on the hill is currently occupied by the bay checkerspot, and is essential both as a population center and for dispersal across the valley. The Metcalf and Kirby populations of the bay checkerspot lie less than 1 km (0.6 mi) to the northeast, separated by a major highway (U.S. 101) and a narrow band of other unfavorable uses (another large road, railroad tracks, an electrical substation, a large open reservoir with artificially hardened banks, and agricultural area). The Santa Teresa Hills population area for the subspecies lies about 2 km (1.2 mi) to the southwest, with dispersal habitat in between. We believe the long-term viability of the bay checkerspot depends on the presence of a corridor for dispersal of adults to and from the Santa Teresa Hills and Coyote Ridge (Service 1998). Tulare Hill is an ideal location for such a corridor because of the narrowness of the valley at this location and the limited amount of development currently present, the presence of high elevations on the hill that may attract butterflies over busy roads and developed areas, and the presence of suitable habitat on Tulare Hill itself. Migrant butterflies from either Santa Teresa Hills or Coyote Ridge may settle on Tulare Hill, contributing individuals and genetic diversity to the population there, and adults from Tulare Hill may migrate to the adjacent habitat areas.

Public lands within the designated unit include parts of Coyote Creek Park, Metcalf Park, and Santa Teresa County Park. Roughly half of Tulare Hill itself is within the limits of the City of San Jose, the remainder on private lands in unincorporated Santa Clara County. Several major electrical transmission lines cross the unit. Some areas within the unit are not inhabited by bay checkerspot individuals but can function as dispersal corridors.

Effect of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out do not destroy or adversely modify critical habitat to the extent that the action appreciably

diminishes the value of the critical habitat for the survival and recovery of the species. Individuals, organizations, States, local governments, and other non-Federal entities are affected by the designation of critical habitat only if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Section 7(a) of the Act requires Federal agencies, including the Service, to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened, and with respect to its critical habitat, if any is proposed or designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) and regulations at 50 CFR 402.10 requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. Conference reports provide conservation recommendations to assist the agency in eliminating conflicts that may be caused by the proposed action. The conservation recommendations in a conference report are advisory. If a species is listed or critical habitat is designated, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Through this consultation, we would ensure that the permitted actions do not destroy or adversely modify critical habitat.

When we issue a biological opinion concluding that a project is likely to result in the destruction or adverse modification of critical habitat, we also seek to provide reasonable and prudent alternatives to the project, if any are identifiable. "Reasonable and prudent alternatives" are defined at 50 CFR 402.02 as alternative actions identified during consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that the Director believes would avoid destruction or adverse modification of critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or

relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where critical habitat is subsequently designated, and the Federal agency has retained discretionary involvement or control over the action or such discretionary involvement or control is authorized by law. Consequently, some Federal agencies may request reinitiation of consultation or conference with us on actions for which formal consultation has been completed, if those actions may affect designated critical habitat, or adversely modify or destroy proposed critical habitat. Conference reports assist the agency in eliminating conflicts that may be caused by the proposed action, and may include recommendations on actions to eliminate conflicts with or adverse modifications to proposed critical habitat. The conservation recommendations in a conference report are advisory.

We may issue a formal conference report if requested by a Federal agency. Formal conference reports on proposed critical habitat contain an opinion that is prepared according to 50 CFR 402.14, as if critical habitat were designated. We may adopt the formal conference report as the biological opinion when the critical habitat is designated, if no substantial new information or changes in the action alter the content of the opinion (see 50 CFR 402.10(d)).

Activities on Federal lands that may affect the bay checkerspot or its critical habitat will require section 7 consultation. Activities on private or State lands requiring a permit from a Federal agency, such as a permit from the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act, a section 10(a)(1)(B) permit from the Service, or some other Federal action, including funding (e.g., Federal Highway Administration (FHA), Federal Aviation Administration, or Federal Emergency Management Agency (FEMA)), will also continue to be subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat and actions on non-Federal lands that are not federally funded, authorized, or permitted do not require section 7 consultation.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe in any proposed or final regulation that designates critical habitat those activities involving a Federal action that may destroy or adversely modify such

habitat, or that may be affected by such designation. Activities that may destroy or adversely modify critical habitat include those that appreciably reduce the value of critical habitat for both the survival and recovery of the bay checkerspot. Within critical habitat, this pertains only to those areas containing the primary constituent elements. We note that such activities may also jeopardize the continued existence of the species.

To properly portray the effects of critical habitat designation, we must first compare the section 7 requirements for actions that may affect critical habitat with the requirements for actions that may affect a listed species. Section 7 prohibits actions funded, authorized, or carried out by Federal agencies from jeopardizing the continued existence of a listed species or destroying or adversely modifying the listed species' critical habitat. Actions likely to "jeopardize the continued existence" of a species are those that would appreciably reduce the likelihood of the species' survival and recovery. Actions likely to "destroy or adversely modify" critical habitat are those that would appreciably reduce the value of critical habitat for the survival and recovery of the listed species.

Common to both definitions is an appreciable detrimental effect on both survival and recovery of a listed species. Given the similarity of these definitions, actions likely to destroy or adversely modify critical habitat would almost always result in jeopardy to the species concerned, particularly when the area of the proposed action is occupied by the species concerned. Designation of critical habitat in areas occupied by the bay checkerspot is not likely to result in a regulatory burden above that already in place due to the presence of the listed subspecies.

Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat and require that a section 7 consultation be conducted include, but are not limited to:

- (1) Ground disturbance, including but not limited to, grading, discing, ripping and tilling;
- (2) Removing, destroying, or altering vegetation (e.g., altering grazing practices or seeding);
- (3) Water contracts, transfers, diversion, impoundment, application, or conveyance, groundwater pumping, irrigation, or other activity that wets or inundates habitat, creates barriers or deterrents to dispersal, or results in critical habitat being converted to lower values for the bay checkerspot (e.g.,

conversion to urban development, vineyards, landscaping, etc.);

(4) Sale, exchange, or lease of critical habitat that is likely to result in the habitat being destroyed or degraded;

(5) Recreational activities that significantly deter the use of critical habitat by bay checkerspots or alter habitat through associated maintenance activities (e.g., off-road vehicle parks, golf courses, trail construction or maintenance);

(6) Construction activities that destroy or degrade critical habitat (e.g., urban and suburban development, building of recreational facilities such as off-road vehicle parks and golf courses, road building, drilling, mining, quarrying and associated reclamation activities); and

(7) Application or drift onto critical habitat of pesticides, herbicides, fertilizers, or other chemicals or biological agents.

(8) Deposition or release onto critical habitat of pollutants, other chemicals or biological agents.

Any of the above activities that appreciably diminish the value of critical habitat, once established, to the degree that they affect the survival and recovery of the bay checkerspot may be considered an adverse modification of critical habitat. We note that such activities may also jeopardize the continued existence of the subspecies.

If you have questions regarding whether specific activities will constitute destruction or adverse modification of critical habitat resulting from a Federal action, contact the Field Supervisor, Sacramento Fish and Wildlife Office (see **ADDRESSES** section). Requests for copies of the regulations on listed wildlife, and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Branch of Endangered Species, 911 N.E. 11th Ave, Portland, Oregon 97232 (telephone 503/231-2063; facsimile 503/231-6243).

Relationship to Habitat Conservation Plans (HCPs)

Section 4(b)(2) of the Act allows us broad discretion to exclude from critical habitat designation areas where the benefits of exclusion outweigh the benefits of designation, provided the exclusion will not result in the extinction of the species. We believe that, in most instances, the benefits of excluding HCPs from critical habitat designations will outweigh the benefits of including them.

The benefits of including HCP lands in critical habitat are normally small. Federally authorized, funded, or permitted activities in designated

critical habitat that may affect critical habitat require consultation under section 7 of the Act. This is the major benefit of designating lands as critical habitat. Consultation would ensure that adequate protection is provided to avoid adverse modification of critical habitat. However, our experience indicates that where HCPs are in place, this benefit is small or non-existent. Currently approved and permitted HCPs are designed to ensure the long-term survival of covered species within the plan area. The lands that we would find essential for the conservation of the species, and thus be considered for designation of critical habitat would, where we have approved HCPs and the species is a covered species under the HCP, normally be protected in reserves and other conservation lands. HCPs, and their associated implementation agreements, outline management measures and protections for conservation lands that are crafted to protect, restore, and enhance their value as habitat for covered species.

In addition, an HCP application must itself be consulted upon by the Service. While this consultation will not look specifically at the issue of adverse modification of critical habitat, it will look at the very similar concept of jeopardy to the listed species in the plan area. HCPs, particularly large regional HCPs, address land use within the plan boundaries; habitat issues within the plan boundaries are thoroughly addressed in the HCP and the consultation on the HCP. Our experience is that, under most circumstances, consultations under the jeopardy standard will reach the same result as consultations under the adverse modification standard. Additional measures to protect the habitat from adverse modification are not likely to be required.

Further, HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs assure the long-term protection and management of a covered species and its habitat, and funding for such management through the standards found in the 5-Point Policy for HCPs (64 FR 35242) and the HCP No Surprises regulation (63 FR 8859). Such assurances are typically not provided by section 7 consultations which, in contrast to HCPs, often do not commit the project proponent to long-term special management or protections. Thus, the lands covered by a consultation typically will not provide the extensive benefits of an HCP.

The development and implementation of HCPs provide other important conservation benefits, including the

development of biological information to guide conservation efforts and assist in species recovery and the creation of innovative solutions to conserve species while allowing for development. The educational benefits of critical habitat, including informing the public of areas that are important for the conservation of the species, are essentially the same as those that would occur from the public notice and comment procedures required to establish an HCP, as well as the public participation that occurs in the development of many regional HCPs. For these reasons, then, we believe that designation of critical habitat has little benefit in areas covered by HCPs.

In contrast, the benefits of excluding HCPs from being designated as critical habitat are more significant. In response to other critical habitat proposals, we have received comments about the additional regulatory and economic burden of designating critical habitat. These include the need for additional consultation with us and the need for additional surveys and information gathering to complete these consultations. HCP applicants have also stated that they are concerned that third parties may challenge HCPs on the basis that they result in adverse modification or destruction of critical habitat.

The benefits of excluding HCPs from critical habitat include relieving landowners, communities, and counties of any additional minor regulatory review that might be imposed by critical habitat. This benefit is important given our past representations that once an HCP is negotiated and approved by us after public comment, activities consistent with the plan will satisfy the requirements of section 10(a)(1)(B) of the Act. Many HCPs, particularly large regional HCPs, take many years to develop and, upon completion, become regional conservation plans that are consistent with the recovery of covered species. Many of these regional plans benefit many species, both listed and unlisted. Imposing an additional regulatory review after HCP completion not only results in minor, if any, additional benefit to the species, it may jeopardize conservation efforts and partnerships in many areas and could be viewed as a disincentive to those developing HCPs. Excluding HCPs provides us with an opportunity to streamline regulatory compliance and confirms regulatory assurances for HCP participants.

Another benefit of excluding HCPs is that it would encourage the continued development of partnerships with HCP participants, including States, local governments, conservation

organizations, and private landowners, that together can implement conservation actions we would be unable to accomplish alone. By excluding areas covered by HCPs from critical habitat designation, we preserve these partnerships, and, we believe, set the stage for more effective conservation actions in the future.

In general, then, we believe the benefits of critical habitat designation to be small in areas covered by approved HCPs. We also believe that the benefits of excluding HCPs from designation are small, but significant. We believe that the small benefits of inclusion, when weighed against the benefits of exclusion, including the benefits of relieving property owners of an additional layer of approvals and regulation, together with the encouragement of conservation partnerships, would generally result in HCPs being excluded from critical habitat designation under section 4(b)(2) of the Act.

Given this general analysis, we expect to analyze the specific benefits in each particular critical habitat designation because not all HCPs are alike with regard to species coverage and design. Within this designation, we need to evaluate completed and legally operative HCPs in the range of the bay checkerspot to determine whether the benefits of excluding these particular areas outweigh the benefits of including them.

The San Bruno Mountain Area HCP overlaps with the critical habitat designation on San Bruno Mountain. The bay checkerspot is believed to have been extirpated from the mountain since about 1986. The San Bruno Mountain Area HCP does not discuss the bay checkerspot in detail, and the Incidental Take Permit for this HCP currently does not include the subspecies. Therefore, we have not excluded the area covered by this HCP from the critical habitat designation. Any future Service or other Federal agency involvement in activities on San Bruno Mountain, such as habitat restoration, may require section 7 consultation if there are likely to be effects on bay checkerspot critical habitat.

The Pacific Gas and Electric (PG & E) Metcalf-Edenvalle/Metcalf-Monte Vista HCP covers only about 4 ha (10 ac) in the Santa Teresa Hills, San Vicente-Calero, and Tulare Hill Corridor critical habitat units. Because the HCP expires in November 2001, and the permitted project is substantially complete within critical habitat areas, we are not excluding lands covered under this short-term HCP from our critical habitat proposal. We believe that no formal

consultation on any remaining work covered by the HCP will be necessary.

In the event that future HCPs covering the bay checkerspot are developed within the boundaries of designated critical habitat, we will work with applicants to ensure that the HCPs provide for protection and management of habitat areas essential for the conservation of the bay checkerspot by either directing development and habitat modification to nonessential areas, or appropriately modifying activities within essential habitat areas so that such activities will not adversely modify the primary constituent elements. The HCP development process provides an opportunity for more intensive data collection and analysis regarding the use of particular habitat areas by the bay checkerspot. The process also enables us to conduct detailed evaluations of the importance of such lands to the long-term survival of the subspecies in the context of constructing a biologically configured system of interlinked habitat blocks.

We will provide technical assistance and work closely with applicants throughout the development of future HCPs to identify lands essential for the long-term conservation of the bay checkerspot and appropriate management for those lands. Preliminary HCPs are being discussed for listed and non-listed species within the range of the bay checkerspot in areas designated herein as critical habitat. These HCPs, coupled with appropriate adaptive management, should provide for the conservation of the subspecies. If these HCPs, or others, that address the bay checkerspot are ultimately approved, we will reassess the critical habitat boundaries in light of the HCPs. We will seek to undertake this review when an HCP is approved, but funding constraints may influence the timing of such a review.

Summary of Comments and Recommendations

In the October 16, 2000, proposed rule (65 FR 61218), we requested all interested parties to submit comments on the specifics of the proposal including information, policy, treatment of HCPs, and proposed critical habitat boundaries as provided in the proposed rule. The first comment period closed on December 15, 2000. The comment period was reopened from February 9, 2001, to March 12, 2001, (66 FR 9683) to allow for additional comments on both the proposed rule and the draft economic analysis. Although not stated in the **Federal Register** notice of February 9, 2001, we accepted all comments received from October 16,

2000, to March 12, 2001, and entered them into the administrative record for the rule.

We contacted all appropriate State and Federal agencies, Tribes, county governments, elected officials, and other interested parties and invited them to comment. In addition, we invited public comment through the publication of notices and display ads to announce the public hearing in the following newspapers in California: the San Mateo County Times and the Palo Alto Weekly. These announcements were published on October 20 and October 25, 2000, respectively. In these notices and the proposed rule, we announced the date and time of one public hearing that was held on the proposed rule. This hearing was in Newark, California, on October 30, 2000. A transcript of this hearing is available for inspection (see **ADDRESSES** section).

When the comment period was reopened, we sent out notices of the reopening to all parties on a mailing list for the bay checkerspot. Additionally, we held one informational meeting on February 22, 2001, in San Jose, California.

We requested four professional ecologists, who have familiarity with bay checkerspot butterflies and/or butterfly metapopulation dynamics, to peer review the proposed critical habitat designation. Three of the peer reviewers submitted comments on the proposed critical habitat designation, and one did not respond.

One peer reviewer stated that the proposed rule was “* * * formulated utilizing technically accurate and up-to-date information * * *” about the bay checkerspot, and that “* * * the criteria or primary constituent elements * * *” used to identify and propose critical habitat “* * * are appropriate to identify the large-scale boundaries of critical habitat units.” He found that the maps and descriptions of the 15 proposed critical habitat units we prepared “* * * accurately delimit the approximate boundaries of potential habitat at every location.”

He recommended we review the status of *Euphydryas editha* populations of uncertain subspecific status in San Benito and San Luis Obispo counties. We note that we will continue to review and consider scientific data and peer consensus on the subspecific status of uncertain *Euphydryas editha* populations as it becomes available. We believe that the best information available at this time supports proceeding with this rule substantially as proposed. The Act provides procedures under section 4 for modifying species listings and critical

habitat designations as may be appropriate in light of any new information that may be developed.

The reviewer agreed with our assessment of the value of the Tulare Hill unit as a dispersal corridor for the bay checkerspot butterfly to connect populations that lie east and west of that unit. He contrasted Tulare Hill with more isolated sites such as San Bruno Mountain and Communications Hill, where the distance to existing bay checkerspot butterfly populations may be more than a butterfly normally disperses, and intervening areas are urbanized. We agree that the San Bruno Mountain site may require introduction in order to establish and perhaps to maintain a bay checkerspot population; however, we believe Communications Hill is within normal flight range of other Santa Clara Valley metapopulation units.

A second peer reviewer generally supported the rule, stating that “* * * it does an excellent job of reviewing and interpreting bay checkerspot population biology, habitat requirements, and distribution.” In particular, she noted that the ridge including the Kirby and Metcalf units [which we call Coyote Ridge] is very important to the persistence of the Santa Clara County metapopulation, supporting multiple demographic units. In her research Coyote Ridge appeared to be a stable “source” that plays a major role in sustaining the species in the region. The reviewer suggested that the Edgewood unit serves the same “source role” in the San Mateo County metapopulation, and stated that it is important to protect Edgewood as the last remainder of whatever unique genetic variants of the bay checkerspot may exist in that region.

The second reviewer mentioned Silver Creek, Santa Teresa Hills, and Morgan Hill as having especially good potential for strong populations of the bay checkerspot butterfly, but that the Santa Teresa Hills, such as the ungrazed Santa Teresa County Park, may need more grazing to achieve its full potential as a large block of habitat. She stated that during her field studies, the only critical habitat unit she did not think had much potential as bay checkerspot habitat was Communications Hill, recalling it as being disturbed and grassy with few native forb-dominated meadows. We note that we have received a recent host plant survey of a portion of Communications Hill that documents substantial areas of larval food plants and adult nectar plants (Arnold 2000).

The third reviewer also generally supported the rule, finding it “carefully

constructed, comprehensive, and well justified. * * * Importantly, the critical habitat areas contain important dispersal corridors between serpentine patches, and account for the dynamic nature of bay checkerspot metapopulations, with local extinctions and recolonizations.”

This reviewer made extensive comments about nitrogen deposition, stating that the preponderance of scientific evidence and opinion is that the serpentine grasslands in question are highly sensitive to nitrogen additions, that nitrogen deposition can lead to degradation of habitat, and that excess nitrogen deposition from smog may be the single biggest immediate threat to the bay checkerspot.

The reviewer also stated that well-managed grazing is vital to the recovery of the bay checkerspot, specifically mentioning public lands in the Santa Teresa Hills unit as being in need of grazing to reverse deteriorating habitat quality. He estimated that one formerly degraded site in the Silver Creek unit recovered and greatly increased host plant and nectar plant density in about five years of grazing. We concur that recovery of habitat quality with grazing is feasible and documented.

The reviewer stated that Communications Hill in its current state is unlikely to support bay checkerspot populations, but also stated that the proposed unit boundaries “contain the remaining habitat.” He considers the Communications Hill habitat relatively warm and dry, with few north-facing slopes, degraded by lack of grazing, and generally of low priority relative to higher quality habitats elsewhere. The Service believes that Communications Hill is likely to be occupied by the bay checkerspot, and we discuss why in detail in our responses to public comment regarding Communications Hill, below. The reviewer suggested one additional unit in the vicinity of Canada Garcia and Manzanita Ridge (west of Chesbro Reservoir, Santa Clara County), with more than 100 ha (247 ac) of serpentine and a good mix of slopes and aspects. However, we lack adequate information about this area to justify including it in the critical habitat designation at this time. The Act provides opportunity for later revision of critical habitat designation through petition procedures under section 4(b)(3)(D). Further unit-specific comments by the third reviewer are covered below.

We received a total of 1,037 oral and written comments during the comment periods. In total, oral and written comments were received from 1 State office, 5 local governments, and 1,031

private individuals or organizations. We reviewed all comments received for substantive issues and new information regarding critical habitat and the bay checkerspot. Of the comments we received, 1,006 supported designation, 24 were opposed to it, and 7 provided information or declined to oppose or support the designation. Similar comments were grouped into four general issues relating specifically to the proposed critical habitat determination and draft economic analysis on the proposed determination. These are addressed in the following summary.

Issue 1: Biological Justification, Methodology, and Regulatory Comments

(1) *Comment:* One commenter stated that the Service should concentrate its critical habitat efforts for the bay checkerspot on those sites where the bay checkerspot exists and which, therefore, truly provide potential conservation benefits to the subspecies.

Our Response: We did concentrate on occupied sites, and have only included unoccupied sites where they are essential to the conservation of the subspecies. The unoccupied sites are essential, as described in the bay checkerspot's Recovery Plan (Service 1998), because of the metapopulation dynamics exhibited by the bay checkerspot, and because they are representative of the historic geographical and ecological distribution of the subspecies.

(2) *Comment:* A commenter was concerned that the activities described in the proposed rule that may affect critical habitat under section 7 consultation were broadly defined and, combined with other species listings and critical habitat designations, have the net effect of establishing the Service as the sole arbiter of land use decisions. It was suggested that the Service narrow the defined activities that may affect critical habitat. The commenter also stated that water contracting and operations carried out by Federal agencies are not a direct or indirect cause of loss of habitat or cause for endangerment of the subspecies and, therefore, should not require section 7 consultation. It was also stated that sale or lease of private property does not result in habitat loss and should be deleted from the rule.

Our Response: We provide the list of activities that may affect critical habitat to assist Federal agencies when they review their actions and determine whether critical habitat may be affected. The list is wide-ranging because diverse Federal agencies have broad responsibilities under the Act to protect

and conserve listed species and critical habitat. The list in no way conveys land use jurisdiction to the Service. The trigger for section 7 consultation is whether a Federal action may affect a listed species or critical habitat. Federal water contracts and operations that meet this criterion are required to consult. Sales or leasing of property will only be subject to consultation on critical habitat when a Federal agency is funding, authorizing, or carrying out the action, and the sale or lease may affect critical habitat.

(3) *Comment:* One commenter said that if the Service is going to use fragmentation as a reason for designating critical habitat (Background section), it should develop a quantitative assessment of how much fragmentation has taken place. Are the urban developments replacing woodlands, chaparral, or other habitats between areas of serpentine grassland a detriment or a benefit to the bay checkerspot? These developments may be a detriment, because of reduced resting area, increased obstacles, and pesticide; however, they could be a benefit by reducing predatory birds. The commenter also asked the Service to consider and insert why butterflies may be avoiding wooded or scrub habitats, as this may be a predator avoidance behavior.

Our Response: A quantitative analysis of habitat fragmentation is not required to designate critical habitat, and is beyond the scope of this rulemaking. It is not known why bay checkerspot butterflies appear to avoid wooded or scrub habitats. We are not aware of any scientific reports of bay checkerspots exhibiting predator avoidance behavior.

(4) *Comment:* One commenter said the indirect effects of added nitrogen deposition from increased automobile traffic on plant community structure need to be addressed. Concerns about the effects of nitrogen deposition on the bay checkerspot were also expressed by a peer reviewer.

Our Response: Nitrogen oxides from increased automobile traffic contribute to excess nitrogen deposition on surrounding habitats. Nitrogen deposition and its effects are briefly addressed in the Background section. We agree that scientific studies, such as those summarized in our Recovery Plan (Service 1998), show that automobiles and many other air pollution sources produce excess nitrogen oxides. A recent study found that nitrogen deposition from air pollution on Coyote Ridge, which includes the Kirby, Metcalf, and Silver Creek units, is already likely to be at levels adversely affecting serpentine plant community

structure, with negative effects on the bay checkerspot (Weiss 1999). We have modified the list of activities that may affect critical habitat in the section 7 Consultation section to address excess nitrogen deposition more clearly, by listing deposition as well as application of fertilizers, pollutants, and other chemicals. In ongoing consultation and discussions with the Corps of Engineers, the Federal Highway Administration, the City of San Jose, and the County of Santa Clara, we are currently seeking to address the risk that excess nitrogen deposition poses to the bay checkerspot butterfly.

(5) *Comment:* One commenter said that a higher proportion of the outcrops on the peninsula than in Santa Clara County might reasonably be proposed for critical habitat.

Our Response: We are aware of, and considered, several serpentine outcrop areas on the San Francisco peninsula when developing the proposed rule. However, the remaining undeveloped area of each of these sites is small, the topographic diversity is generally poor, and most are degraded and exposed to significant threats, such as lying directly adjacent to an eight-lane freeway. All are considered to have been unoccupied by the bay checkerspot for one or more decades.

(6) *Comment:* One commenter asked what percentage of total bay checkerspot habitat is included in the critical habitat designation and how much area outside this designated area is likely to contain bay checkerspot.

Our Response: We do not currently have comprehensive figures on the total area or location of bay checkerspot habitat or the status of all bay checkerspot populations. In our estimation, this critical habitat designation includes the majority of remaining bay checkerspot habitat in Santa Clara and San Mateo counties, and an even higher proportion of currently existing bay checkerspot populations. However, bay checkerspot populations and suitable habitat do exist outside of designated critical habitat. For example, bay checkerspot butterflies exist in a locality on serpentine soils near Uvas Reservoir in Santa Clara County, and at several other serpentine outcrops west of the foothills of the Santa Clara Valley. We did not include these areas in critical habitat because available data do not indicate they are essential to the conservation of the subspecies, or because we lack sufficient information on the localities to make a determination.

(7) *Comment:* One commenter said that if assessor's parcel numbers were identified or assessor's maps were used

to identify parcel ownership, then information on land use on those parcels would also be available. The designation of critical habitat appears to have skipped an important part of the analysis and this information should be included and reviewed.

Our Response: We did not use assessor's parcel maps in developing our designation. Instead, subsequent to the bay checkerspot critical habitat proposal on October 16, 2000 (65 FR 61218), the County of Santa Clara sent us a list of property owners potentially interested in the designation. We contacted these landowners by mail and provided them the opportunity to comment about the proposed rule and draft economic analysis. Several landowners commented on these two documents and provided information that helped us refine our final critical habitat designation.

(8) *Comment:* Several commenters felt that the critical habitat designation should encourage viable grazing activities.

Our Response: We agree that sustainable grazing practices are generally compatible with bay checkerspot habitat and conservation, and that in some areas or at certain times the removal of grazing may actually be a threat. The rule states this in the Background and the Effects of Critical Habitat Designation sections.

(9) *Comment:* A commenter asked what types of development would typically be allowed in critical habitat areas, what would be the threshold that would trigger a Federal permit, what Federal agencies would be involved in issuance of these permits, to which agencies would the county refer development applications, and what typical mitigation measures would be required in a development proposal to ensure adequate habitat protection.

Our Response: There is no such thing as a Federal permit for development in critical habitat units. Critical habitat identifies specific areas that have the physical and biological features that are essential to the conservation of a listed species, and that may require special management considerations or protection. Federal agencies are required to consult with us only if an action they are authorizing, funding, or carrying out, in whole or in part, may affect critical habitat. We do not believe any new county procedures for critical habitat would be required beyond what the county should already have in place to protect the threatened bay checkerspot butterfly. Refer to the section above that discusses section 7 or the Regulatory Planning and Review and Regulatory Flexibility Act sections

under Required Determinations below for more information as to what potential Federal agencies may initiate a section 7 consultation and the types of activities that may be involved.

(10) *Comment:* One commenter asked why we had proposed so many contiguous units. He recommended a single unit should be proposed for the Coyote Ridge area.

Our Response: These units have distinct bay checkerspot populations and are connected by dispersal habitat. Separate units allow us to evaluate the effects resulting from any Federal actions on unit populations individually, rather than lumping them all together.

(11) *Comment:* One commenter requested that information on the distances the Edgewood Park/Triangle, Jasper Ridge, and San Bruno Mountain units are from other units be provided.

Our Response: We added distance information to the narrative discussion of these units. Please see that section.

(12) *Comment:* One commenter stated that the Service should provide quantitative or qualitative measures for the primary constituent elements. The commenter proposed additions to and omissions from the primary constituent elements, adding: minimum size areas such as at least 1.6 ha (4 ac), north-facing serpentine slopes with dense stands of *Plantago erecta*, a diversity of north and nearby south- and west-facing slopes, at least 152 m (500 ft) in elevation, and serpentine soil; and omitting pollinators, stable holes, or cracks in soil, and wetlands.

Our Response: The "may affect" criterion that triggers Federal agencies to consult under section 7 of the Act is a broad, qualitative standard. We believe that precise quantitative standards for habitat are unnecessary and would overstate the scientific understanding of the bay checkerspot, its environments, and its needs. For example, *Plantago erecta* densities vary greatly from year to year, and what bay checkerspot larvae need for a "dense" stand of *Plantago erecta* has not been documented. We have reviewed and made alterations in the wording of the primary constituent elements designation, and we believe the final language suitably captures the needs of the subspecies in a manner that will be useful to Federal agencies in determining whether actions they fund, authorize, or carry out may affect critical habitat.

(13) *Comment:* One commenter felt some of the primary constituent elements were either difficult to measure, or are considered generally

unimportant for the subspecies, such as wetlands.

Our Response: We provide justification for the primary constituent elements stated above (see Background section). We also provided citations stating the importance of wetlands to the bay checkerspot. For example, the article cited regarding occasional wetland use by bay checkerspot (Launer *et al.* 1993) is co-authored by six well-known ecologists and biologists, and states "our observations are consistent with the hypothesis that (bay checkerspot) butterflies are visiting moist areas in order to replenish essential nutrients or water expended during mating, gamete (egg or sperm) production, or general metabolism." They go on to say that local population persistence may be enhanced by moist areas, and that canyon bottoms and moist areas may need to be considered in conservation planning for the bay checkerspot.

(14) *Comment:* One commenter objected that the size of patches of host plants and the average density of *Plantago erecta* are not provided for any of the units, even though data exist for many. The minimum patch size of *Plantago erecta* necessary to support a population of bay checkerspot should also be provided.

Our Response: While we would be interested in reviewing the data on *Plantago erecta* referred to in the comment, *Plantago erecta* is an annual plant whose year-to-year abundance is strongly affected by abiotic and biotic environmental conditions. As such, information on its present abundance is not necessarily a good indicator of conditions next year or over the long run. Regarding the minimum amount of *Plantago erecta* needed to support a population of bay checkerspot, we are not aware of any studies in the literature of what this amount might be. Also, the mobility and metapopulation dynamics of the bay checkerspot would need to be considered in evaluating the relevance of the size of any particular patch of food plants.

(15) *Comment:* One commenter asked whether the Service will require all of the proposed primary constituent elements to be present, or only one or two to qualify a site as critical habitat.

Our Response: We clarified the language regarding the primary constituent elements in the final rule (see the Primary Constituent Elements section of this rule). All areas within the legal descriptions are considered critical habitat except for existing manmade features and structures, such as buildings, roads, railroads, and urban development. All critical habitat areas

contain one or more of the primary constituent elements.

(16) *Comment:* A commenter stated that many farmers and ranchers are concerned that their current agricultural practices could be impacted. They fear cropping patterns, water conservation, and other practices may be limited with the critical habitat designation because these practices may now impact the bay checkerspot.

Our Response: With the changes made from the proposed rule, very little, if any, crop land remains within the critical habitat boundaries. Normal ranching practice will be unaffected by bay checkerspot critical habitat designation.

(17) *Comment:* A commenter representing certain landowners in the area of the proposed Kalana Hills unit said substantial areas were included within the borders of the proposed critical habitat area that clearly lack any of the primary constituent elements for the bay checkerspot. For instance, the Service included area that is non-serpentine and presently in cultivation in Kalana Hills unit.

Our Response: There is no requirement that all of the area within critical habitat boundaries support the primary constituent elements; to the contrary, critical habitat regulations explicitly state that intervening or surrounding areas not capable of supporting the subspecies may be included within designated critical habitat for purposes of describing a readily identifiable boundary and providing adequate consideration to a spatially complex mix of area with and without habitat (50 CFR 424.12(c), (d)). Furthermore, space for dispersal between habitable areas is a primary constituent element of bay checkerspot critical habitat. Nevertheless, within these requirements under the Act and with more detailed information provided during the comment period, we have modified the Kalana Hills unit boundary, eliminating over 80 ha (200 ac) of agricultural lands lacking the primary constituent elements from the unit.

(18) *Comment:* Many commenters mentioned possible benefits of designating critical habitat. Items suggested include facilitating proper evaluation of development proposals and plans, helping with acquiring more lands to be protected, increasing the chances of funding of scientific projects, and furthering the development of an HCP for Santa Clara County.

Our Response: While none of these items are required by critical habitat, we acknowledge that critical habitat designation can serve as an important

public information function. Non-Federal parties may also elect to use critical habitat maps to inform their decision-making, direct funding, or guide large-scale planning and conservation efforts. Critical habitat designation does not set aside lands or funds to acquire lands.

(19) *Comment:* One commenter stated that it is important that the Service use the Act to exercise control over Federal projects and analyze the direct and indirect impacts on the bay checkerspot, especially for those projects that only indirectly impact the bay checkerspot and its habitat.

Our Response: We, and other Federal agencies, are required under the Act to consider all effects, direct and indirect, to listed species and critical habitat of actions subject to Federal authorization, funding, or control, including the indirect effects of those actions.

(20) *Comment:* One commenter believed that it is important for the Service and the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) to coordinate on use of plants for landscaping of projects.

Our Response: If the NRCS is placing, funding, or recommending the placement of plants in or near bay checkerspot critical habitat, it must consider whether its actions may affect the subspecies or critical habitat. We are prepared to consult informally or formally with NRCS on their plant recommendations.

(21) *Comment:* One commenter stated that critical habitat designation will facilitate proper evaluation of development proposals and plans. One commenter stated the Service inaccurately downplayed the difficulty of the normal regulatory process and that the critical habitat designation requires additional regulatory review and analysis under State and local laws. The commenter stated that this should be acknowledged in the rule.

Our Response: Critical habitat designation does not provide for a wholesale environmental evaluation of proposed development projects. If a Federal agency funds, authorizes, or carries out an action that may affect critical habitat for the bay checkerspot, the Act requires that the agency consult with us under section 7 of the Act. For a project to affect critical habitat, it must affect the habitat features important to the bay checkerspot, which are defined in the regulation section in this final rule. Projects lacking a Federal nexus do not require any additional regulatory review and analysis under Federal laws, and we are not aware of any additional regulatory review and analysis under

State or local laws for designated critical habitat.

(22) *Comment:* A commenter stated that the section on Relationship to Habitat Conservation Plans does not explain a benefit to the Santa Clara Valley Water District or to the subspecies if the District develops an HCP. He recommended we rewrite the section to establish good linkage to the benefits to the subspecies and the use of HCPs.

Our Response: HCPs reduce conflicts between listed species and the economic use or development activities of a particular piece of land. By developing an HCP, an individual, agency, or organization can reduce the burden of the Act by providing an efficient mechanism for compliance with it, while at the same time, providing for the conservation of one or more species. One of the great strengths of the HCP process is its flexibility, as they can vary greatly in size and scope. Each HCP is unique, with its own set of issues and objectives.

As mentioned in the Relationship to Habitat Conservation Plans section, section 4(b)(2) of the Act allows us broad discretion to exclude from critical habitat designation areas where the benefits of exclusion outweigh the benefits of designation, provided the exclusion will not result in the extinction of the species. We believe that in most instances, the benefits of excluding HCPs from critical habitat designations will outweigh the benefits of including them. For a species, an approved HCP would provide certain measures to benefit the species and its habitat. For the landowner, it would ensure that no additional land use restriction or financial compensation would be required for the term of the permit.

Our rationale for excluding HCPs is provided in the Relationship to Habitat Conservation Plans. For additional information regarding the specifics of developing an HCP, please contact our Sacramento Fish and Wildlife Office (see **ADDRESSES**) section.

Issue 2: Legal and Procedural Comments

(23) *Comment:* The Service failed to consult with citizens affected by the designation during preparation of the proposed rule and gave deference to environmental groups.

Our Response: Following the publication of the proposed critical habitat determination on October 16, 2000, we opened a 60-day comment period, which closed on December 15, 2000. We held one public hearing on October 30, 2000, and one public information meeting on February 22,

2001. We conducted outreach by notifying affected elected officials, local jurisdictions, interested groups, and property owners. We conducted much of this outreach through legal notices in regional newspapers, telephone calls, letters, and news releases faxed and/or mailed to affected officials, local jurisdictions, and interest groups, and publication of the proposed determination and associated material on our Regional Internet page. We announced the availability of the draft economic analysis in the **Federal Register** on February 9, 2001, and opened a public comment period from February 9, 2001, to March 12, 2001, to allow for comments on the draft economic analysis and additional comments on the proposed determination itself. We provided notification of the draft economic analysis through telephone calls, letters, and news releases faxed and/or mailed to affected officials, local jurisdictions, and interest groups. Due to the court ordered deadline, we were not able to reopen the comment period a third time. We prepared the proposed and final rules based upon the best scientific and commercial information available to us from all sources at the time. We reviewed and treated, with equal weight, all of the oral and written comments received from various parties, regardless of their affiliation. Also, see our response to comment 7.

(24) *Comment:* Several commenters requested that the proposal be withdrawn and reissued. One commenter stated the withdrawn proposal should be redrafted after completion of the economic analysis. Another commenter stated that withdrawal and reissuance of the proposal was needed to be in compliance with the Act and the Administrative Procedure Act (APA).

Our Response: We have complied with the APA and Act during this rulemaking. We prepared and published a proposed rule and a draft economic analysis and solicited comments from private parties and public agencies on both documents. We reviewed all comments received either in writing or at public hearings and have responded to these comments in the preparation of this final rule. Where site-specific documentation was submitted to us providing a rationale as to why an area should not be designated critical habitat, we evaluated that information in accordance with the definition of critical habitat pursuant to section 3 of the Act and made a determination as to whether modifications to the proposal were appropriate. While not actually deleting any of the proposed critical

habitat areas originally proposed, we changed the boundaries of certain critical habitat areas and excluded lands from the final designation that we determined to be nonessential to the conservation of the bay checkerspot. We also complied with the District Court's order, which required us to make a final decision on critical habitat for the bay checkerspot by April 20, 2001.

(25) *Comment:* One commenter stated that the public hearing location chosen by the Service in Newark, California, limited public input compared to having a public hearing closer to property owners affected by the critical habitat designation. Another commenter requested the Service hold a public hearing in San Jose to address local comments and questions.

Our Response: We recognize that the location selected for a public hearing may be more problematic for some individuals who may want to attend than another location. In this case, we attempted to select a central location for the public hearing that was roughly equally accessible to all parties potentially interested in the proposed critical habitat designation, including parties from San Francisco and the East Bay, south to San Martin and southern Santa Clara County; so we held the public hearing in Alameda County. In addition to the public hearing, we held a public information meeting in San Jose, Santa Clara County, and the comment period was re-opened from February 9 to March 12, 2001. Due to the time constraint under the court order, we could schedule only one public hearing in Newark, California, on October 30, 2000.

(26) *Comment:* Several commenters requested the Service to reopen the comment period for a sufficient time period to allow meaningful comment on the proposed designation or the economic analysis.

Our Response: While we may have preferred to extend or reopen the comment period, if requested, we have complied with the regulations under 50 CFR 424.16(c) (2) and (3) where it states that we shall have the comment period open for at least 60 days and we shall hold one public hearing. Given the constraints imposed by the Court, we made an effort to exceed our statutory obligations. Following the publication of the proposed critical habitat determination on October 16, 2000, we opened a 60-day comment period which closed on December 15, 2000. We conducted outreach by notifying affected elected officials, local jurisdictions, interested groups, and property owners. We conducted much of this outreach through legal notices in

regional newspapers, telephone calls, letters, and news releases faxed and/or mailed to affected officials, local jurisdictions, and interest groups, and publication of the proposed determination and associated material on our Regional Internet page. We announced the availability of the draft economic analysis in the **Federal Register** on February 9, 2001, and re-opened the public comment period from February 9, 2001, to March 12, 2001, to allow for comments on the draft economic analysis as well as additional comments on the proposed determination itself. During this time, we also held one informational meeting. We provided notification of the draft economic analysis through telephone calls, letters, and new releases faxed and/or mailed to affected elected officials, local jurisdictions, property owners, and interest groups. Since this rule is under a court ordered deadline, we were not able to reopen the comment period a third time. We believe that we provided the interested parties sufficient time to comment on this rule and we conducted sufficient outreach on this notice.

(27) *Comment:* Several commenters stated that the Service violated the National Environmental Policy Act of 1969 (NEPA) by failing to prepare an Environmental Impact Statement for the designation of critical habitat for the bay checkerspot butterfly.

Our Response: We have determined that an Environmental Assessment and/or an Environmental Impact Statement as defined by NEPA need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act as amended. We published a notice outlining our reason for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

(28) *Comment:* Three commenters said that in order to comply with the statutory definition of critical habitat, the Service should specifically exclude those portions of the proposed designation that are not essential to the conservation of the subspecies in the final rule.

Our Response: We have determined that the areas designated as critical habitat within this final rule are essential to the conservation of the bay checkerspot. With improved information since the proposed rule, however, we did exclude lands that are not essential to the conservation of the bay checkerspot in this final rule from five units.

(29) *Comment:* A commenter stated that only the four areas originally proposed as critical habitat in 1984 (Edgewood, Jasper Ridge, San Bruno

Mountain, and Kirby) should be considered, because critical habitat designations should be based only on bay checkerspot occupancy, information about the subspecies and habitats, and economic considerations existing "at the time of listing."

Our Response: We did not designate critical habitat at the time of listing because we found that it was not determinable at that time. The courts have now ruled we must finalize a critical habitat determination for the subspecies. Restricting our consideration of critical habitat to what was known about the subspecies in 1984 (the first proposed rule) or 1987 (the time of listing) would return us to the situation in which we found critical habitat undeterminable, and would ignore the intervening 16 years of accumulation of extensive scientific data about the bay checkerspot. We are required by the Act (sections 4(b)(2) and 4(b)(6)(C)(ii)) to base our determination on the best scientific data available at the present moment of critical habitat designation.

(30) *Comment:* One commenter stated that the rule does not provide sufficient information on which a critical habitat determination can be premised. The proposed designation is not properly supported by the best scientific and commercial data available. The Service makes numerous and varied unsupported assertions regarding the biology and habitat requirements of the bay checkerspot. In proposing several "primary constituent elements" of critical habitat for the bay checkerspot, the Service offers no evidentiary support for the elements chosen (except in isolated instances). The Service failed to specify what lands are "occupied" based on best scientific data available.

Our Response: The descriptions of the primary constituent elements for the bay checkerspot are based on a compilation of data from peer reviewed published literature, unpublished or non-peer reviewed survey or research reports, the Recovery Plan (Service 1998), and biologists knowledgeable about the subspecies and its habitat. The primary constituent elements, as described, represent our best estimate of those habitat features that are essential to the subspecies. In our response to specific comments, and in other pertinent areas, we have listed citations where it is necessary or appropriate. Also, a copy of all supporting documentation used in the development of this determination is in the administrative record and available for inspection at the Sacramento Fish and Wildlife Office (see **ADDRESSES** section).

(31) *Comment:* One commenter stated the critical habitat designation for the bay checkerspot is based on the wrong standard (i.e., a "recovery" standard) by including suitable and potential habitat that the Service deems is useful for the subspecies' recovery. The commenter stated that this "recovery" standard is much broader than the standard that Congress contemplated in enacting the Act and subsequent amendments.

Our Response: We have used the correct standard for critical habitat as defined in section 3(5)(A) of the Act—(i) the specific areas within the geographic area occupied by a species, at the time of listing in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection and; (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The term "conservation" as defined in section 3(3) of the Act, means "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary" (i.e., the species is recovered and removed from the list of endangered and threatened species). The Recovery Plan for the bay checkerspot provides a description of habitat attributes that are essential to the survival and recovery of the subspecies (Service 1998).

(32) *Comment:* One commenter stated the Act requires the Service to designate adequate habitat for conservation of the subspecies. The Act defines conservation as recovery. Since the Recovery Plan (Service 1998) for the bay checkerspot identifies the need for populations in Contra Costa and Alameda Counties, the Service should add critical habitat in those counties.

Our Response: We considered proposing critical habitat in Contra Costa and Alameda Counties. However, while the Recovery Plan (Service 1998) identifies the need to reestablish populations of the bay checkerspot butterfly in the east bay to fully recover the species, it does not identify specific areas where such populations should be reestablished. We lacked sufficient information to indicate which particular areas in the east bay are essential for the conservation of the species. We believe it is not appropriate to designate critical habitat in areas without such information. The Act provides for revisions to critical habitat designations

when necessary, and we intend to continue working with the California Department of Parks and Recreation and other stakeholders on opportunities to possibly reintroduce the bay checkerspot butterfly in appropriate locations in the east bay. Should these efforts identify additional areas that may meet the definition of critical habitat (i.e., areas that are both essential to the conservation of the species and that require special management), we will consider proposing a revision to this critical habitat designation at that time or when our resources allow.

(33) *Comment:* One commenter stated that the Service failed to make findings required by law before including unoccupied areas as designated critical habitat for the bay checkerspot. The commenter said that the Service appears to have designated the entire geographical area that can be occupied by the bay checkerspot without making the findings required by law for making an exception to the statutory prohibition against making such a broad designation. Another commenter urged the Service to respect the Act's distinction between critical habitat and the geographic habitat of the bay checkerspot.

Our Response: In proposing critical habitat for the bay checkerspot, we identified those areas that are essential to the conservation of the subspecies. The areas we proposed to designate as critical habitat provide all of those habitat components essential for the primary biological needs of the bay checkerspot described in the Recovery Plan (Service 1998), and defined by the primary constituent elements.

The definition of critical habitat in section 3(5)(A) of the Act includes, "specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species." After weighing the best available information, including the Recovery Plan (Service 1998), we conclude that the areas designated by this final rule that lie outside the geographic area occupied by the subspecies at the time it was listed are essential for the recovery of the subspecies and its subsequent removal from the List of Endangered and Threatened Species. As is stated in this final rule, we have not designated all areas currently occupied, potentially occupied, or historically occupied by the bay checkerspot as critical habitat.

(34) *Comment:* One commenter stated that the Service did not identify and discuss the cumulative impacts of critical habitat designation.

Our Response: The commenter appears to be using the term "cumulative impacts" in the context of NEPA. This is not appropriate in determining the critical habitat needs of the listed species. We are required to consider the effect of the proposed government action, which in this case is the designation of critical habitat for the bay checkerspot. The appropriate baseline to use in an analysis of a Federal action, which in this case is the designation of critical habitat for the bay checkerspot, is the way the world would look absent the proposed regulation. Against this baseline, we attempt to identify and measure the incremental costs and benefits associated with the government action. Because the bay checkerspot is already a federally protected species, any effect this listing has on the regulated community is considered part of the baseline scenario, which remains unaffected by our critical habitat designation.

(35) *Comment:* One commenter requested that the critical habitat proposal be withdrawn and reissued with more precisely delineated critical habitat area boundaries, including deletion of improperly proposed units, after completion of the economic analysis. The boundaries include developed areas, which are not bay checkerspot butterfly habitat. Two other commenters asserted that the proposed critical habitat boundaries were not described in sufficient detail for landowners to locate them precisely. One stated that the proposed designation failed to designate "specific areas" as critical habitats required by the Act. One commenter stated that the Service failed to precisely describe the lands to be designated as critical habitat and thus violated the notice and comment provisions of the Administrative Procedure Act.

Our Response: All critical habitat boundaries were specific and precisely delineated in the proposed rule and were publicly available as text descriptions and printed maps. In addition, we provided the boundaries in geographic information systems (GIS) format to anyone who requested them. All units were properly proposed and were presented in detail allowing anyone with a standard topographic map to locate the boundary (50 CFR 424.12(c)). It should be noted that the precise boundaries are given in the legal descriptions at the end of the rule, not in the narrative comments in the preamble. The draft economic analysis was made available after some of the comments were received; all earlier commenters were provided a copy of the draft economic analysis and notified

of the opportunity to comment again. We believe the information that we made available and provided to the public was sufficiently detailed for informed public comment.

(36) *Comment:* Several commenters stated the Service avoided a statutory obligation to determine whether the benefits of excluding particular areas from critical habitat designation outweigh the benefits of including each area.

Our Response: Section 4(b)(2) of the Act allows us to exclude from critical habitat designation areas where the benefits of exclusion outweigh the benefits of designation, provided the exclusion will not result in the extinction of the species. We base our decision to exclude an area from critical habitat designation on the best scientific data available, and taking into consideration the economic impact of specifying any particular area as critical habitat. We completed an economic analysis, and considered the results of this analysis and comments received on the analysis and the critical habitat proposal in the section 4(b)(2) weighing process. We used the section 4(b)(2) process in evaluating whether the areas covered by the San Bruno Mountain and PG & E HCPs should be excluded from this critical habitat designation. The San Bruno Mountain HCP area was included because the HCP does not cover bay checkerspot butterfly, and the PG & E HCP area was included because the HCP is due to expire in November 2001. These HCPs are discussed further in the Relationship to Habitat Conservation Plans section.

Issue 3: Site-Specific Comments

(37) *Comment:* Several commenters felt that the bay checkerspot butterfly does not inhabit Communications Hill and, therefore, this unit should not be designated as critical habitat. They said that surveys at the site between the mid-1980s and 2000 have failed to locate any of the subspecies. Some commenters noted that, although a single bay checkerspot was observed in 1992, by a bay checkerspot butterfly specialist, they believed it was either misidentified or a transient individual. Seven commenters believed that there is no suitable habitat for the bay checkerspot on Communications Hill and it should, therefore, not be designated as critical habitat. Five commenters believed that the quarry on Communications Hill was not historic bay checkerspot butterfly habitat nor could it be restored to suitable habitat.

Our Response: We do not concur with the belief that the bay checkerspot butterfly does not inhabit

Communications Hill. In the past, the bay checkerspot has been observed at the site, as well as both of its foodplants and adult nectar plants. While a number of surveys of widely varying duration and quality were conducted between the mid-1980s to 2000, it does not appear possible to definitively conclude the subspecies is not present at Communications Hill. This is because adequate surveys have not been conducted over the entire flight season in all suitable areas on Communications Hill for an adequate time period, and thus likely would have missed the subspecies if they emerged early, late, or had a short adult flight season. The *Draft Supplemental Environmental Impact Report for the Communications Hill Kaufman Broad Residential Project*, dated November 2000, stated that "A check with biologists monitoring the bay checkerspot butterfly during its 2000 flight season revealed that the earliest adults were observed on March 10th at other locations, with adults being most active at most locations sometime during the week of March 13th. No butterflies were seen after the week of April 17th." Given the tardiness in initiating the field work in 2000, the most recent survey on Communications Hill may have missed adult bay checkerspot butterflies at the site.

Populations of the bay checkerspot butterfly undergo dramatic fluctuations that may be unexpected by entomologists and other biologists. For example, based on the results of a survey conducted in 1987, an entomologist concluded that a proposed residential development at Silver Creek would not adversely affect the bay checkerspot butterfly, given its "low" population size (Dennis Murphy *in litt.*; D. Murphy, pers. comm.). However, in the time period from 1987 to 1990, the bay checkerspot dramatically increased the size and extent of their population at this location, and more comprehensive studies at the site determined that the serpentine habitat at that location was very important for the subspecies.

The eggs, larvae, and pupae of the bay checkerspot butterfly are difficult to locate in the field (R. White 1986 (87)). In addition, the ability of larvae of a related taxa, the endangered quino checkerspot butterfly (*Euphydryas editha quino*), to become dormant during adverse environmental conditions (aestivate) is well documented and they likely are able to survive long periods of time in this state (Mattoni *et al.* 1997). In judging whether a population of the quino checkerspot butterfly has been extirpated, it is important to know that even a robust

population may generate no adults at all under poor environmental conditions (Service 2001). It is likely the bay checkerspot butterfly, a subspecies of the same species, possesses this same life-history trait (Service 1998).

There are numerous studies documenting that the bay checkerspot butterfly possesses a "metapopulation type" of distribution and population structure. A metapopulation is a network of semi-isolated populations with some level of regular or intermittent migration and gene flow among them, in which populations may disappear, but then are recolonized by dispersing individuals from other populations. Other populations of this subspecies are known from the immediate vicinity at Santa Teresa County Park, Tulare Hill, Silver Creek, Kirby Canyon, and the Morgan Hill area. The bay checkerspot butterfly also was intentionally released at 38 sites that contain serpentine grassland in Santa Clara County (Harrison 1989). It is not known if any of these releases resulted in the establishment of permanent populations, however, individuals were observed at four of the 38 sites two years after the releases occurred (Harrison 1989).

Communications Hill contains all of the primary constituent elements of critical habitat for the bay checkerspot butterfly: open grassland, larval foodplants, adult nectar sources, soils derived from serpentine rock, stable holes or cracks in the soil, wetlands that may provide moisture during times of spring drought, space for dispersal, and relatively varied topography (Arnold 2000). Communications Hill is only 3.2 km (2 mi) from the Silver Creek unit and 5 km (3 mi) from the Santa Teresa Hills unit, both recently documented to be occupied by the bay checkerspot. Both are within documented dispersal distances of the subspecies. The bay checkerspot seen on Communications Hill in 1992 was identified by an experienced biologist with extensive field research on the bay checkerspot. It is much more probable that this butterfly was a member of a low-density resident population than that it was a "transient," given that dispersal is a rare event and the chances of one biologist observing one transient butterfly on one day are very small, whereas the chances of seeing a member of a low-density resident population is quite reasonable.

Therefore, given the presence of suitable serpentine habitat and other primary constituent elements of critical habitat on Communications Hill, the observation of an adult bay checkerspot butterfly at the site, the lack of adequate surveys for this subspecies that may

provide data conclusively demonstrating it is not present, its biology, as well as the mobility of the subspecies and the presence of nearby populations, we believe that it is highly likely that Communications Hill is inhabited by the subspecies.

In reference to the quarry, we are unaware of any specific data indicating if the quarry site was inhabited by the bay checkerspot prior or subsequent to the substantial earth-removing operations, but the area does contain some of the primary constituent elements (serpentine soils, areas of *Plantago*, and nectar plants). Efforts and experiments involving the restoration of similar, severely disturbed serpentine habitat for the bay checkerspot and plants have been underway at the sanitary landfill at Kirby Canyon for several years and are showing promising results.

(38) *Comment*: One commenter stated that Communications Hill should be analyzed in terms of its connection to other proposed critical habitat units and the ability of the bay checkerspot butterfly to disperse to it over time.

Our Response: Normal within-habitat movements by bay checkerspot butterflies are typically less than 150 meters (490 feet) between recaptures (Ehrlich 1961, 1965; Gilbert and Singer 1973). Harrison (1989) recaptured 5 percent of bay checkerspot butterflies at distances greater than 1 km (0.6 mi) from the point of release of the individuals marked/recaptured. However, long-distance dispersal has been documented as far as 7.6 km (4.7 mi) (Service 2001), and 5.6 km (3.5 mi) for one male, and 3.2 km (2 mi) for one female (Harrison 1989).

Long-distance habitat patch colonization may be achieved within a single season through the long-distance dispersal of individual butterflies, or over several seasons through stepping-stone habitat patch colonization events. In a study of the Morgan Hill bay checkerspot butterfly island-mainland type metapopulation, no colonizations of unoccupied habitat patches further than 4.5 km (2.8 m) from the source population were detected over a 10-year period (Harrison *et al.* 1988). A mathematical model, of unknown accuracy, predicted satellite habitat patches at a distance greater than 6 to 8 km (4 to 5 mi) from large source populations were not likely to support populations of the bay checkerspot butterfly (Harrison *et al.* 1988). Communications Hill is approximately 3 km (2 mi) from the Silver Creek critical habitat unit, which contains the closest known bay checkerspot butterfly population. Therefore, we believe that

this habitat is suitable, reachable, and is used by the bay checkerspot butterfly, and warrants critical habitat designation.

(39) *Comment:* Several commenters felt that Communications Hill should be deleted because the site was not mentioned in the Recovery Plan for the bay checkerspot butterfly.

Our Response: Communications Hill is ranked as "other current or historic localities or suitable habitat areas" on page II-203 of the Recovery Plan (Service 1998). In addition, the site is listed on Table IV-1 of the Recovery Plan as a site that is targeted for the protection of the bay checkerspot, the endangered Santa Clara Valley dudleya (*Dudleya setchellii*), and other species. Thus, we determined that this unit is essential for the conservation of the bay checkerspot butterfly.

(40) *Comment:* The area west of State Route 87, Communications Hill unit, should be deleted from critical habitat designation. The area south of the water tanks has been developed into houses.

Our Response: We requested, but did not receive, more precise information on the location of the developed area the commenter discusses. This development was begun after the 1999 SPOT satellite imagery we used to refine our proposed boundaries. We believe, based on a visit to the site vicinity, that useful habitat likely remains west of route 87. In the absence of specific data allowing us to redraw the boundary in an informed manner, and because the rule explicitly states that existing developed areas do not provide the primary constituent elements and will not be subject to consultation, we believe it is most appropriate to leave the boundary unchanged in this area.

(41) *Comment:* A commenter stated that habitat restoration is needed in the Edgewood Park/Triangle unit.

Our Response: We have sought to encourage and facilitate appropriate native habitat restoration efforts in this and other units, and will continue to do so.

(42) *Comment:* We received comments stating that the proposed Kalana Hills unit should be eliminated entirely, because it is not listed as either a "core habitat area" or "potential core area" within the Recovery Plan (Service 1998), or because it is not certain to be presently occupied. If not eliminated, the commenters requested that the boundaries of the proposed Kalana Hills Unit should be refined to conform to natural land features and to a voter-approved urban growth boundary initiative.

Our Response: We have modified the Kalana Hills unit boundary based on a

site visit and specific information provided by the landowners and their consultant. The remaining critical habitat area contains substantial occupied areas of good-quality bay checkerspot habitat close to core areas and contributes to the Santa Clara County metapopulation. We, therefore, consider this area essential to the conservation of the bay checkerspot.

(43) *Comment:* One commenter suggested we expand the Kalana Hills unit southward to include an area of habitat south of San Bruno Canyon that supports *Plantago erecta* and nectar plants. Another commenter recommended that the western boundary of the San Bruno Mountain unit should extend west to just before the summit area; some of the best remaining stands of *Plantago* are in large native grassland patches west of the western transmission line. Historical records along the ridgetop may not fully describe the bay checkerspot's distribution on San Bruno Mountain. The 500-foot contour limit also needs to be investigated; some grasslands below that contour may have *Plantago* stands, especially in Owl and Buckeye canyons. Also, a commenter suggested that the southeast boundary of the San Vicente-Calero unit excludes a finger of serpentine with unknown habitat value. There is a California Department of Fish and Game Natural Diversity Data Base record for the bay checkerspot on a nearby serpentine outcrop of nearly equal size.

Our Response: We lack adequate information about these areas to allow a critical habitat designation at this time. The Act provides opportunity for later revision of critical habitat designation through petition procedures under section 4(b)(3)(D).

(44) *Comment:* Several commenters requested that the Service adjust the eastern boundary of the Kirby Unit of the critical habitat designation. The landowner provided specific, identifiable coordinates for an adjusted boundary and information confirming that the area excluded by their adjustment does not support the primary constituent elements.

Our Response: We believe the recommended boundary changes to the Kirby Unit is reasonable and would not remove any useful areas containing primary constituent elements. We have incorporated these changes in the final rule.

(45) *Comment:* A commenter requested that the Service change the Silver Creek unit, to allow development in the 340-acre portion and exclude development in the 240-acre preserve area as stated in the Service's biological

opinion for the Ranch on Silver Creek project.

Our Response: We have adjusted the boundary using information provided by the commenter, information present in our files, and based on site visits. See the narrative description of the unit, above, and the map and legal description of the unit, below, for specifics.

(46) *Comment:* One commenter requested we remove approximately 365 ha (900 ac) actively being used as a golf course and a landfill in the Kirby unit from the final critical habitat designation. These properties have been the subject of previous understandings with various resource agencies including the Service. The landfill is highly disturbed, and the golf course is not high-quality bay checkerspot habitat.

Our Response: We requested but did not receive information from the commenter regarding the exact boundaries of the golf course. The final rule explicitly states that existing developed areas will not be subject to consultation on critical habitat because they do not contain the primary constituent elements, so in the absence of information we felt it was most appropriate to leave the unit boundary as proposed in this area. The landfill is ultimately to be restored to bay checkerspot habitat and still retains substantial habitat within its permitted borders, so critical habitat designation in this area would ensure that any Federal involvement considers bay checkerspot habitat. We will work with the landowner and the landfill operator to evaluate the status of prior biological opinions and complete further consultation if any is required.

(47) *Comment:* A commenter noted that the northwest boundary of the San Felipe unit excludes some serpentine, and if deemed good grassland habitat, it should be included.

Our Response: We believe, based on serpentine soils mapping, satellite imagery, and visits to the vicinity, that the excluded area referred to has been developed for housing.

(48) *Comment:* A commenter stated that it is unknown whether any part of units 7 (Kalana Hills), 13 (San Vicente-Calero), or 14 (Santa Teresa Hills) currently support bay checkerspots, let alone a large and viable persistent population. Neither the proposed rule nor economic analysis state how much area within the Kalana Hills unit is currently occupied by the bay checkerspot, and the majority of it is likely unoccupied.

Our Response: Bay checkerspots have been found in all three units. Especially

considering the dramatic population swings that are normal for this subspecies, present population size or extent are not the only relevant, or even particularly important, factors in assessing the conservation value of a given habitat area. Each of these units has extensive areas of good habitat, is close to other habitat areas, has a record of occupation, and can serve as a "stepping stone" in bay checkerspot metapopulation dynamics, which is why the Recovery Plan (Service 1998) and this rule consider them essential to the conservation of the subspecies.

Issue 4: Economic Comments

(49) *Comment:* Many commenters believed that we failed to properly consider the economic and other impacts of designating particular areas as critical habitat.

Our Response: We disagree. We believe that the draft economic analysis made a reasonable attempt to identify all current and future planned activities within proposed critical habitat. Our draft economic analysis assessed potential economic impacts from critical habitat designation by first identifying current and future land uses within the proposed critical habitat. Our analysis then considered whether these activities were likely to involve a Federal nexus and, if so, the likelihood that Service biologists would want to consult on the activity over concern for the activity's impact on the bay checkerspot or its critical habitat. For activities identified by Service biologists as likely to cause a concern, we attempted to differentiate between consultations that would take place because such activities could jeopardize the continued existence of a listed species versus those that would likely take place solely because of critical habitat designation.

We characterized these effects by proposed critical habitat unit and were able to estimate the number of likely incremental consultations by unit despite the uncertainties that affect generating reliable estimates for specific areas. It is difficult to estimate whether a potential future activity would require a consultation and to determine the degree to which critical habitat designation influences that outcome. Given these limitations, we were, however, able to develop a general estimate of the number of future consultations that potentially could result from the designation of the proposed rule; we assumed a worst case scenario for our analysis. We believe that this estimate, along with the characterization of activities by unit, provides us with enough information to

make an informed decision concerning the designation of the final rule.

(50) *Comment:* Several commenters stated that the draft economic analysis is flawed because it is based on an improper definition of occupied lands.

Our Response: The determination of whether or not proposed critical habitat is within the geographic range occupied by the bay checkerspot is part of the biological decision-making process and lies beyond the scope of an economic analysis. For a discussion of the biological justification of why we believe the areas being designated are within the geographical areas occupied by the bay checkerspot, see our response to comments on Issue 1: Biological Justification, Methodology, and Regulatory Issues, above.

(51) *Comment:* Commenters stated that the draft economic analysis underestimated impacts to the regional housing market in relation to northern California's current housing crisis. Specifically, a few commenters believed that we failed to fully recognize the cost of project delays to homebuilders and consumers that would result from the designation due to an expected increase in section 7 consultations. One commenter also stated that the draft economic analysis ignored various other financial losses homebuilders would incur as a result of an expected reduction in the number of housing units that would be allowed to be built in designated critical habitat areas. Also, several commenters questioned why the draft economic analysis failed to provide an estimate of costs associated with potential reductions in property values.

Our Response: We are aware that some of the land that we proposed as critical habitat for the bay checkerspot butterfly faces significant development pressure. Development activities can have a significant effect on the land and the species dependent on the habitat being developed. We also recognize that many large-scale development projects are subject to some type of Federal nexus before work actually begins. As a result, we expect that future consultations, in part, will include planned and future real estate development.

However, we believe that these resulting consultations will not take place solely with respect to critical habitat issues. While some project delays may occur out of concern for a project's impact on the bay checkerspot, large real estate projects are often delayed for numerous other reasons that include compliance with various state and local ordinances and zoning regulations. It would be improper to

attribute all such changes in the scope of a development project, along with associated project delay costs, to critical habitat when numerous other factors frequently contribute to these changes. While it is true that development activities can adversely affect designated critical habitat, we believe that our future consultations regarding new housing development will take place because such actions have the potential to adversely affect a federally listed species. We believe that such planned projects would require a section 7 consultation, regardless of the critical habitat designation. Again, as we have previously mentioned, section 7 of the Act requires Federal agencies to consult with us whenever actions they fund, authorize, or carry out can jeopardize a listed species or adversely modify its critical habitat.

We also recognize that in some instances, the designation of critical habitat could result in a distorted real estate market because participants may believe that land within critical habitat designation is subject to additional constraints. In truth, this is not the case because critical habitat designation for the bay checkerspot is not adding any extra protection, nor impacting landowners beyond that associated with the listing of the subspecies as threatened under the Act. As a result, we believe that any resulting distortion will be temporary and have a relatively insignificant effect on the real estate market as it should become readily apparent to market participants that critical habitat for the bay checkerspot is not imposing any additional constraints on landowner activities beyond those currently associated with the listing.

We have also found little evidence to date to support claims by some developers that critical habitat designation would have significant regional economic impacts. In areas where critical habitat has been designated, economic growth has continued to grow. For example, a study released by the Coalition for Sonoran Desert Protection examined the impact of designating habitat for the cactus ferruginous pygmy-owl in southern Arizona (McKenney 2000). Performed 1 year after the designation, the study found that dire predictions made by developers in that region have not materialized. Specifically, high-density housing development has not slowed, the value of vacant land has risen, land sales have continued, and the construction sector has continued its steady growth.

Similarly, in a study conducted by Oliver Houck, the author reviewed over

71,560 informal and 2,000 formal consultations conducted under the Act and found that only 18 projects, or 0.02 percent of the projects we consulted on, were ultimately terminated (Houck 1993, p. 318). Furthermore, of the 99 jeopardy opinions issued by the Service, the author found that we issued "reasonable and prudent alternatives" in nearly all of these opinions, which allowed the projects to proceed (Houck 1993, p. 319).

The economic analysis estimated, for the Communications Hill unit, that given the City of San Jose's specific plan, the unit will include between 2,500 and 4,000 new residential units, additional commercial activities, parks, and schools. Based on this plan, the economic analysis estimated that between three and five large-scale developments may take place on this unit and assumed that each of these development projects could entail a section 7 consultation. The economic analysis noted, however, that it was not clear whether planned development would require a Federal permit, which then could trigger a section 7 consultation. The economic analysis also noted that several other federally protected species inhabit the area, and as a result, could trigger section 7 consultations, assuming a Federal nexus exists, regardless of bay checkerspot critical habitat designation. As a result, the economic analysis most likely overestimated the number of section 7 consultations that would be attributable to critical habitat designation.

We believe that the economic analysis adequately considered all the potential economic costs likely to be associated with potential development and provides sufficient information for the Secretary to make a determination under section 4(b)(2) of the Act.

(52) *Comment:* Some commenters stated that they believed that we understated the cost of section 7 consultations, and that the findings in the draft economic analysis concerning potential associated real estate development costs are significant enough to warrant a withdrawal of these units.

Our Response: In preparing the economic analysis, we estimated the potential effects from critical habitat designation resulting from section 7 consultations that could be attributable to the designation. As previously stated, we believe that many of the effects perceived by the public to be attributable to critical habitat would actually occur, regardless of critical habitat designation, because the bay checkerspot is a federally protected species and other listed species occupy

some of the same habitat. This would trigger consultations, regardless of bay checkerspot critical habitat designation. Because we are attempting to estimate potential future effects from critical habitat designation, our estimates are based on potential future activities that are typical for the areas proposed for designation.

In practice, the costs associated with section 7 consultations can vary widely depending on the activity, its scope, and areas actually affected. In our Addendum to the draft economic analysis, we have used some of the information provided by commenters to revise the expected section 7 consultation costs for some areas being designated. This revised estimate, however, is further adjusted in our Addendum to better estimate the allocation of the section 7 consultation cost that represents the incremental effect of this designation. Overall, we believe we have reasonably estimated the potential future impacts of critical habitat designation for the bay checkerspot.

(53) *Comment:* We received several comments stating that the costs associated with including the Dairy Hill (located on the northeast portion of the Communications Hill unit) and Communications Hill project sites significantly outweighed the benefit of designating the sites as critical habitat.

Our Response: Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific and commercial information available, and to consider the economic and other relevant impacts of designating a particular area as critical habitat. We may exclude areas from critical habitat upon a determination that the benefits of such exclusions outweigh the benefits of specifying such areas as critical habitat. We cannot exclude such areas from critical habitat when such exclusion will result in the extinction of the subspecies.

As our economic analysis indicated there are potential economic costs of including this area in the final critical habitat designation, we considered whether it should be excluded under section 4(b)(2). The benefits of excluding these areas would be the avoidance of these additional costs, which we estimate could range up to \$6.5 million over the next 10 years. Actual costs are likely to be significantly lower, given the historic presence of bay checkerspot butterflies on the site, the presence of other listed species, and the expected overlap of any measures implemented to protect these species with measures necessary to protect bay checkerspot butterfly habitat. In

addition, much of the potential cost associated with section 7 consultations will already be required by the presence of these other listed species. Further, this maximum cost estimate is derived from a planning assumption that no habitat would be preserved within the units; the high costs are associated with off-site mitigation. Depending on the actual extent of mitigation required, and the actual final level of residential development within the unit, we estimate that mitigation costs associated with critical habitat designation for the bay checkerspot could range between 0.07 percent and 0.6 percent of the total value of future residential development within the unit.

In contrast, the conservation benefits of including these units in the final designation are considerable. The Communications Hill critical habitat unit historically has been occupied by the bay checkerspot and contains all of the primary constituent elements essential for the conservation of the subspecies. It also represents the northwestern-most remnant of the Santa Clara metapopulation. Such warmer, lower elevation sites as this are likely to be especially important to the subspecies during rare episodes of great population increase, dispersal, gene flow, and recolonization of extirpated sites. Loss of the Communications Hill unit would likely preclude recovery and delisting of the subspecies, and could reduce or eliminate the viability of this metapopulation, ultimately diminishing or eliminating the long-term survivability of the bay checkerspot. Including the unit in this critical habitat designation will have important informational benefits, reinforcing to our Federal partners and other stakeholders the importance of this area to the conservation of the bay checkerspot butterfly in the future, with likely low overall costs. To the degree that the higher costs in our range of cost estimates are realized, we expect additional conservation benefits. That is, where increased costs result from avoidance of impacts that may destroy or adversely modify designated critical habitat, we expect real, on-the-ground benefits (in addition to these informational benefits) to the conservation of the bay checkerspot butterfly. As a result, we conclude that, even at the highest range of potential costs identified in our economic analysis, the benefits of including these areas in this final designation as critical habitat outweigh the possible benefits of excluding them.

(54) *Comment:* We received several comments stating that the draft economic analysis mis-characterized the

potential land use activities on the Kalana Hills unit by omitting future real estate development.

Our Response: According to the city of San Jose's General Plan, portions of the Kalana Hills unit are planned for future real estate development, which was overlooked in the draft economic analysis. Because this unit is occupied and because real estate development in this area lacks any clear Federal nexus, it is unlikely that critical habitat designation would have any significant effect. In this final rule, however, we significantly modified this unit to withdraw the majority of lands considered suitable for development, and we do not expect real estate development activities to be significantly impacted within this unit.

(55) *Comment:* One commenter stated that the draft economic analysis failed to consider the incremental costs associated with additional California Environmental Quality Act (CEQA) compliance as a result of the critical habitat rule.

Our Response: We disagree. Landowners in the state of California must comply with CEQA whether or not their land is within the area designated as critical habitat for a federally-listed species. The draft economic analysis discusses the effect that existing state and local regulations have on current activities in proposed critical habitat units. Specifically, CEQA requires identification of significant environmental effects of proposed projects that have the potential to harm the environment. The lead agency (typically the California State agency in charge of the oversight of a project) must determine whether a proposed project would have a "significant" effect on the environment.

Review of the CEQA statute, and conversations with the California Resources Agency (one of the agencies responsible for administering CEQA), revealed that when a species is known to occupy a parcel of land, the designation of critical habitat alone does not require a lead agency to pursue any incremental actions. In the case of the bay checkerspot, the Recovery Plan (Service 1998) for serpentine soil species in the San Francisco Bay area includes a description of the habitat areas needed by the bay checkerspot. Impacts to such previously identified areas would likely result in the need for compliance with CEQA by project proponents. Therefore, economic impacts generated by CEQA on bay checkerspot habitat areas are part of the baseline and not attributable to bay checkerspot critical habitat designation.

Summary of Changes From the Proposed Rule

Based on a review of public comments received on the proposed determination of critical habitat for the bay checkerspot butterfly, we reevaluated our proposed designation of critical habitat. This resulted in some changes that are reflected in this final determination. These are: (1) the exclusion of some lands where new information revealed that lands were not essential to the conservation of the bay checkerspot; (2) refining of the critical habitat boundaries; and (3) clarification of the primary constituent elements.

Based on comments received, we excluded those areas where new information revealed that lands were not essential. This included the exclusion of approximately 141 ha (348 ac) of primarily agricultural lands from unit 7, 57 ha (141 ac) of nonserpentine lands from unit 8, 81 ha (201 ac) of mostly residential development from unit 9, 260 ha (643 ac) of mostly commercial development from unit 10, and 382 ha (943 ac) of developed areas and graded lands permitted for development from unit 12.

These changes resulted in a reduction of approximately 923 ha (2,279 ac) in the critical habitat designation from the proposed rule to the final rule. We originally had proposed 10,597 ha (26,182 ac) of critical habitat for the bay checkerspot, and in this final rule, we are designating 9,673 ha (23,903 ac). Certain unit acreages have changed slightly from the proposed rule, and these reflect errors in rounding.

Economic Analysis

Section 4(b)(2) of the Act requires us to designate critical habitat on the basis of the best scientific and commercial information available and to consider the economic and other relevant impacts of designating a particular area as critical habitat. We may exclude areas from critical habitat upon a determination that the benefits of the exclusions outweigh the benefits of specifying the areas as critical habitat. We cannot exclude the areas from critical habitat when the exclusion will result in the extinction of the subspecies.

Economic effects caused by listing the bay checkerspot as a federally protected threatened species, and by other statutes, are the baseline against which the effects of critical habitat designation are evaluated. The economic analysis must then examine the incremental economic and conservation effects and benefits of the critical habitat

designation. Economic effects are measured as changes in national income, regional jobs, and household income. An analysis of the economic effects of the proposed bay checkerspot critical habitat designation was prepared (Industrial Economics, Incorporated, 2001) and made available for public review (February 9 to March 12, 2001; 66 FR 9683). The final analysis, which reviewed and incorporated public comments, concluded that no significant economic impacts are expected from critical habitat designation above and beyond that already imposed by listing the bay checkerspot.

The most likely economic effects of critical habitat designation are on activities funded, authorized, or carried out by a Federal agency. The analysis examined the effects of the proposed designation on: (1) re-initiation of section 7 consultations; (2) length of time in which section 7 consultations are completed; and (3) new consultations resulting from the determination. The draft economic analysis reported that, although difficult to assess because the bay checkerspot's critical habitat overlapped with the habitat of other federally protected species, impacts could be as high as \$1.2 to \$6.5 million dollars over the next 10 years.

Potential impacts that were identified included consultations with Federal agencies in the Communications Hill unit regarding proposed real estate development projects. Specifically, the draft economic analysis estimated that between three and five section 7 consultations could occur based on the City of San Jose's estimate and with costs up to a total of \$50,000 for all the consultations and with associated mitigation costs that could range between \$0.96 and \$3.74 million, based on a previous consultation recently completed in the area for another large-scale development project. However, based on comments we received on the draft analysis, we recognized that the draft may have underestimated the consultation costs on Communications Hill (due to the large scale of development planned for the hill) and thus revised the estimates of consultation costs in the final addendum to the economic analysis. The revised estimates for these consultation costs are \$50,000 per consultation (estimated as 50 percent of the maximum suggested cost of \$100,000 to account for the impact of additional listed species within the unit) or a total of \$250,000 for the five potential consultations. However, due to the existence of other federally

protected species within the area which could trigger consultations regardless of bay checkerspot critical habitat, much of the survey work associated with the consultation, and the consultation itself would already be required. Therefore, a substantial portion of the costs associated with these consultations most likely would also be attributable to factors or species other than the bay checkerspot critical habitat designation, and thus we believe that this estimate most likely overstates the actual impacts of this critical habitat designation.

We believe that any project that would adversely modify or destroy critical habitat would also jeopardize the continued existence of the species, and that reasonable and prudent alternatives to avoid jeopardizing the species would also avoid adverse modification of critical habitat. Within the analysis, we determined there would be costs associated with the designation, however, these costs were determined to be negligible, except as discussed above. Thus, little regulatory burden or associated significant additional costs would accrue because of critical habitat above and beyond that resulting from listing. Our economic analysis does recognize that there may be costs from delays associated with reinitiating completed consultations after the critical habitat designation is made final. There may also be economic effects due to the reaction of the real estate market to critical habitat designation, as real estate values may be lowered due to perceived increase in the regulatory burden. However, we believe this impact will be short-term.

In summary, in our economic analysis, we estimate that, over the next 10 years, the total cost of this rulemaking will range between \$1.2 and \$6.5 million. This estimate is primarily attributable to costs associated with section 7 consultations and potential modifications to future residential and commercial real estate development projects. The high end of the estimate was a result of assuming no on-site habitat were preserved in the Communications Hill unit and 312 acres of off-site habitat would need to be purchased to mitigate this loss. However, the analysis compared this cost to the estimated value of the residential development proposed to be built within the unit. Depending on the extent of mitigation required, and the actual final level of residential development within the unit, we estimate that mitigation costs associated with critical habitat designation for the bay checkerspot could range between 0.07 percent and 0.6 percent of the total value of future residential development within the unit. A copy of the final economic analysis and description of the exclusion process with supporting documents are included in our administrative record and may be obtained by contacting the Sacramento Fish and Wildlife Office (see **ADDRESSES** section).

Required Determinations

1. Regulatory Planning and Review

In accordance with the criteria in Executive Order 12866, this rule is a significant regulatory action and has

been reviewed by the Office of Management and Budget (OMB).

(a) This rule will not have an annual economic effect of \$100 million or more or adversely affect an economic sector, productivity, jobs, the environment, or other units of government. The bay checkerspot butterfly was listed as a threatened subspecies in 1987. In fiscal years 1987 through 2000, the Sacramento Fish and Wildlife Office conducted, or is in the process of conducting, 4 formal section 7 consultations with other Federal agencies to ensure their actions would not jeopardize the continued existence of the bay checkerspot.

Under the Act, critical habitat may not be adversely modified by a Federal agency action; the Act does not impose any restrictions through critical habitat designation on non-Federal persons unless they are conducting activities funded or otherwise sponsored, authorized, or permitted by a Federal agency. Section 7 requires Federal agencies to ensure that they do not jeopardize the continued existence of the species. Based upon our experience with the species and its needs, we conclude that any Federal action or authorized action that could potentially cause adverse modification of designated critical habitat would currently be considered as "jeopardy" under the Act (see Table 2).

TABLE 2.—IMPACTS OF BAY CHECKERSPOT BUTTERFLY LISTING AND CRITICAL HABITAT DESIGNATION

Categories of activities	Activities potentially affected by species listing only	Additional activities potentially affected by critical habitat designation ¹
Federal Activities Potentially Affected ² .	Activities conducted by the Army Corps of Engineers, Bureau of Reclamation, Environmental Protection Agency, Federal Highway Administration.	Activities by these Federal Agencies in any unoccupied critical habitat areas.
Private or other non-Federal Activities Potentially Affected ² .	Activities that require a Federal action (permit, authorization, or funding) and may remove or destroy bay checkerspot habitat by mechanical, chemical, or other means (e.g., grading, discing, ripping, and tilling, water diversion, impoundment, groundwater pumping, irrigation, construction, road building, herbicide application, recreational use, etc.) or appreciably decrease habitat value or quality through indirect effects (e.g., edge effects, invasion of exotic plants or animals, fragmentation of habitat).	Funding, authorization, or permitting actions by Federal Agencies in any unoccupied critical habitat areas.

¹ This column represents activities potentially affected by the critical habitat designation in addition to those activities potentially affected by listing the subspecies.

² Activities initiated by a Federal agency.

³ Activities initiated by a private or other non-Federal entity that may need Federal authorization or funding.

Accordingly, the designation of areas within the geographic range occupied by the bay checkerspot butterfly has little, if any, incremental impacts on what actions may or may not be

conducted by Federal agencies or non-Federal entities that receive Federal authorization or funding. Non-Federal entities that do not have a Federal "sponsorship" of their actions are not

restricted by the designation of critical habitat (however, they continue to be bound by the provisions of the Act concerning "take" of the species).

Designation of areas of unknown occupancy as critical habitat may have impacts on what actions may or may not be conducted by Federal agencies or non-Federal entities that receive Federal authorization or funding. Based on our understanding of the threats to the species, the prohibition against adverse modification of critical habitat in areas of unknown occupancy is not expected to impose any additional restrictions to federally sponsored projects or activities occurring in these areas, unless we make a determination that the proposed activity would result in an appreciable reduction of the value of the critical habitat for both the survival and recovery of the bay checkerspot. As discussed in the final addendum to the economic analysis, we determined that the costs of any additional consultations and any resulting project modifications will not have an annual economic effect of \$100 million or more or adversely affect an economic sector, productivity, jobs, the environment, or other units of government.

(b) This rule will not create inconsistencies with other agencies' actions. As discussed above, Federal agencies have been required to ensure that their actions do not jeopardize the continued existence of the bay checkerspot butterfly since the listing in 1987. The prohibition against adverse modification of critical habitat is not expected to impose any substantial additional restrictions to those that currently exist. Because of the potential for impacts on other Federal agencies' activities, we will continue to review this action for any inconsistencies with other Federal agencies' actions.

(c) This rule will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. Federal agencies are currently required to ensure that their activities do not jeopardize the continued existence of the subspecies, and as discussed above, we do not anticipate that the adverse modification prohibition (resulting from critical habitat designation) will have any significant incremental effects.

(d) OMB has determined that this rule will raise novel legal or policy issues and, as a result, this rule has undergone OMB review.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

In the economic analysis, we determined that designation of critical habitat will not have a significant effect on a substantial number of small entities. As discussed under Regulatory Planning and Review above, and in this final determination, this rule is not

expected to result in any restrictions in addition to those currently in existence. Although small entities may carry out activities within designated critical habitat, many of these activities lack a Federal nexus and therefore their impacts on critical habitat do not need to be considered. For those actions requiring federal funding or authority, we believe that the incremental impacts attributable to this rule are not significant for reasons explained above and in the draft economic analysis. Therefore, we are certifying that the designation of critical habitat for the bay checkerspot butterfly will not have a significant economic impact on a substantial number of small entities. As indicated in Table 1 (see Critical Habitat Designation section), we designated property owned by State and local governments, and private property. Within these areas, the types of Federal actions or authorized activities that we have identified as potential concerns are:

(1) Regulation of activities affecting waters of the United States by the Corps of Engineers under section 404 of the Clean Water Act;

(2) Regulation of water flows, execution of water contracts, water delivery, transfer of Federal project water, damming, diversion, and channelization by the Bureau of Reclamation or the Corps of Engineers;

(3) Pesticide and air quality regulation by the Environmental Protection Agency; and

(4) Funding and regulation of road construction by the FHWA.

Many of the activities sponsored by Federal agencies within critical habitat areas are carried out by small entities (as defined by the Regulatory Flexibility Act) through contract, grant, permit, or other Federal authorization. As discussed above, these actions are already currently required to comply with the protections of the Act, and the designation of critical habitat is not anticipated to have any additional effects on these activities.

For actions on non-Federal property that do not have a Federal connection (such as funding or authorization), the current restrictions concerning take of the subspecies remain in effect, and this final rule will have no additional restrictions.

Small Business Regulatory Enforcement Fairness Act (5 U.S.C. 804(2))

In the economic analysis, we determined that designation of critical habitat would not cause: (a) any effect on the economy of \$100 million or more; (b) any increases in costs or prices for consumers, individual industries,

Federal, State, or local government agencies, or geographic regions; and (c) any significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. Please refer to the final economic analysis for a discussion of the effects of this determination.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.):

(a) This rule will not "significantly or uniquely" affect small governments. A Small Government Agency Plan is not required. Small governments will be affected only to the extent that any programs having Federal funds, permits, or other authorized activities must ensure that their actions will not adversely affect the critical habitat. However, as discussed above, these actions are currently subject to equivalent restrictions through the listing protections of the subspecies, and few, if any, further restrictions are anticipated.

(b) This rule will not produce a Federal mandate of \$100 million or greater in any year, that is, it is not a "significant regulatory action" under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments.

Takings

In accordance with Executive Order 12630, this rule does not have significant takings implications. A takings implication assessment is not required. As discussed above, the designation of critical habitat affects only Federal actions. The rule will not increase or decrease the current restrictions on private property concerning take of the bay checkerspot butterfly. Due to current public knowledge of the subspecies' protections, the prohibition against take of the subspecies both within and outside of the designated areas, and the fact that critical habitat provides no substantial incremental restrictions, we do not anticipate that property values will be affected by the critical habitat designation. While real estate market values may temporarily decline following designation, due to the perception that critical habitat designation may impose additional regulatory burdens on land use, we expect any such impacts to be short term.

Additionally, critical habitat designation does not preclude development of HCPs and issuance of incidental take permits. Owners of areas that are included in the designated critical habitat will continue to have the opportunity to utilize their property in ways consistent with the survival of the bay checkerspot butterfly.

Federalism

In accordance with Executive Order 13132, the rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies in California. The designation of critical habitat in areas currently occupied by the bay checkerspot butterfly imposes no substantial additional restrictions to those currently in place and, therefore, has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments in that the areas essential to the conservation of the subspecies are more clearly defined, and the primary constituent elements of the habitat necessary to the survival of the subspecies are specifically identified. While making this definition and identification does not alter where and what federally sponsored activities may occur, it may assist these local governments in long-range planning (rather than waiting for case-by-case section 7 consultations to occur).

Civil Justice Reform

In accordance with Executive Order 12988, the Department of the Interior's

Office of the Solicitor has determined that this rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order. We designated critical habitat in accordance with the provisions of the Endangered Species Act. The rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs of the bay checkerspot butterfly.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule references permits for HCPs which contain information collection activity. The Fish and Wildlife Service has OMB approval for the collection under OMB Control Number 1018-0094. The Service may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We determined that we do not need to prepare an Environmental Assessment and/or an Environmental Impact Statement as defined by the National Environmental Policy Act of 1969 in connection with regulations adopted pursuant to section 4(a) of the Act as amended. We published a notice outlining our reason for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951), E.O. 13175, and 512 DM 2, we understand

that federally recognized Tribes must be related to on a Government-to-Government basis. We are not aware of any Tribal lands essential for the conservation of the bay checkerspot. Therefore, we are not designating critical habitat for the bay checkerspot on Tribal lands.

References Cited

A complete list of all references cited in this final rule is available upon request from the Sacramento Fish and Wildlife Office (see **ADDRESSES** section).

Authors

The primary authors of this rule are the staff of the Sacramento Fish and Wildlife Office (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.11(h), by revising the entry for "Butterfly, bay checkerspot," under "INSECTS," to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
* INSECTS	*	*	*	*	*		*
* Butterfly, bay checkerspot.	<i>Euphydryas editha bayensis</i> .	U.S.A. (CA)	Entire	T	288	17.95(i)	NA
*	*	*	*	*	*		*

3. Amend § 17.95(i) by adding critical habitat for the bay checkerspot butterfly (*Euphydryas editha bayensis*) in the same alphabetical order as this subspecies occurs in § 17.11(h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(i) *Insects*.

Bay Checkerspot Butterfly (*Euphydryas editha bayensis*)

1. Critical habitat units are depicted for San Mateo and Santa Clara Counties, California, on the maps below.

2. Within these areas, the primary constituent elements are those habitat components that are essential for the primary biological needs of foraging, sheltering, breeding, maturation, and dispersal. The primary constituent elements are one or more of the following: stands of *Plantago erecta*, *Castilleja exserta*, or *Castilleja densiflora*; spring flowers providing nectar; pollinators of the bay checkerspot's food and nectar plants; soils derived from serpentinitic rock; and space for dispersal between habitable areas. In addition, the following are each primary constituent elements to be conserved when present in combination with one or more of the primary constituent elements above: areas of open grassland, topography with varied slopes and aspects providing surface conditions with warm and moderate to cool temperatures during sunny spring days, stable holes or cracks in the soil and surface rocks or rock outcrops, wetlands providing moisture during times of spring drought.

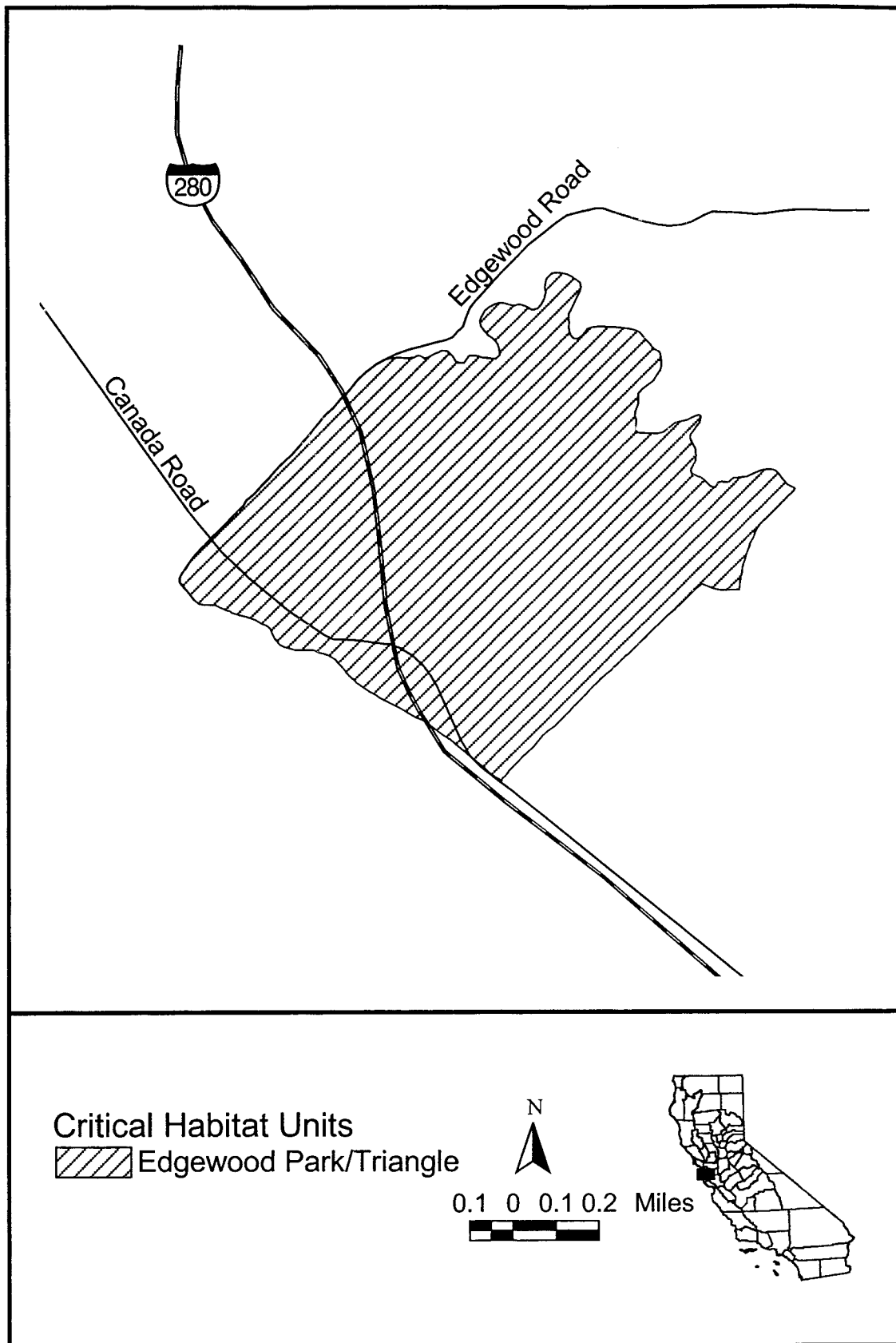
3. Within these areas, existing human-constructed features and structures, such as buildings, roads, railroads, urban development, and other human-constructed features not containing any primary constituent elements, are not considered critical habitat and are not included in the designation.

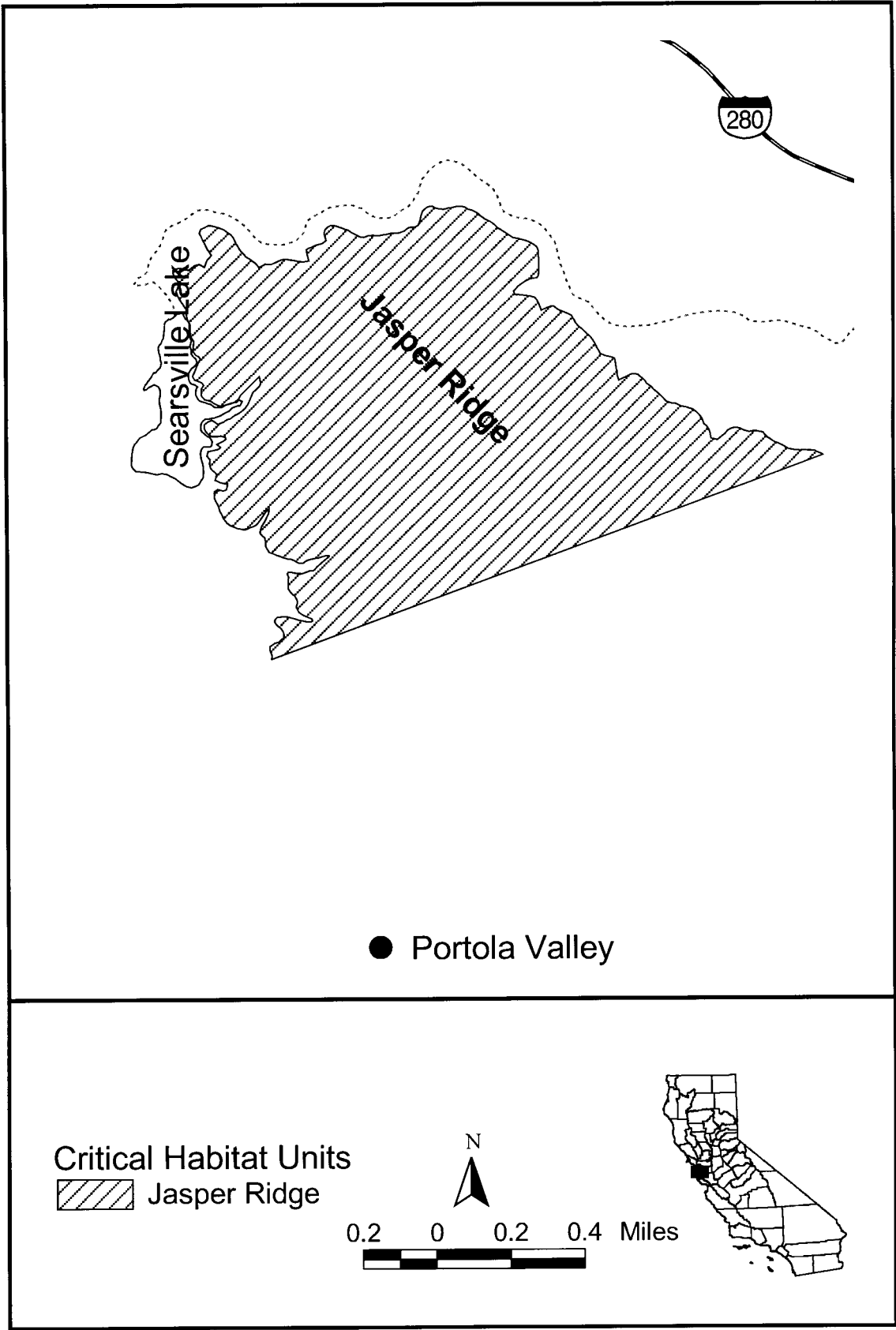
Unit 1 (Edgewood Park/Triangle Unit): San Mateo County, California. Bounded as follows: beginning at the intersection of Edgewood Road and Canada Road; southwesterly, south, and southeasterly along the light-duty extension of Edgewood Road southwest of Canada Road to its intersection with an unnamed intermittent drainage tributary to Upper Crystal Springs Reservoir as shown on the USGS Woodside 7.5 minute quadrangle (1961, photorevised 1968 and 1973); then southwesterly along this drainage to its intersection with I-280; then southeasterly along the eastern edge of pavement of I-280 to a point due southwest of the southernmost corner of Edgewood Natural Preserve (this just south of a

substation shown on the Woodside quadrangle, where the State Fish and Game Refuge boundary meets Canada Road and an elevation of 161 m (528 ft) is marked); then due northeast to the southernmost corner of Edgewood Natural Preserve; then northeast along the southeast boundary of Edgewood Natural Preserve to the 159 m (520 ft) elevation contour as shown on the Woodside quadrangle; then northwesterly along this contour to its intersection with Edgewood Road; then southwesterly along the south edge of pavement of Edgewood Road to the starting point.

Unit 2 (Jasper Ridge Unit): San Mateo County, California. Bounded as follows: to the east, north, and west by the 110 m (360 ft) elevation contour around Jasper Ridge (USGS Palo Alto 7.5 minute quadrangle, 1991); and to the south by the current boundary of the Jasper Ridge Biological Reserve, which is largely coincident with the northern boundary of the town of Portola Valley.

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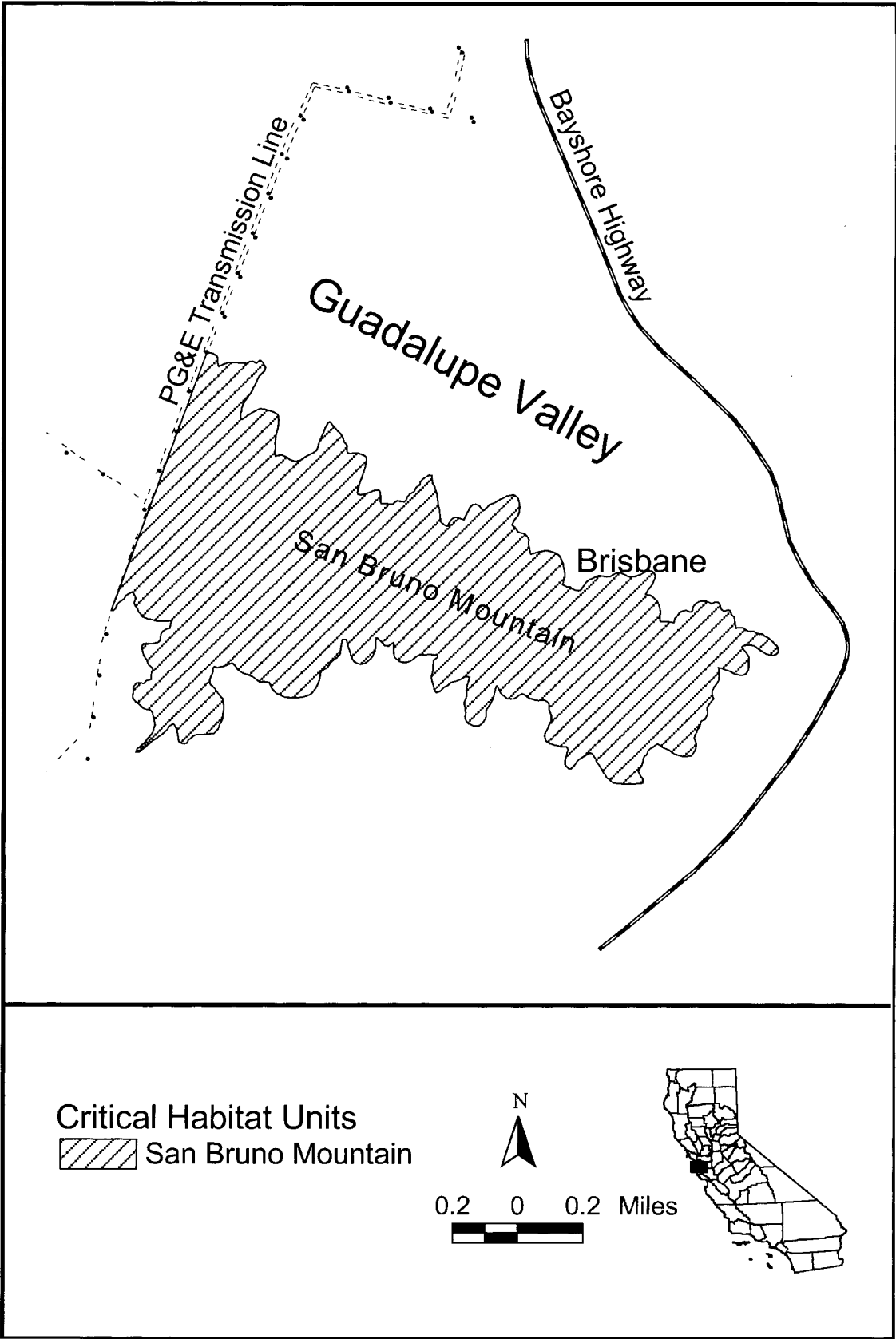
Unit 3 (San Bruno Mountain Unit): San Mateo County, California. All area on San Bruno Mountain above the 152 m (500 ft) elevation contour and east of the western Pacific Gas and Electric transmission corridor (this transmission corridor runs south to southwesterly from the west end of Guadalupe Valley to the South San Francisco/Colma City border) as shown on the USGS San Francisco South 7.5 minute quadrangle, 1956).

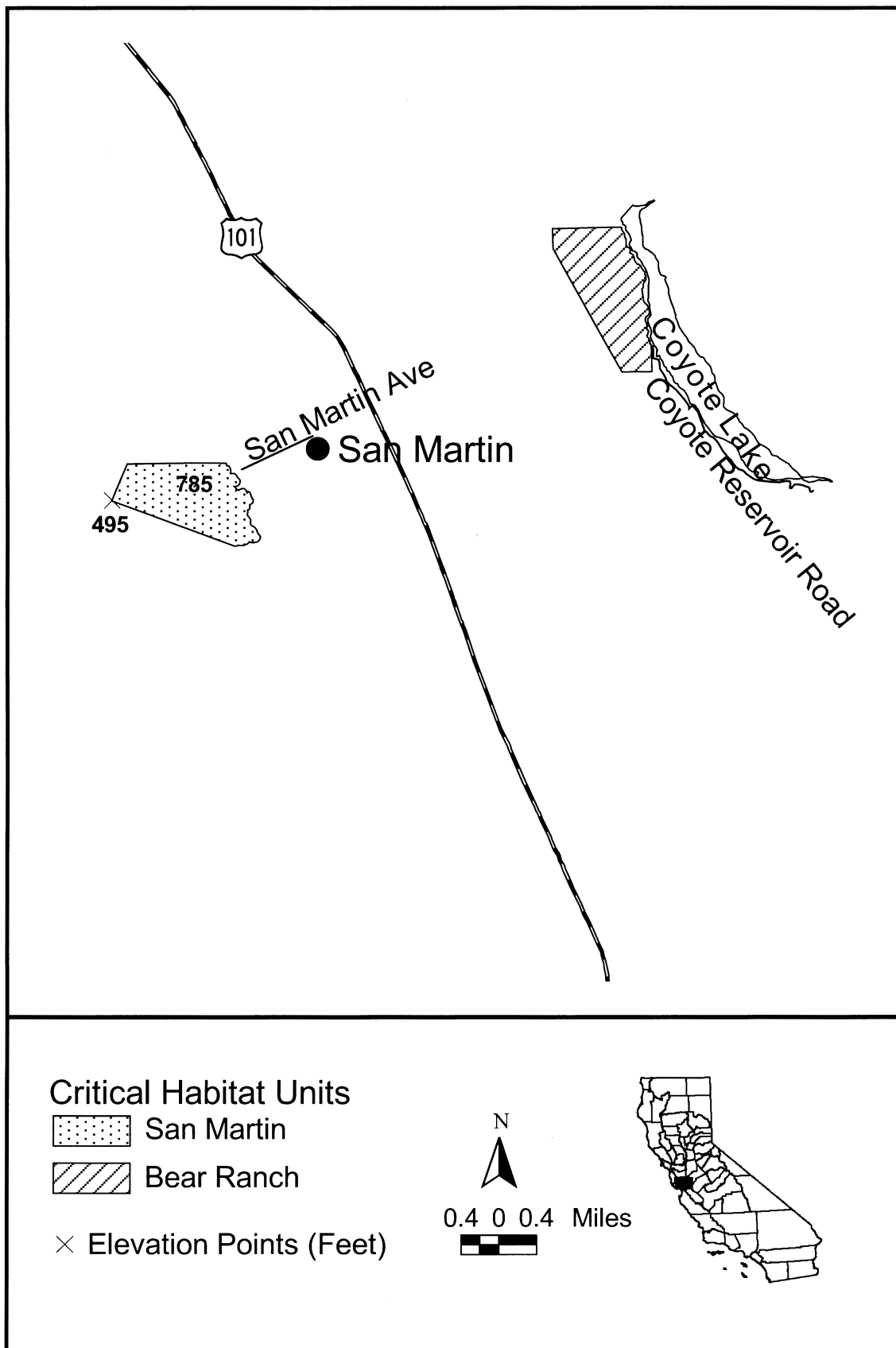
Unit 4 (Bear Ranch Unit): Santa Clara County, California. Those portions of section 32, T.9 S., R.4 E. and section 5, T.10 S., R.4 E., westerly of Coyote Reservoir Road—a light-duty road shown but not named on the USGS Gilroy 7.5 minute quadrangle (1955, photorevised 1968 and 1973).

Unit 5 (San Martin Unit): Santa Clara County, California. Bounded on the north by a line running due east-west through a point 305 m (1000 ft) due north of a hilltop marked 239 m (785 ft) in elevation on the USGS Mt. Madonna 7.5 minute quadrangle (1955, photorevised 1968). This hilltop is near latitude 37 degrees 4 minutes 42 seconds north, longitude 121 degrees 38 minutes 19 seconds west (Hayes Lane, not shown on the Mt. Madonna quadrangle, also runs in the vicinity of this hilltop). The north boundary runs as far east as its intersection with the 97 m (320 ft) elevation contour west of Coolidge Avenue as shown on the Mt. Madonna quadrangle. From this point the boundary runs southeasterly, southerly, and westerly following this

contour, continuing onto the USGS Gilroy 7.5 minute quadrangle (1955, photorevised 1968 and 1973) and back to its intersection with longitude 121 degrees 37 minutes 30 seconds west (the junction between the two quadrangles). The unit is bounded on the south-southwest by a straight line running from this latter point for a distance of about 2,228 m (7,310 ft) slightly south of west-northwest (bearing 291.5 degrees) to a hilltop labeled 151 m (495 ft) in elevation on the Mt. Madonna quadrangle. The west boundary of the unit runs from this hilltop due north-northeast (bearing 22.5 degrees) to the north boundary.

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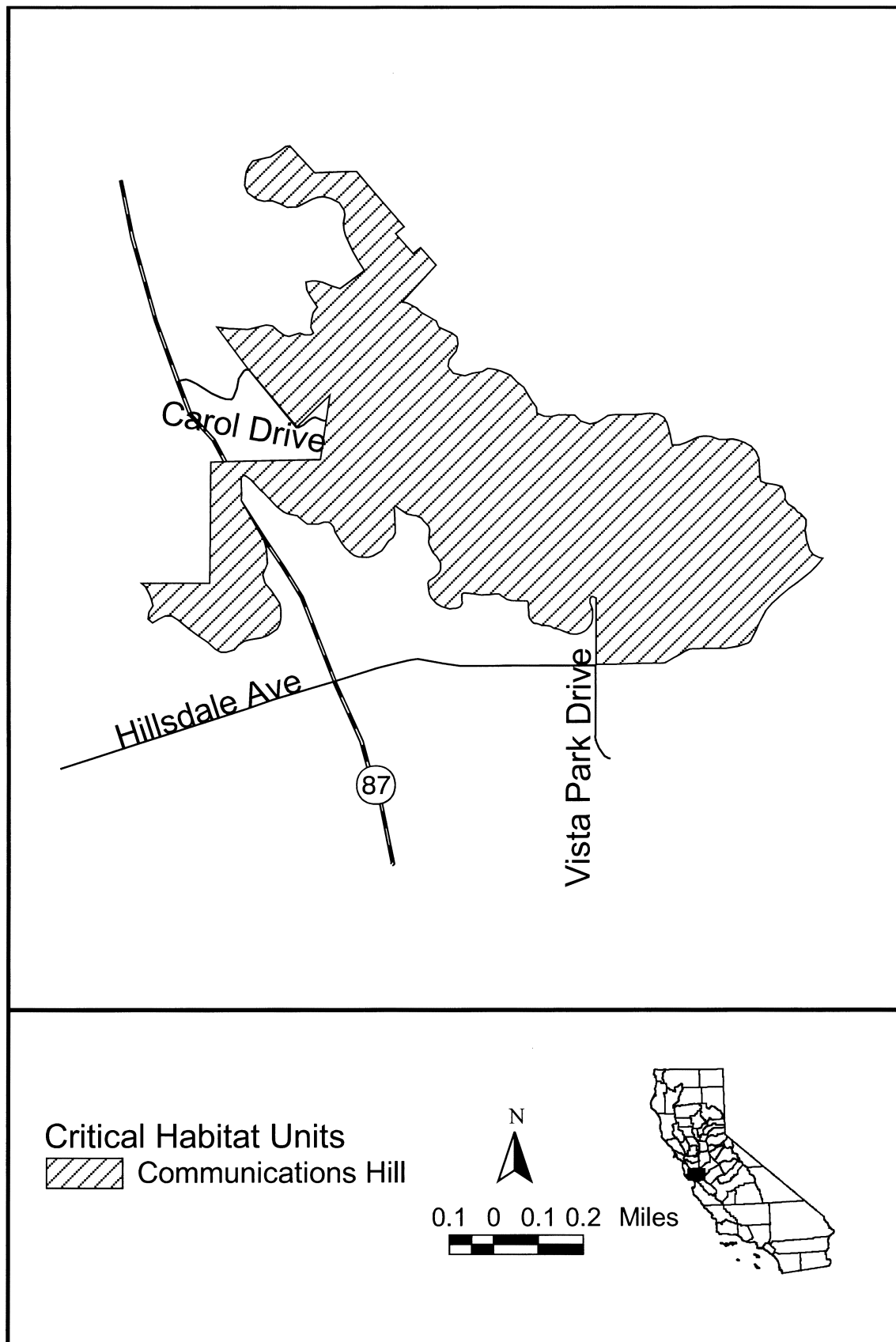


Unit 6 (Communications Hill Unit): Santa Clara County, California. Starting at a point on the 73 m (240 ft) elevation contour due south of the 133 m (435 ft) summit of Communications Hill, the Communications Hill unit is bounded to the south by the 73 m (240 ft) elevation contour as shown on the USGS San Jose East 7.5 minute quadrangle map (1961, photorevised 1980; the hill is not named on this map but the county communications center is shown), as far west as its intersection with Highway 87 (this highway is not shown on the San Jose East quadrangle); then south along Highway 87 (west edge of pavement) to the 55 m (180 ft) elevation contour (all contours in this description are as shown on the San Jose East quadrangle); then south, west, and north along this contour to a point due west of the southernmost point of the southern of the two water tanks on the top of the hill

west of Highway 87; then due east for a distance of about 238 m (780 ft) to a point due south of the easternmost point of the eastern of the two water tanks; then due north for about 439 m (1,440 ft) to the intersection with the 85 m (280 ft) elevation contour; then slightly north of east on a straight line to the southern corner of the property of the county communications facility; then on a line to the northern corner of this property; then due southwest to Carol Drive (not named on the San Jose East quadrangle); then slightly north of northwest (bearing 322 degrees) to the 55 m (180 ft) elevation contour; then along this contour easterly and northeasterly until it reaches the second dirt road as shown on the San Jose East quadrangle; then due northeast across the Southern Pacific railroad tracks to the 55 m (180 ft) elevation contour; then northwesterly and northeasterly along this contour to

the boundary of Oak Hill Memorial Park cemetery; then following the cemetery boundary southeasterly, skirting a hill summit marked 98 m (323 ft) on the San Jose East quadrangle, to the first 67 m (220 ft) elevation contour southeast of this summit; then due southwest to the 49 m (160 ft) elevation contour immediately west of the railroad tracks; then southeasterly along this contour as shown on the 1961 San Jose East quadrangle to its intersection with Hillsdale Avenue; then southwesterly along Hillsdale Avenue (north edge of pavement) to its intersection with Vista Park Drive (not shown on the San Jose East quadrangle); then due north to the 73 m (240 ft) elevation contour; then westerly along this contour to the starting point.

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Unit 7 (Kalana Hills Unit): Santa Clara County, California. From USGS 1:24,000 quadrangle map Morgan Hill, lands bounded by the following UTM Zone 10 NAD83 Coordinates (E,N): 612000, 4115810; 612070, 4115810; 612090, 4115790; 612170, 4115750; 612210, 4115700; 612240, 4115640; 612270, 4115590; 612270, 4115490; 612330, 4115490; 612360, 4115460; 612360, 4115370; 612430, 4115370; 612470, 4115360; 612550, 4115280; 612580, 4115190; 612630, 4115150; 612670, 4115110; 612710, 4115060; 612710, 4115050; 612730, 4115000; 612730, 4114960; 612710, 4114910; 612550, 4114910; 612550, 4114880; 612510, 4114840; 612510, 4114820; 612480, 4114790; 612450, 4114740; 612400, 4114700; 612350, 4114660; 612180, 4114660; 612130, 4114700; 612110, 4114700; 612080, 4114720; 612060, 4114720; 611960, 4114790; 611810, 4114900; 611800, 4115630; 611850, 4115680; 611880, 4115680; 611900, 4115700; 611940, 4115770; 612000, 4115810 Including lands bounded by: 612830, 4114610; 612900, 4114610; 612950, 4114590; 612950, 4114520; 612940, 4114510; 612940, 4114500; 612950, 4114490; 612950, 4114470; 612960, 4114460; 612960, 4114410; 612970, 4114410; 612970, 4114380; 612990, 4114360; 613000, 4114360; 613000, 4114370; 613040, 4114370; 613080, 4114360; 613090, 4114360; 613090, 4114410; 613080, 4114410; 613080, 4114480; 613150, 4114530; 613230, 4114530; 613280, 4114510; 613290, 4114510; 613370, 4114510; 613440, 4114470; 613460, 4114440; 613490, 4114400; 613490, 4114340;

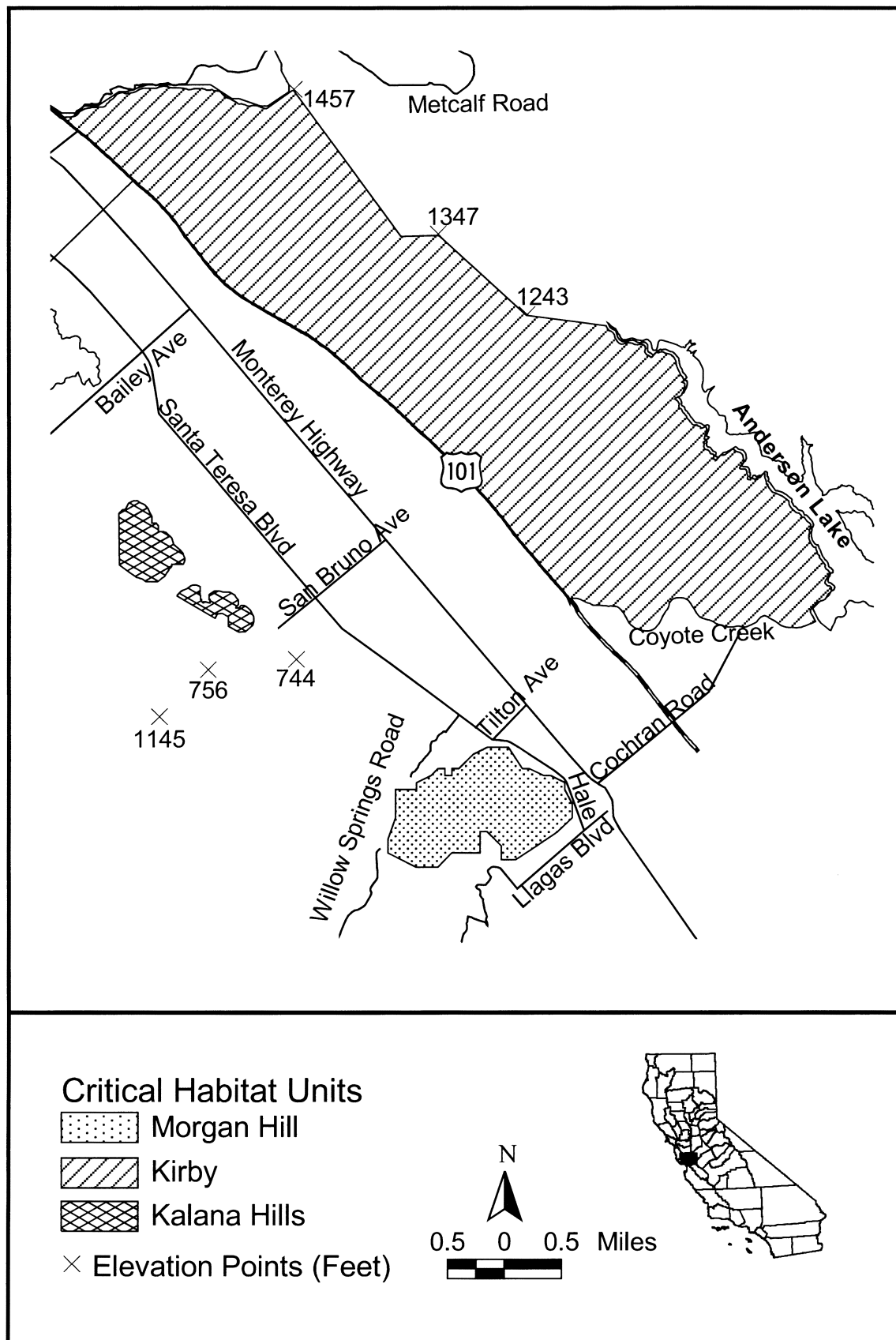
613460, 4114300; 613460, 4114290; 613500, 4114290; 613530, 4114320; 613580, 4114320; 613610, 4114300; 613660, 4114260; 613710, 4114160; 613710, 4114090; 613700, 4114040; 613590, 4113950; 613500, 4113940; 613350, 4114030; 613350, 4114160; 613270, 4114210; 613200, 4114200; 613160, 4114140; 612630, 4114460; 612630, 4114470; 612680, 4114530; 612770, 4114560; 612830, 4114610.

Unit 8 (Kirby Unit): Santa Clara County, California. Beginning at the intersection of the intermittent creek draining Metcalf Canyon (Metcalf Canyon on the USGS Morgan Hill 7.5 minute quadrangle, 1955, photorevised 1980) with Highway 101 (current alignment, not shown on Morgan Hill quadrangle), the unit is bounded on the east, southeast, and south by Highway 101 (east edge of pavement, current alignment, not shown on the Morgan Hill quadrangle), south to where it crosses Coyote Creek. From there the boundary runs southeasterly up along Coyote Creek to the Anderson Lake dam; then east-northeasterly up the face of the dam to Anderson Lake (Anderson Reservoir). The unit is bounded on the southeast by Anderson Lake. From the northernmost tip of Anderson Lake (at latitude 37 degrees 12 minutes 15 seconds north) the boundary runs slightly north of west for a distance of about 1,097 m (3,600 ft) to a hilltop marked 379 m (1,243 ft) in elevation on the Morgan Hill quadrangle; then slightly west of northwest for a distance of about 1,707 m (5,600 ft) to a hilltop marked 411 m (1,347 ft) in elevation on the Morgan Hill quadrangle; then nearly

due west for a distance of about 500 m (1,640 ft) to a hilltop marked 430 m (1,412 ft) in elevation on the Morgan Hill quadrangle; then north of northwest (bearing 325 degrees) for a distance of about 2,551 m (8,370 ft) to a hilltop marked 444 m (1,457 ft) in elevation on the Morgan Hill quadrangle; then on a line running from this hilltop south of west-southwest (bearing 237 degrees) to the intersection of the Metcalf Canyon drainage with the 354 m (1,160 ft) elevation contour as shown on the Morgan Hill quadrangle. The north boundary of the unit then continues westerly down the Metcalf Canyon drainage to the starting point.

Unit 9 (Morgan Hill Unit): Santa Clara County, California. From USGS 1:24,000 quadrangle map Morgan Hill, lands bounded by the following UTM Zone 10 NAD83 Coordinates (E,N): 617000, 4112300; 617300, 4112300; 617500, 4112000; 617600, 4112000; 617800, 4111900; 617900, 4111900; 618100, 4111800; 618100, 4111700; 618200, 4111500; 618200, 4111300; 618000, 4111100; 617700, 4110900; 617400, 4110700; 617200, 4110700; 617200, 4110900; 617000, 4111100; 616900, 4111100; 616900, 4110800; 616500, 4110800; 616300, 4110600; 616000, 4110600; 615600, 4110800; 615600, 4111000; 615700, 4111300; 615700, 4111700; 616000, 4111700; 616000, 4111800; 616200, 4111900; 616300, 4112000; 616400, 4112000; 616400, 4111900; 616500, 4111900; 616500, 4112000; 616600, 4112000; 616800, 4112200; 617000, 4112300.

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Unit 10 (Metcalf Unit): Santa Clara County, California. From USGS 1:24,000 quadrangle maps Lick Observatory, Morgan Hill, San Jose East, and Santa Teresa Hills, lands bounded by the following zone 10 NAD83 Coordinates (E,N): 608300, 4125800; 608500, 4125800; 608900, 4125400; 609500, 4125400; 609800, 4125300; 610200, 4125600; 610300, 4125600; 610600, 4125500; 610700, 4125500; 610900, 4125300; 610900, 4125000; 611000, 4124900; 611200, 4124500; 611300, 4124500; 611400, 4124400; 611400, 4124300; 611500, 4124200; 611500, 4124100; 611800, 4123900; 612100, 4123800; 612500, 4123500; 612500, 4123400; 612800, 4123200; 613600, 4123200; 613700, 4123000; 613900, 4122500; 613900, 4122400; 614100, 4122000; 614100, 4121900; 614200, 4121700; 614200, 4121600; 613900, 4121400; 613800, 4121400; 613500, 4121500; 613400, 4121500; 613100, 4121700; 612200, 4121700; 611900, 4121600; 611800, 4121600; 611500, 4121400; 611300, 4121400; 611200, 4121300; 611000, 4121300; 610700, 4121500; 610400, 4121700; 610100, 4121900; 609900, 4122100; 609900, 4122200; 610100, 4122300; 610100, 4122400; 610000, 4122600; 610000, 4122800; 609900, 4122900; 609900, 4123000; 609800, 4123100; 609700, 4123100; 609600, 4123000; 609500, 4123000; 609500, 4123600; 609200, 4124000; 609100, 4123900; 608900, 4123900; 608000, 4124500; 608000,

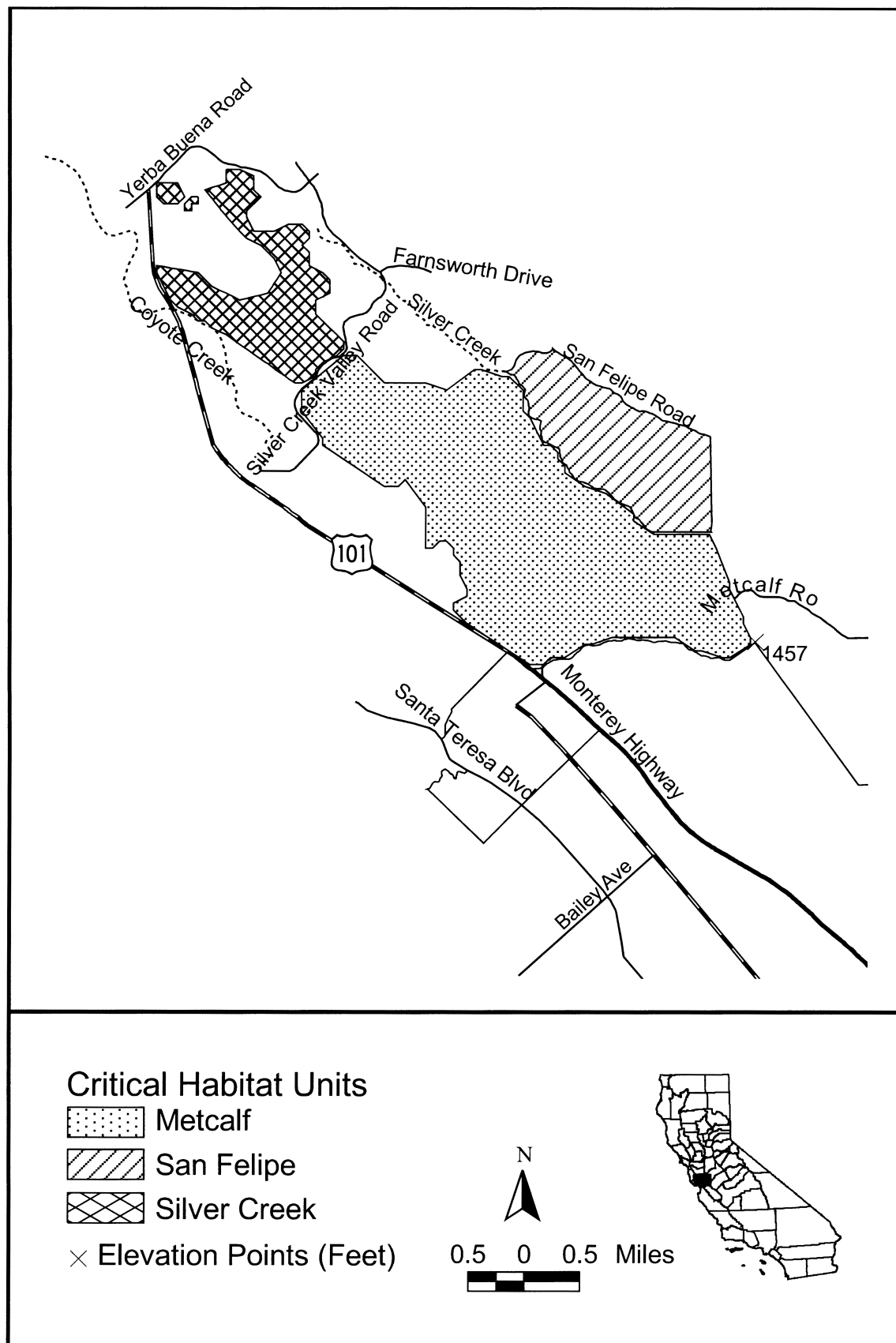
4124600; 607700, 4125000; 607700, 4125300; 608300, 4125800.

Unit 11 (San Felipe Unit): Santa Clara County, California. The east boundary of the San Felipe critical habitat unit begins at the 440 m (1,445 ft) hilltop identified in the northeast boundary of the Metcalf unit (this peak is labeled on the USGS Morgan Hill 7.5 minute quadrangle (1955, photorevised 1980), near latitude 37 degrees 15 minutes north, longitude 121 degrees 43 minutes west); and proceeds from that hilltop due north to San Felipe Road at an elevation of about 296 m (970 ft) (USGS Lick Observatory 7.5 minute quadrangle, 1955, photorevised 1968); then west-northwesterly along San Felipe Road (southwest edge of pavement) for a distance of about 2.7 km (1.7 mi) to Silver Creek Road (sic). The north boundary is formed by Silver Creek Road (south edge of pavement) from San Felipe Road to Silver Creek (the creek crossing is on the USGS San Jose East 7.5 minute quadrangle, 1961, photorevised 1980). The west boundary, which abuts the Metcalf unit, runs from Silver Creek Road southeasterly along Silver Creek (mostly on Lick Observatory quadrangle). The south boundary also abuts the Metcalf unit, and runs from Silver Creek (Morgan Hill quadrangle) due east to the starting point.

Unit 12 (Silver Creek Hills Unit): Santa Clara County, California. From USGS 1:24,000 quadrangle maps San

Jose East, lands bounded by the following UTM Zone 10 NAD83 Coordinates (E,N): 606600, 4128500; 606800, 4128500; 607000, 4128400; 607000, 4128200; 607100, 4128100; 606900, 4127900; 606900, 4127800; 607000, 4127600; 607300, 4127600; 607500, 4127700; 607700, 4127700; 607800, 4127600; 607800, 4127500; 607700, 4127400; 607800, 4127300; 607800, 4127100; 608000, 4127000; 608100, 4126900; 608100, 4126700; 607900, 4126600; 607900, 4126400; 608300, 4126000; 608300, 4125900; 608200, 4125800; 608000, 4125700; 607900, 4125600; 607900, 4125500; 607700, 4125400; 607600, 4125400; 606600, 4126100; 606400, 4126200; 606300, 4126300; 606200, 4126300; 606100, 4126400; 605900, 4126500; 605800, 4126600; 605600, 4127000; 605600, 4127100; 606200, 4127000; 606400, 4126800; 606800, 4126600; 607200, 4126700; 607400, 4127000; 607300, 4127200; 607100, 4127400; 606900, 4127500; 606700, 4127700; 606300, 4128200; 606600, 4128300; 606600, 4128500, including lands bounded by: 605600, 4128300; 605900, 4128300; 606000, 4128100; 605900, 4128000; 605700, 4128000; 605600, 4128100; 605600, 4128300 and lands bounded by: 606200, 4128100; 606200, 4128000; 606100, 4128000; 606100, 4127900; 606000, 4127900; 606000, 4128000; 606100, 4128100; 606200, 4128100.

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Unit 13 (San Vicente-Calero Unit): Santa Clara County, California. Bounded on the north and northwest by Calero Reservoir, by the canal and siphon running westerly of the main reservoir dam (dam on the Arroyo Calero), and by the city boundary of the City of San Jose, which follows the canal at an elevation of roughly 152 m (500 ft), as far as its intersection with Chilianian Gulch. The boundary then runs generally southeast following Chilianian Gulch to its intersection with the R.1 E./R.2 E. (Mount Diablo meridian/base line) dividing line, then due south to the Calero County Park border. The park boundary forms the rest of the western, southern, and southeastern border of the unit. The eastern border of the unit is formed by a line running due north from the southern Calero County Park boundary through a hilltop elevation labeled 307 m (1,009 ft) on the USGS Santa Teresa Hills 7.5 minute quadrangle (1953, photorevised 1980) to Calero Reservoir. This hilltop is near latitude 37 degrees 10 minutes 15 seconds north, longitude 121 degrees 46 minutes 15 seconds west.

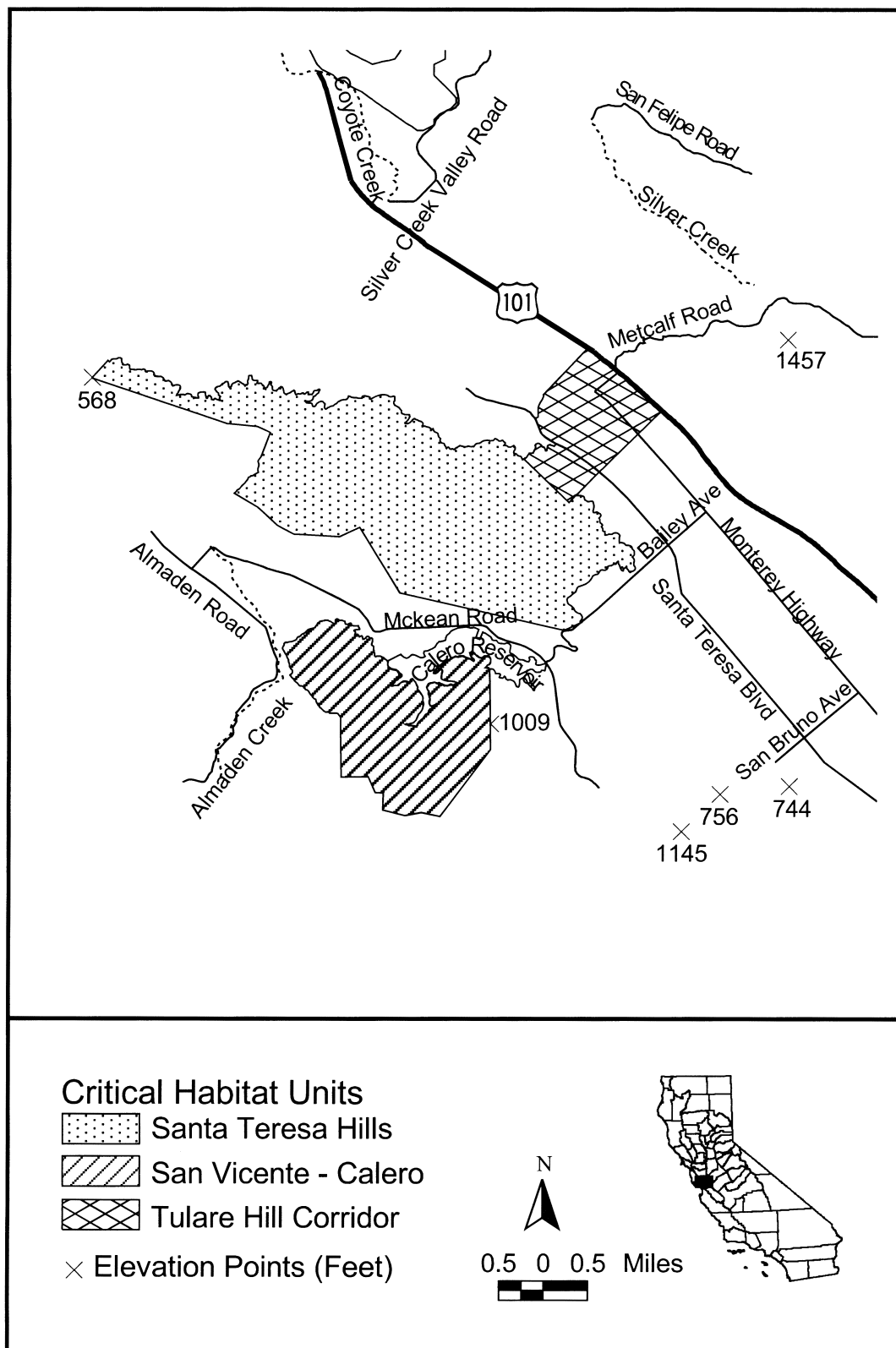
Unit 14 (Santa Teresa Hills Unit): Santa Clara County, California. The east and southeast boundary runs as follows, beginning at the westernmost corner of the Tulare Hill Corridor unit: due southeast and then northeast along the Tulare Hill Corridor unit boundary, to the 85 m (280 ft) elevation contour (USGS Santa Teresa Hills 7.5 minute quadrangle, 1953, photorevised 1980); then southeasterly, south, and southwesterly along this elevation contour (continues onto USGS Morgan Hill 7.5 minute quadrangle, 1955, photorevised 1980, and back) to its

intersection with Bailey Avenue. The south, southwest, and western border of the unit then continues from this point, along a line running west-southwesterly (bearing 248 degrees) for a distance of about 325 m (1,065 ft) to a bench mark north of Bailey Avenue labeled 108 m (354 ft) in elevation on the Santa Teresa Hills quadrangle; then north of east (bearing 284 degrees) for a distance of about 3,030 m (9,940 ft) to the intersection of a land grant boundary with a transmission line shown on the 1980 photorevised Santa Teresa Hills quadrangle at an elevation of about 152 m (500 ft); then north-northwesterly along this land grant line to the intersection with Fortini Road; then generally west-southwest and west along Fortini Road to the intersection with San Vicente Avenue (these road names do not appear on the Santa Teresa quadrangle); then westerly along San Vicente Avenue to where it turns south south-west; then continuing westerly and northwesterly from this point along a land grant boundary shown on the Santa Teresa Hills quadrangle to its intersection with both Henwood Drive (road name does not appear on the Santa Teresa quadrangle) and an unnamed intermittent drainage (tributary to Arroyo Calero); then northeasterly and northerly up this drainage as marked on the Santa Teresa Hills quadrangle to the 183 m (600 ft) elevation contour; then due north-northeast for a distance of about 424 m (1,390 ft) to the first intersection with the 280 m (920 ft) elevation contour; then west-northwest for a distance of about 265 m (870 ft) to a hilltop over 280 m (920 ft) in elevation, then slightly north of west (bearing 276 degrees) for

a distance of about 543 m (1,780 ft) to the end of a dirt road as marked on the 1980 photorevised Santa Teresa Hills quadrangle; then slightly south of west-northwest (bearing 290 degrees) for a distance of about 2,551 m (8,370 ft) to a hilltop marked 173 m (568 ft) in elevation on the Santa Teresa Hills quadrangle; then due northeast to the 73 m (240 ft) elevation contour as shown on the Santa Teresa Hills quadrangle. The northern boundary of the unit is formed by the 73 m (240 ft) elevation contour as shown on the Santa Teresa Hills quadrangle.

Unit 15 (Tulare Hill Corridor Unit): Santa Clara County, California. Bounded on the northeast by the most northeasterly edge of pavement of Highway 101 (i.e., the highway itself is included, and the unit abuts the Kirby and Metcalf units). Bounded on the northwest, west, and southwest by a line extending due southwest from the northeast boundary to the corner of Cheltenham Way and Coburn Court, then southwesterly along Cheltenham Way from Coburn Court to the intersection with Santa Teresa Boulevard, then southeasterly along Santa Teresa Boulevard to the 73 m (240 ft) elevation contour as shown on the USGS Santa Teresa Hills 7.5 minute quadrangle (1953, photorevised 1980), then southwesterly along this contour to the border of Santa Teresa County Park, then along a line due southeast to the southeast border of the unit. Bounded on the southeast by a line running due northeast-southwest through the southeastern-most point of the 85 m (280 ft) contour of Tulare Hill, as shown on the Morgan Hill quadrangle.

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Dated: April 20, 2001.

Joseph E. Doddridge,
*Acting Assistant Secretary for Fish and
 Wildlife and Parks.*

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